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KUDZ ZE KAYAH PROJECT  
2017 HYDROGEOLOGY BASELINE REPORT

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BMC-17-02-1105\_002\_2017 Hydrogeology Baseline\_Rev0\_26April2018

April 2018

Prepared for:



BMC MINERALS (No.1) LTD.

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## EXECUTIVE SUMMARY

BMC Minerals (No.1) Ltd. (BMC) is proposing to develop the Kudz Ze Kayah (KZK) Project (the Project), which is located approximately 110 km southeast of Ross River, Yukon territory. BMC's Project Proposal for the Project and is currently undergoing a Screening Assessment by the Yukon Environmental and Socio-economic Assessment Board's (YESAB) Executive Committee, under the *Yukon Environmental and Socio-economic Assessment Act*. During the Adequacy stage of the Assessment, YESAB requested that BMC submit a number of updated water related reports, prior to YESAB preparing the draft Screening Report. Subsequently, this 2017 Hydrogeology Baseline report is an update to the 2016 Hydrogeology Baseline Report (AEG, 2017) that was submitted as Appendix D-3 of the Project Proposal (BMC, 2017). This report builds upon the hydrogeology baseline information collected by Tetra Tech EBA Inc. (EBA) during 2015 and reported in the document entitled *2015 Baseline Hydrogeology Assessment Kudz Ze Kayah, Yukon* (EBA, 2016).

New information presented in this update report includes:

- Data from quarterly groundwater sampling March, June, September, and November 2017 by AEG at 32 bedrock and overburden monitoring wells (total of four sampling events);
- Refined baseline water quality characterization using all water chemistry data collected during 2015, 2016, and 2017; and
- Evaluation of groundwater level elevations across the site using information from all three years of data collection.

The 2017 data were compiled by AEG and combined with data from the 2015 and 2016 field work presented in EBA (2016). Additionally, the data collected by Cominco Ltd. (Cominco) as part of the Initial Environmental Evaluation (Cominco, 1996) in the 1990's is also presented within this report.

The principal hydrogeologic units at KZK are bedrock and overburden. The overburden consists of two subunits:

- Fine-grained lower permeability sediments composed of silts and fine sands; and
- Coarse-grained higher permeability sands and gravels.

In the depth range of 10 m to 70 m below ground surface, the bedrock hydraulic conductivity generally ranges from  $1 \times 10^{-7}$  m/s to  $1 \times 10^{-5}$  m/s and does not appear to exhibit a trend of increasing or decreasing hydraulic conductivity with depth. The geometric mean of short-term tests conducted in bedrock is  $1.2 \times 10^{-6}$  m/s, which is similar to the results of a longer term bedrock pumping test ( $1.7 \times 10^{-6}$  m/s).

For tests conducted in the fine-grained overburden, the measured hydraulic conductivities have a geometric mean of  $5.2 \times 10^{-6}$  m/s. Based on two field tests, including a 2015 long-term pumping test conducted by EBA, the hydraulic conductivity of the coarse-grained overburden is about  $1.3 \times 10^{-4}$  m/s.

Continuous groundwater level monitoring was conducted in eight monitoring wells across the site from mid-November 2015 through November 2017. With varying levels of intensity, the water levels in both bedrock and overburden wells exhibited the following seasonal trends:

- Rising water levels through the summer months (approximately May to August);

- Peak water levels reached between August and September, depending on the year;
- Falling water levels through the winter months (approximately October to March); and
- Lowest levels reached between April and May, depending on the year.

In most monitoring wells, the maximum-minimum water level difference ranged between 2 m and 8 m; the maximum observed difference was 14 m.

Project wide, the groundwater field pH ranged from circumneutral to slightly alkaline (5.68 to 8.63, or an average value of 7.5) for both bedrock and overburden wells. Monitoring wells MW15-10S and MW15-10D had lower pH values compared to the average site pH, with a range of 5.8 to 6.46, and 5.82 to 6.43, respectively. These two wells are located near the KZ-9 east seep, which is also characterized by low pH water (pH 5.8 to 6.0), suggesting groundwater found in wells MW15-10S and MW15-10D are fed from the same source as this seep.

Water quality results were compared against the Yukon Contaminated Sites Regulation Standards, which indicated a few exceedances for dissolved cadmium and cobalt, and single exceedances of dissolved arsenic and zinc. Sulphate and fluoride concentrations were generally higher in the wells screened in bedrock compared to overburden; however, the concentrations of other anions, nutrients, and metals did not show marked differences between overburden and bedrock wells. Groundwater sampled in the ABM open pit area generally returned higher anion, nutrient, and metal concentrations than groundwater sampled elsewhere on the KZK property. Groundwater concentrations of cadmium, iron, and zinc were elevated in the ABM open pit area relative to the rest of the KZK property, likely due to the subsurface mineralization present in this area. Additionally, sulphate concentrations were typically more elevated within the pit area, likely due to the oxidation of the sulphidic minerals in the deposit.

## LIST OF ACRONYMS

µm	Micrometre
AEG	Alexco Environmental Group Inc.
BMC	BMC Minerals (No. 1) Ltd.
BCMoE	British Columbia Ministry of Environment
CAEAL	Canadian Association for Environmental Analytical Laboratories
CCME	Canadian Council of Ministers of the Environment
CEQG	Canadian Environmental Quality Guidelines
COC	Chain of Custody
Cominco	Cominco Ltd.
CRC ICP-MS	Collision Inductively Coupled Plasma Mass Spectrometry
DL	Detection Limit
DOC	Dissolved Organic Carbon
EBA	Tetra Tech EBA Inc.
FIGWQG	Federal Interim Groundwater Quality Guidelines
ICP-OES	Inductively Coupled Plasma Optical Emission Spectrometry
IEC	International Electrotechnical Commission
ISO	International Organization for Standardization
KP	Knight Piésold Ltd.
KZK	Kudz Ze Kayah
LGO	Low Grade Ore
masl	Metres above sea level
mbgs	Metres below ground surface
mBToC	Metres below top of casing
ORP	Oxidation-reduction Potential
PAL	Protection of Aquatic Life
PQL	Practical Quantitation Limit
QA/QC	Quality Assurance/Quality Control
RPD	Relative Percent Difference
ROM	Run-of-mine
TSS	Total Suspended Solids
YESAB	Yukon Environmental and Socio-economic Assessment Board
YG	Yukon Government

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## GLOSSARY

**Chain of Custody:** paperwork that chronologically documents the collection, transportation, processing, and analysis of a sample.

**Detection Limit:** the lowest quantity of a constituent that can be distinguished from the absence of that constituent using the analytical technique employed, generally at a 1% confidence limit (i.e. it is the smallest amount of a constituent that can be measured with a 99% certainty of detection).

**EQWin:** database management software that is used to archive and interrogate water quality data collected for the Kudz Ze Kayah Project.

**Initial Environmental Evaluation:** document produced by Cominco Ltd. in 1996 that summarizes baseline studies at the Kudz Ze Kayah property, describes the baseline information, Mine plan, waste material characterization, closure plan, environmental management, potential impacts and associated mitigation measures, and socio-economic impacts associated with the Project as it was defined in 1996.

**Oxidation-reduction Potential:** a measure of how oxidizing or reducing a water sample is and can shed light on the geochemical conditions of the water body from which the water sample was collected.

**Practical Quantification Limit:** defined here as five times the detection limit.

**Relative Percent Difference:** calculated as the difference between the constituent concentrations of two replicate samples divided by the average of the two constituent concentrations, expressed as a percentage.

**Theis Equation:** presented in Theis (1935) as a method for estimating the transmissivity and storativity of an aquifer using drawdown data from a pumping/recovery test.

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## 1 INTRODUCTION

BMC Minerals (No.1) Ltd. (BMC) is proposing to develop the Kudz Ze Kayah (KZK) Project (the Project), which is located approximately 110 km southeast of Ross River, Yukon territory. BMC's Project Proposal for the Project and is currently undergoing a Screening Assessment by the Yukon Environmental and Socio-economic Assessment Board's (YESAB) Executive Committee, under the Yukon Environmental and Socio-economic Assessment Act. During the Adequacy stage of the Assessment, YESAB requested that BMC submit a number of updated water related reports, prior to YESAB preparing the draft Screening Report. Subsequently, this Hydrogeology Baseline report is an update to the 2016 Hydrogeology Baseline Report (AEG, 2017) that was submitted as Appendix D-3 of the Project Proposal (BMC, 2017).

The Project is located approximately 260 km northwest of Watson Lake and 110 km southeast of Ross River (Figure 1- 1). Access to the Project is via a 24 km long, all weather, single lane gravel Tote Road that connects the Project to the Robert Campbell Highway. The Project is in the northern foothills of the Pelly Mountains of the Yukon Plateau and in the Finlayson Creek watershed.

In March 2015, a gap analysis was undertaken by Tetra Tech EBA Inc. (EBA) to review the historic baseline groundwater quality data available. Based on the review of historical data and current regulatory requirements, a baseline water quality program was designed to update the dataset and fill in any data gaps. The baseline hydrogeology program was implemented in May 2015 and is ongoing. This report summarizes the data collected up to November 2017

Site activities performed to date for the Project have primarily been exploration activity and associated infrastructure (accommodation, offices, core storage, and equipment laydown areas). Subsequently, the baseline groundwater monitoring program documents the natural background chemistry of the groundwater and flow paths in the Project's local and regional study area.

### 1.1 SCOPE OF 2017 BASELINE PROGRAM

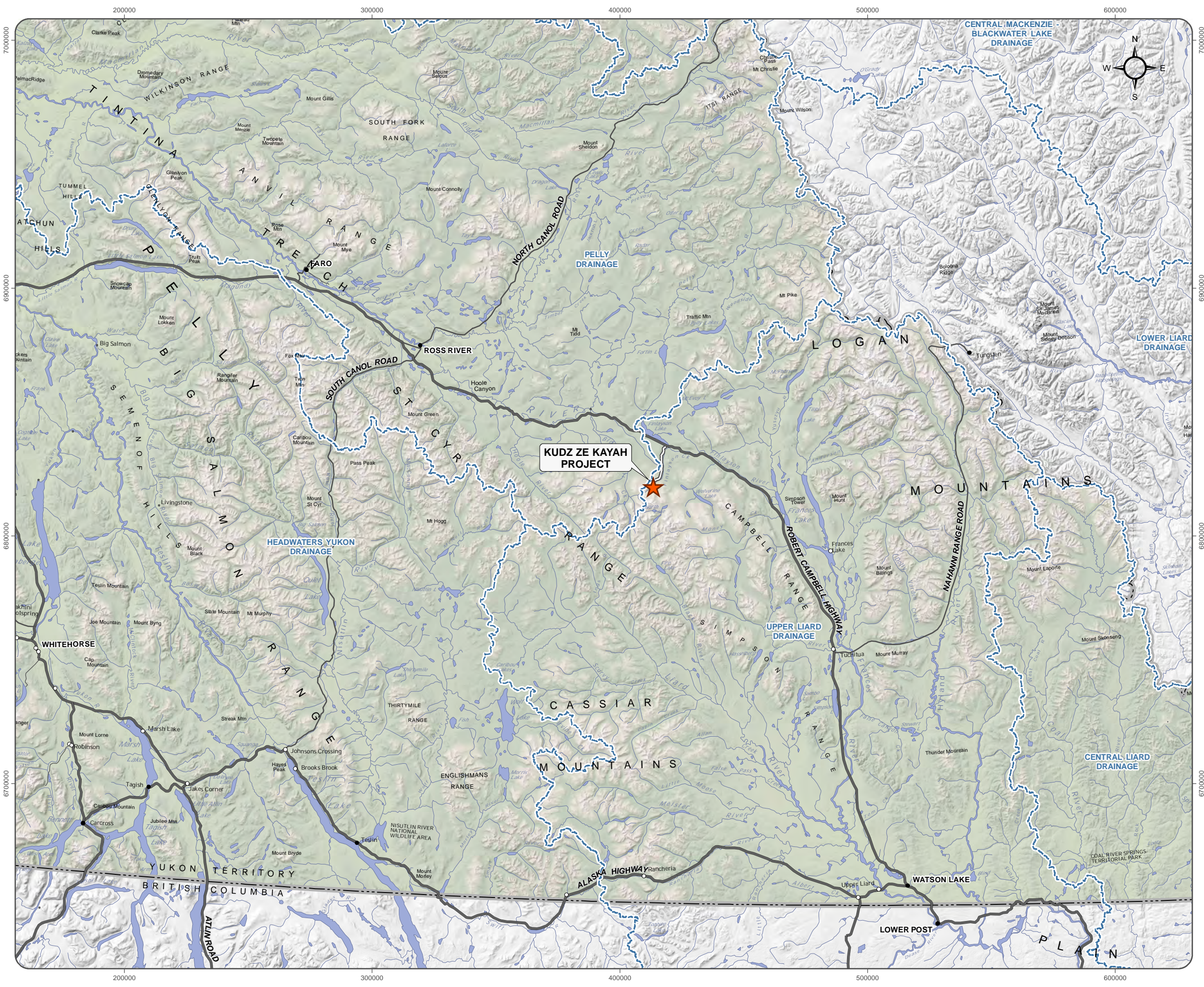
Groundwater monitoring at KZK was initiated in 1995 by Cominco Ltd. (Cominco) through the installation of 40 groundwater piezometers. During September 1995, Cominco performed water level monitoring in the piezometers and some open exploration boreholes, and minor water quality sampling at 11 wells. These results are summarized in Section 1.2, which is based on the information provided in Section 3 of the Initial Environmental Evaluation Kudz Ze Kayah Project, Yukon Territory (Cominco Ltd., 1996). During 2015/2016, EBA performed hydraulic testing and groundwater sampling (May, August, September, November 2015 and March 2016). The 2015 Baseline Hydrogeology Assessment Kudz Ze Kayah, Yukon (EBA, 2016) also includes the 1995 Cominco data. AEG took over sampling in May 2016 and the program is ongoing.

The scope and purpose of this AEG report is to update to the AEG 2016 baseline report (AEG 2017) and EBA baseline report (EBA, 2016) with 2017 data to support BMC's Project Proposal submission to YESAB.

The 2017 scope of work included the following:

- Quarterly groundwater sampling in March, June, September, and November 2017 by AEG at 32 bedrock and overburden monitoring wells (total of seven sampling events);
- Update and refine the baseline water quality characterization using all water chemistry data collected during 2015 to 2017; and
- Evaluate groundwater level elevations across the site.

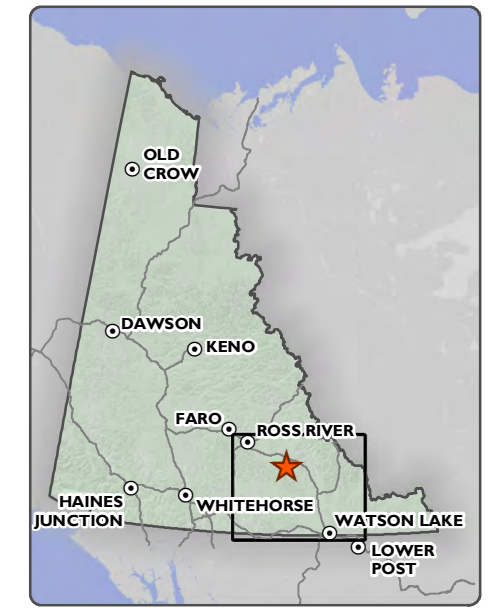




KUDZ ZE KAYAH PROJECT

**FIGURE 1 - 1  
KUDZ ZE KAYAH PROJECT LOCATION**

DECEMBER 2016



KUDZ ZE KAYAH PROJECT



Digital elevation model created by the Yukon Department of the Environment interpolated from the digital 1:50,000 Canadian National Topographic Database (NTDB Edition 2) contour and watercourse layers. Obtained from Geomatics Yukon.  
 Canvec compiled by Natural Resources Canada at a scale of 1:10,000 - 1:50,000. Reproduced under license from Her Majesty the Queen in Right of Canada, as represented by the Minister of Natural Resources Canada. All rights reserved.  
 Drainage areas obtained from National Hydrology Network 2011  
 Datum: NAD 83; Projection UTM Zone 9N  
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1:1,500,000 when printed on 11 x 17 inch paper





## 1.2 HISTORICAL DATA

During 1995 a geotechnical and hydrogeological site investigation was conducted by Golder Associates Ltd. (Golder) with the purpose of characterising the hydrogeology around the proposed open pit, Class B Storage Facility, Class C Storage Facility, and four optional tailings dam locations. The investigation also addressed mine dewatering requirements for the ABM open pit and identified a process water source (Golder, 1996a, 1996b).

### 1.2.1 1995 Hydrologic Investigation

Forty piezometers, listed in Table 1-1, were installed to target the originally proposed site infrastructure. Water levels were measured in the piezometers, as well as selected open exploration boreholes.

**Table 1-1: 1995 Piezometer Installations**

Location	Piezometers
ABM Open pit area	<ul style="list-style-type: none"> <li>• BH95G-20</li> <li>• BH95G-21</li> <li>• BH95G-22</li> <li>• BH95G-23</li> <li>• BH95G-24</li> <li>• BH95G-25</li> <li>• BH95G-26</li> <li>• BH95-129</li> <li>• BH95-131</li> <li>• BH95-135</li> <li>• BH95-146</li> <li>• BH95-148</li> <li>• BH95-150</li> </ul>
South of Open pit	<ul style="list-style-type: none"> <li>• BH95G-29</li> </ul>
Class B Storage Facility	<ul style="list-style-type: none"> <li>• BH95G-32</li> <li>• BH95G-33</li> </ul>
Class C Storage Facility	<ul style="list-style-type: none"> <li>• BH95G-30</li> <li>• BH95G-31</li> </ul>
Mill Site	<ul style="list-style-type: none"> <li>• BH95G-35</li> <li>• BH95G-36</li> <li>• BH95G-37</li> <li>• BH95G-20M</li> </ul>
Geona Creek Valley	<ul style="list-style-type: none"> <li>• BH95G-2</li> <li>• BH95G-3</li> <li>• BH95G-4</li> <li>• BH95G-5</li> <li>• BH95G-6</li> <li>• BH95G-7</li> <li>• BH95G-8</li> <li>• BH95G-9</li> <li>• BH95G-10</li> <li>• BH95G-12</li> <li>• BH95G-13</li> <li>• BH95G-14</li> <li>• BH95G-15</li> <li>• BH95G-17</li> <li>• BH95G-18</li> <li>• BH95G-19</li> <li>• BH95G-21</li> <li>• BH95G-27</li> </ul>

During (or shortly after) the drilling of select boreholes, single-well rising and falling head slug tests were performed by Golder to characterize the hydraulic conductivity of overburden, upper fractured bedrock, and deeper massive bedrock. Table 1-2 presents a summary of the 1995 test results (Golder, 1996a).

**Table 1-2: 1995 Hydraulic Conductivity Testing by Golder Associates**

Soil/Rock Type	Borehole ID	Hydraulic Conductivity (K) <sup>1</sup> m/s	Soil/Rock Description	Geometric Mean
Overburden	BH95G-21S	8.35 x 10 <sup>-7</sup>	Silty SAND some gravel (TILL)	4.1 x 10 <sup>-6</sup>
	BH95G-22	1.34 x 10 <sup>-5</sup>	Gravelly SAND trace silt	
	BH95G-23	2.95 x 10 <sup>-5</sup>	SAND some gravel some silt	
	BH95G-24	6.24 x 10 <sup>-6</sup>	Sandy GRAVEL trace to some silt	
	BH95G-25S	1.02 x 10 <sup>-6</sup>	SAND and GRAVEL trace to some silt	
	BH95G-26	2.06 x 10 <sup>-6</sup>	SAND and GRAVEL some silt	
Fractured Upper Bedrock	BH95G-29	4.88 x 10 <sup>-6</sup>	SAND and GRAVEL some silt (TILL)	7.1 x 10 <sup>-7</sup>
	BH95G-15D	1.06 x 10 <sup>-7</sup>	Argillite with calcite bands	
	BH95G-21D	3.07 x 10 <sup>-7</sup>	Porphyroblastic Schist – Mafic volc/dyke	
	BH95G-20	4.72 x 10 <sup>-7</sup>	Schist	
	BH95G-21	2.49 x 10 <sup>-6</sup>	Schist	
	BH95G-25	1.32 x 10 <sup>-6</sup>	Quartz Schist	
Massive Bedrock	BH95G-33D	2.46 x 10 <sup>-6</sup>	-	8.1 x 10 <sup>-8</sup>
	BH95G-131	2.47 x 10 <sup>-7</sup>	-	
	BH95G-129	2.63 x 10 <sup>-8</sup>	-	

<sup>1</sup> Depth of hydraulic testing, methodology of test and subsequent analysis, and raw data were unavailable to confirm results. These results are as reported in Feasibility Level Mining Geotechnical Design Criteria for the ABM Deposit (Golder, 1996a).

In the 2015 *Baseline Hydrology Assessment, Kudz Ze Kayah, Yukon* (EBA, 2016), EBA provides the following summary of the Golder conceptual model:

*The conceptual hydrogeological model created by Golder expected the groundwater table to generally mimic topography, with the groundwater table located near surface in the valley bottom and greater than 200 m below the mountains. They anticipated the groundwater table to be within the competent and fractured bedrock on the valley flanks and in the overburden in the valley bottoms. They found that the groundwater flows from the mountains to the valley bottoms. Artesian conditions encountered in the valley bottom indicated discharging groundwater, which is the result of the steep topography and upward hydraulic gradients.*

## 1.2.2 1995 Groundwater Quality Investigation

In 1995, a single round of groundwater sampling was conducted on September 4<sup>th</sup> to characterise the baseflow of Geona Creek and South Creek (Cominco, 1996). Groundwater was sampled at 11 sites, from a combination of wells and exploration boreholes (Table 1-3 and Table 1-4). A complete description of the 1995 groundwater quality program and results is summarized by EBA in the 2015 *Baseline Hydrogeology Assessment, Kudz Ze Kayah, Yukon* (EBA, 2016) and is provided below:

*One piezometer below the proposed tailings dam (BH95G-13D), and two in the area of the proposed open pit (BH95G-26 and BH95G-29) were sampled, and analyzed for a range of non-metal "general parameters" as well as total and dissolved metals. The general parameters included pH, conductivity, suspended solids, dissolved solids, hardness, alkalinity, nitrogen species, phosphorous and sulphate. Three other piezometers, located on the north and south sides of the open pit (BH95G-21 and BH95G-23), and west of the proposed Class C Storage Area (95G-31) were also sampled. These samples were analyzed for total and dissolved metals only. Flowing exploration boreholes were sampled including one each on the north and south sides of the open pit (T94- 23 and T94-49). These samples were analyzed for general parameters and total and dissolved metals. Three other borehole samples (T94-14, T94-26 and T94-30) were analyzed for total and dissolved metals only. All of the exploration boreholes were cased through the overburden, and are open for the remaining length of the borehole in bedrock.*

*Analytical results showed that groundwater chemistry was similar to surface water chemistry (Table [1-3]). The groundwater pH was similar to that of surface water. Alkalinity, total dissolved solids and hardness were slightly higher in groundwater than in surface water. Sulphate concentrations were variable, with two wells (one shallow, one deep) having sulphate concentrations more than double the concentrations in surface water and the remaining three having similar concentration to surface water. Concentrations of nitrate, nitrite and ammonia were generally low except for a moderate level of nitrate-N (0.13 mg/L) in shallow well BH95G-26. The two shallow*

overburden wells (BH95G-26 and BH95G-29) had phosphorus concentrations an order of magnitude or more above those measured in surface water. Metal concentrations in both shallow and deep groundwater were low. In particular, copper and lead concentrations in all groundwater samples were equal to or lower than the concentrations in surface water. Exceptions to the pattern of low metals were elevated concentrations of arsenic and iron in the three deep bedrock wells within the orebody (T94-49, T94-30 and T94-13) and elevated arsenic, iron, cadmium and zinc in one overburden well.

The deep well (T94-49) with the highest arsenic and iron concentrations (170 µg/L and 4300 µg/L, respectively) also had elevated sulphate (71.4 mg/L) and the lowest pH and alkalinities of any of the wells measured. Zinc was also somewhat elevated (160 µg/L). Sulphate, pH and alkalinity were not measured in the shallow well that had elevated arsenic, iron, cadmium and zinc (BH95G-23).

**Table 1-3: Historical Water Quality Summary**

Borehole	Location	Well Screen (mbgs)	Flowing	Analyses		Field Measurements <sup>1</sup>			
				General Parameters	Metals	pH	Cond (µS/cm)	Temp (°C)	DO (mg/L)
BH95G-13D	Tailings Dam	39.4-50.3	Y	X		8.2	202	3	4.2
BH95G-26	Open Pit	10.0-14.3	N	X		7.9	330	2.5	3.5
BH95G-29	Open Pit	14.3-19.2	N	X		8	228	2.5	2.4
BH95G-21	Open Pit	5.3-10.0	N		X	7.8	218	2	7.6
BH95G-23	Open Pit	8.8-12.8	Y		X	8	228	2.5	2.4
BH95G-31	Class C Storage	2.4-10.0	N		X	8	160	2	7.4
T94-23	Open Pit	-	Y	X		8.1	252	2.5	1.9
T94-49	Open Pit	-	Y	X		7.9	398	2.5	2
T94-14	Open Pit	-	Y		X	7.9	398	2.5	2
T94-26	Open Pit	-	Y		X	8.1	235	3.5	1.8
T94-30	Open Pit	-	Y		X	8	235	2.3	3.2

<sup>1</sup> Data from Cominco (1996)

**Table 1-4: Historical Water Quality Data**

PARAMETER <sup>1</sup>	UNIT	BH95G-13	BH95G-31	BH95G-26	BH95G-21	BH95G-23	BH95G-29	T94-23	T94-26	T94-49	T94-30	T94-14
Specific Conductance	µS/cm	350	-	783	-	-	516	567	-	449	-	-
Non-filterable Residue	mg/L	4	-	826	-	-	28	6	-	14	-	-
Filterable Residue (TDS)		210	-	386	-	-	224	463	-	240	-	-
Hardness, Dissolved		177	143	320	193	111	204	236	201	170	201	355
Alkalinity Total 4.5		160	-	254	-	-	168	185	-	98.9	-	-
Ammonia Nitrogen		0.01	-	<0.005	-	-	<0.005	0.009	-	0.016	-	-
Nitrate Nitrogen		<0.02	-	0.13	-	-	<0.02	<0.02	-	<0.02	-	-
Nitrite Nitrogen		<0.005	-	<0.005	-	-	<0.005	<0.005	-	<0.005	-	-
Phosphorus - Total		<0.003	-	0.187	-	-	0.511	0.003	-	0.013	-	-
Sulphate		13.4	-	72.9	-	-	38.1	47.5	-	71.4	-	-
<b>Dissolved Metals</b>												
Silver	µg/L	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	0.03
Aluminum		7	15	<61	10	15	17	7	7	7	9	13
Arsenic		0.26	0.06	0.39	0.7	61	3.8	0.29	0.06	170	33	23
Barium		73	97	82	37	36	55	38	25	17	28	24
Cadmium		<0.01	0.02	0.16	<0.01	6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt		<0.4	0.4	0.4	<0.4	4.2	<0.4	<0.4	<0.4	0.7	<0.4	<0.4
Chromium		0.5	11	8.7	0.3	1.3	0.5	0.3	0.3	0.6	0.3	0.3
Copper		0.2	0.7	0.3	0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iron		320	54	38	8	4800	500	590	440	4300	2100	1800
Mercury		0.02	-	0.04	-	<0.01	0.04	0.06	-	<0.01	<0.01	7
Manganese		160	10	56	46	570	120	46	20	240	250	20t
Molybdenum		2.9	0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Nickel		<1	8	4	<1	9	<1	<1	<1	1	<1	<1
Lead		<0.1	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc		2	3	27	3	2700	4	<1	<1	160	11	<1

<sup>1</sup> Data from Cominco (1996)

## **2 METHODOLOGY**

### **2.1 MONITORING WELLS**

Through 2015 and 2016 there were 44 groundwater wells in the Project monitoring network. In 2017 this was reduced to 32 wells to reflect the change in the proposed Project footprint, as well as removing wells that were inoperable. The current well network is made up of a combination of wells installed by Cominco in 1995 (now refurbished), and new wells installed in 2015 by EBA and 2016 by Knight Piésold Ltd. (KP). The 1995 wells are constructed with unthreaded 1¼ inch schedule 80 PVC pipe and the 2015/2016 wells are constructed with unthreaded 1¼ inch schedule 40 PVC pipe. The PVC well screens are slotted and have lengths ranging from 1.70 m to 14.6 m. The wells have sand packs, bentonite pellet seals, and above-ground steel well protectors. The well casings are sealed with either J-plugs or pressed-on PVC caps. Twelve wells are dual completions with a bentonite seal between two screened intervals. The well completion information is summarized Table 2-1, and well locations are shown on Figure 2-1.

**Table 2-1: Summary of Kudz Ze Kayah Groundwater Monitoring Program**

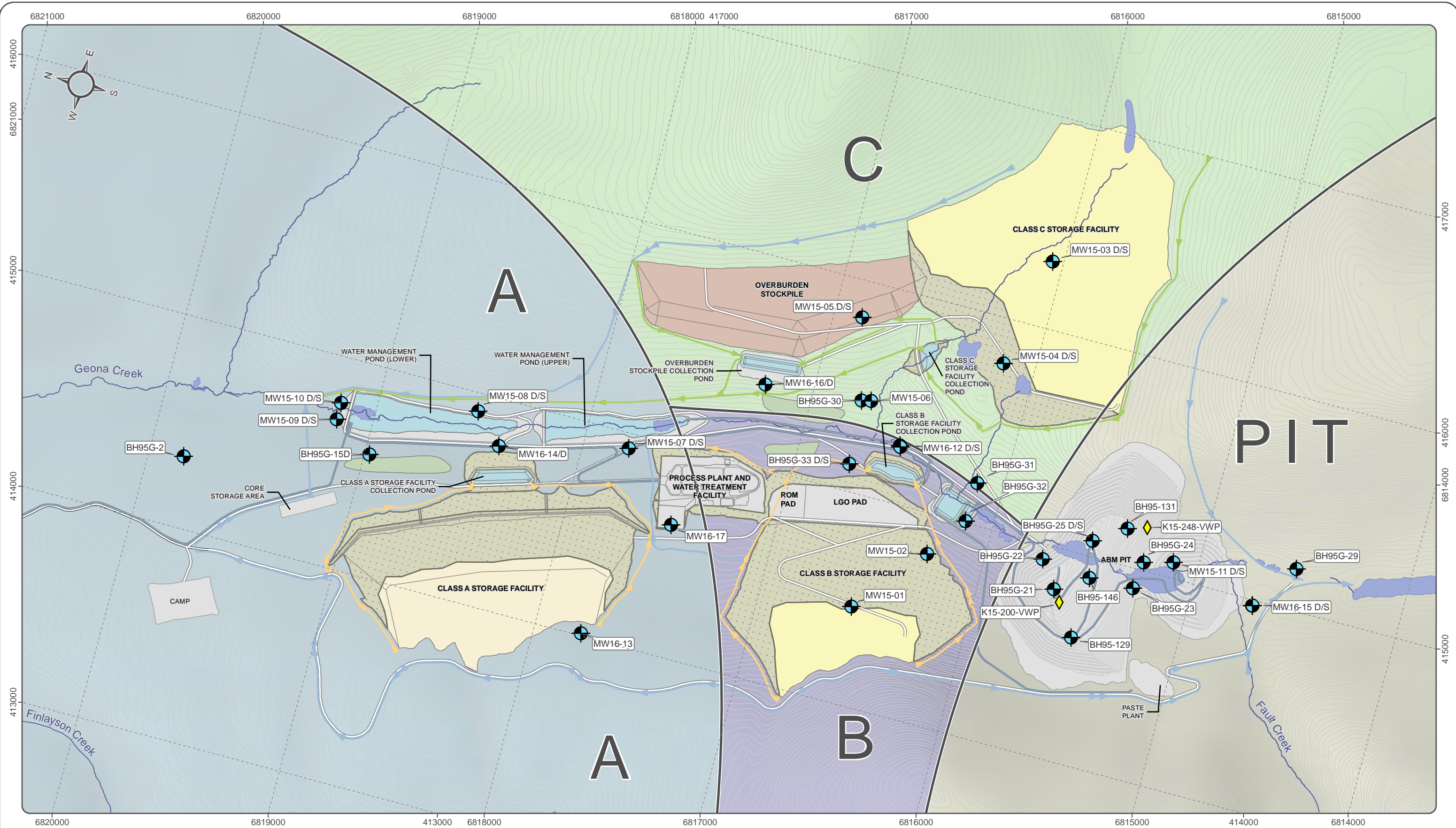
Well ID	In situ Parameters Water Level Water Quality	Submerged Transducer and Datalogger	Depth-to-Water (Oct 2016 – mBToC)	Aquifer Monitored	Borehole Depth (mbgs)	Screen Interval (mbgs)	
						From	To
MW15-01	x	x	11.289	Bedrock	18.83	10.0	18.8
MW15-02	x		Artesian	Bedrock	31.58	23.0	31.7
MW15-03S	x		3.861	Overburden	7.46	4.1	7.1
MW15-03D	x		2.215	Bedrock	15.98	10.1	16.0
MW15-04S	x	x	6.3	Overburden	14.09	11.2	14.1
MW15-04D	x	x	6.336	Bedrock	31.28	27.1	32.9
MW15-05S	x		Dry	Overburden	6.98	4.6	7.6
MW15-05D	x		11.633	Bedrock	27.45	22.4	29.8
MW15-06	x		Artesian	Overburden	8.94	6.5	9.4
MW15-07S	x	x	1.584	Overburden	10.09	8.1	11.0
MW15-07D	x		Frozen	Bedrock	32.26	26.3	32.1
MW15-08S	x		Artesian	Overburden	11.64	8.7	11.6
MW15-08D	x		Blocked	Bedrock	35.96	29.8	35.6
MW15-09S	x		Artesian	Overburden	18.48	11.4	17.3
MW15-09D	x		Blocked	Bedrock	40.73	35.1	40.9
MW15-10S	x		Frozen	Overburden	9.55	6.6	9.6
MW15-10D	x		Artesian	Bedrock	31.47	25.7	31.5
MW15-11S	x		1.826	Overburden	7.01	4.15	7.05
MW15-11D	x		Frozen	Bedrock	35.30	20.6	35.2
MW16-12S	x		1.162	Overburden	8.00	2.6	4.3
MW16-12D	x		Artesian	Bedrock	28.20	20.5	27.6
MW16-13	x		Frozen	Bedrock	27.90	20.3	27.7
MW16-14D	x		Artesian	Bedrock	40.20	30.8	38.8
MW16-15S	x		4.61	Overburden	6.00	3.1	5.3
MW16-15D	x		8.748	Bedrock	42.20	28.8	36.6
MW16-16D	x		17.815	Bedrock	40.30	31.5	38.8
MW16-17	x		3.697	Bedrock	31.10	20.3	27.7
BH95G-2	x	x	4.457	Bedrock	18.29	15.2	19.8
BH95G-15D	x		4.657	Bedrock	22.56	19.5	21.6
BH95G-21	x		1.981	Bedrock	8.97	6.1	9.1
BH95G-22	x	x	2.374	Bedrock	5.65	2.8	5.8
BH95G-23	x		Blocked	Overburden	12.45	9.8	12.8
BH95G-24	x		Blocked	Bedrock	8.14	6.4	9.4
BH95G-25S	x		1.597	Overburden	11.26	8.5	11.5
BH95G-25D	x		4.686	Bedrock	20.02	17.8	20.8
BH95G-29	x		Frozen	Overburden	15.33	15.6	18.6
BH95G-30	x		Blocked	Bedrock	18.10	16.2	19.2
BH95G-31	x		Frozen	Bedrock	7.64	7.0	10.0
BH95G-32	x		4.842	Bedrock	14.61	12.2	15.2
BH95G-33S	x		6.134	Overburden	5.27	2.8	5.8
BH95G-33D	x	x	5.783	Bedrock	11.76	9.1	12.1
BH95-129	x		7.973	Bedrock	149.88	154.5	160.0
BH95-131	x	x (+Baro)	31.018	Bedrock	126.88	123.5	128.0
BH95-146	x		Artesian	Bedrock	136.67	134.1	138.7
K15-200-VWP	Grouted-in Vibrating Wire Transducers and Datalogger			Bedrock	n/a	n/a	n/a
K15-248-VWP	Grouted-in Vibrating Wire Transducers and Datalogger			Bedrock	n/a	n/a	n/a

Notes:

Mbgs: metres below ground surface

mBToC: metres below top of casing





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Datum: NAD 83, Map Projection: UTM Zone 9N

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**AEG**

1:17,000 (when printed on 11 x 17 inch paper)

0 250 500 750 Metres

- ◆ Vibrating Wire Piezometer
- Groundwater Monitoring
- Existing Watercourse
- Existing Waterbodies
- Proposed Mine Feature Footprint
- Proposed Class A Storage Facility
- Proposed Class B and C Storage Facility
- Proposed Overburden Stockpile
- Proposed Topsoil Stockpile
- Proposed Progressive Reclamation
- Proposed Pond
- Proposed Pipeline
- Proposed Non Contact Diversion
- Proposed Class A & B
- Proposed Contact Class C Diversion



**KUDZ ZE KAYAH PROJECT**

**FIGURE 2 - 1**

**CURRENT GROUNDWATER MONITORING LOCATIONS BY AREA AND PROPOSED SITE PLAN (YEAR 10)**

DECEMBER 2016

D:\Project\WIP\Projects\Kudz\_Ze\_Kayah\Maps\01\_WaterQuality\02-Groundwater\Baseline\_Rprt\GW\_20161206.mxd  
(Last edited: Name REDACTED)

## 2.2 FIELD METHODOLOGY

### 2.2.1 Well Development

All wells were developed using the following methodology:

1. Waterra tubing, equipped with a foot valve, was inserted into the well and pulled up from the bottom approximately 0.5 m;
2. The tubing was connected to an inertial Waterra pump, fixed to the well protector;
3. Water was pumped from the well at the maximum operating speed of the pump;
4. A minimum of five to seven well volumes were removed from the well;
5. Field chemical parameters (pH, specific conductance, oxygen reduction potential (ORP), dissolved oxygen, and temperature) were measured at regular time intervals during pumping;
6. Turbidity (water clarity) was visually observed throughout development; and
7. Development was deemed complete when the field parameters had stabilized and there was minimal visual turbidity. Development generally continued until the pumped water was clear; however, if this was not possible, additional water volumes were purged until there was no visible change in turbidity.

### 2.2.2 Groundwater Level Measurements

As part of monitoring program, water-level measurements were made in all monitoring wells. In most wells, the depth-to-water (in metres below top of PVC casing) was measured using an electric water-level sounder. Based on the surveyed top-of-casing elevations, the depth-to-water measurements were converted to piezometric (hydraulic head) elevations in metres above sea level (masl). These measurements were performed prior to any groundwater collection disturbances such as purging or sampling.

In eight wells, water levels were continuously monitored using submerged pressure transducers and dataloggers. The accuracy of these measurements was corroborated by periodic hand measurements. Two boreholes (K15-200 and K15-248) were completed with multiple *grouted-in* vibrating wire pressure transducers that were positioned at different depths to provide vertical piezometric profiles (that is, hydraulic head elevation versus depth below ground surface). Dataloggers for the submerged transducers and vibrating wire transducers were downloaded during each field trip and the data were transferred to spreadsheets to generate water-level hydrographs expressed in masl.

As described in EBA (2016), all 2015 monitoring wells and exploration hole collars were surveyed by Challenger Geomatics using professional surveying equipment with an absolute vertical accuracy of about  $\pm 0.03$  m. The coordinates of the monitoring wells installed during 2016 were located by KP using a real-time kinematic differential GPS unit with an accuracy of  $\pm 4.0$  m. Elevations were then taken from a topographic map with 1.0 m contours provided by BMC in February 2016.

Groundwater sample collection procedures at all monitoring wells followed the AEG established *Standard Data Collection Protocol for Groundwater Monitoring Well Sampling*, which conforms to the Yukon Environment's Contaminated Sites Regulation, Protocol #7 (YG, 2011). An overview of the sampling process is presented in this section.

Prior to sampling, the static water level is measured in the well using an electric sounder. Groundwater quality samples are collected after a minimum of three well volumes have been purged from the well. Field parameters (pH, specific conductance,



oxidation reduction potential (ORP), dissolved oxygen, and temperature) are measured after each well volume have been removed using a YSI Professional Plus multimeter and then compared to previous measurements to assess water chemistry stabilization.

After the field parameters have stabilized, the groundwater samples are collected. In order to maintain the chemical integrity of the samples, AEG employs quality assurance/quality control (QA/QC) practices during collection. This includes wearing clean, disposable nitrile gloves during collection and placing the water sample in laboratory grade bottleware provided by the analytical laboratory specific to the analyte(s) being tested. Dissolved mercury and dissolved organic carbon parameter water samples are filtered using a 45 µm filter in the field at the time of sample collection. Dissolved metals are collected in falcon tubes and are filtered and preserved by the laboratory. Preservatives are added to bottled samples for measuring total mercury, dissolved mercury, dissolved organic carbon, and nutrients as directed by the laboratory. The samples are packed on ice in a cooler and shipped to the laboratory via courier with an accompanying chain of custody (COC) form specifying the analyte(s) to be tested.

### 2.2.3 Hydraulic Well Testing

Short-term pumping/recovery tests were performed by AEG in seven new monitoring wells installed during 2016. The following test procedure was followed at each well:

- The depth-to-water was measured using an electric sounder;
- A Solinst M2 levellogger was set to a one second measurement interval and submerged below water in the well. The levellogger hung securely from stainless steel cable;
- Waterra tubing equipped with a foot valve was installed down the well and positioned just above the levellogger;
- The Waterra Powerpack inertial pump was installed at the top of the protective well casing, and the tubing was secured;
- The equipment was left untouched for a minimum of five minutes to allow the water level in the well to recovery back to static;
- The pump was turned on and operated at its maximum flow rate for 20 to 30 minutes;
- During pumping the discharge rate was measured every five minutes by measuring the time to fill a 500 mL measuring cup;
- The pump was then shut off and without removing any equipment from the well, water level recovery was monitored by the levellogger for approximately 20 minutes; and
- All equipment was removed from the well and the levellogger data were downloaded to a laptop computer.

During the 2016 drilling of geotechnical test holes, KP performed 52 single- and straddle-packer injection tests in bedrock open boreholes. The procedures used to perform these tests and the associated data analyses are provided in KP (2016).

## 2.3 WATER CHEMISTRY ANALYSIS

Groundwater samples were collected between May of 2015 and November of 2017. Samples were analyzed for the following field and laboratory parameters:

Field parameters

- pH;
- Specific conductance;
- Temperature;
- ORP;
- Dissolved oxygen; and
- Turbidity.

#### Laboratory parameters

- pH;
- Specific conductance;
- Major anions (chloride, fluoride, sulphate, nitrate, nitrite, phosphate)
- Alkalinity and acidity;
- Ammonia;
- Dissolved organic carbon (DOC);
- Hardness; and
- Metals package - dissolved concentrations (including phosphorous and mercury).

A subset of field duplicates was collected during each sampling event to evaluate replication of sampling procedures and laboratory accuracy. All laboratory analyses were performed by Maxxam Analytics International Corp. (Maxxam). Maxxam is an accredited International Organization for Standardization (ISO)/International Electrotechnical Commission (IEC) 17025 testing laboratory located in Burnaby, British Columbia. Maxxam is certified by the Canadian Association for Environmental Analytical Laboratories (CAEAL). The certificates of analysis provided by Maxxam for the 2017 samples are provided in Appendix F. The certificates of analysis for 2015/2016 are located in EBA (2016) and AEG (2017). A summary of the laboratory analysis technique used for each parameter is presented in Table 2-2.

**Table 2-2: Analytical Methods used in the Laboratory**

Parameter	Analytical Method	Source Method
Acidity	Titration	2310 B (Rice et al., 2012)
Alkalinity	Titration	2320 B (Rice et al., 2012)
Dissolved Organic Carbon	Persulphate Oxidation	5310 C (Rice et al., 2012)
Chloride	Automated Colourimetry	4500-Cl- G (Rice et al., 2012)
Fluoride	Ion Specific Electrode	4500-F C (Rice et al., 2012)
Sulphate	Automated Colourimetry	4500-SO42- E (Rice et al., 2012)
Phosphorus	Ascorbic Acid Method (Colourimetry)	4500-P E (Rice et al., 2012)
Nitrite-N	Cadmium Reduction Flow Injection	4500-NO3- I (Rice et al., 2012)
Nitrate-N		4500-NO3- I (Rice et al., 2012)
Ammonia-N	Automated Phenate (Colourimetry)	4500-NH3- G (Rice et al., 2012)
Dissolved Metals (34 elements) <sup>1</sup>	Major elements using Inductively Coupled Plasma – Optical Emission Spectrometry (ICP-OES), and Trace elements using Collision Reaction Cell Inductively Coupled Plasma – Mass Spectrometry (CRC ICP- MS)	CRC ICP-MS USEPA Method 6020 ICP-OES EPA Method 6010 (USEPA, 2007)
Dissolved Mercury	Cold Vapour Atomic Fluorescence	BCMOE (2013)

<sup>1</sup> CRC ICP-MS scan includes: Al, Sb, As, Ba, Be, Bi, B, Cd, Ca, Cr, Co, Cu, Fe, Pb, Li, Mg, Mo, Ni, P, K, Se, Si, S, Ag, Na, Sr, Ti, Sn, Ti, U, V, Zn, & Zr.

## 2.4 QUALITY ASSURANCE/QUALITY CONTROL (QA/QC)

### 2.4.1 Groundwater Sampling QA/QC

QA/QC practices in the groundwater monitoring program follow the methods described in AEG's Protocols and in *Standard Methods for Examination of Water and Wastewater* (Rice et al., 2012). The monitoring program includes a comprehensive QA/QC program to ensure validity of the data collected including the establishment of data quality objectives and documentation of sample variability due to natural variability and analytical variability. The QA/QC program includes the following:

- All field staff are familiar with and follow work methods for groundwater monitoring and sample collection that are based on generally accepted best industry practices (Rice et al., 2012). The sampling procedures include measures to avoid sample contamination in the field during sample collection, as well as during sample handling and shipping;
- Blind field duplicates are collected at a rate of one duplicate per 10 samples collected. The field duplicates are clearly linked to one of the monitoring wells on sampling logs and field notes, but not on the chain of custody forms;
- A field and travel blank are collected for each monthly sampling event;
- All samples are sent to Maxxam in Burnaby, BC, a Canadian Association for Laboratory Accreditation member, for analysis. The laboratory also conducts an internal QA/QC program, including split duplicates (one per 10 samples); and
- Following each sampling event, AEG conducts a review of all analytical results and QA/QC results received from the laboratory to ensure data quality and to flag any potential issues (e.g., data quality issues from the information provided by the lab, conduct an ion balance for each sample – typically ≤10% is acceptable, etc.). Additionally, the QA/QC program includes a review of the relative percent difference in duplicates and parameters measured in field blanks and trip blanks to assess data quality.

Relative Percent Difference (RPD) was used to determine field variability and is equal to the difference between the sample and duplicate value, divided by the average of the sample and duplicate value, and expressed as a percent. When RPD was greater than 25%, a subsequent check was performed against the laboratory detection limit (DL) to establish if the practical quantitation limit (PQL) was met. The PQL is five times the DL and is defined as the minimum concentration that can be measured within specified limits of precision and accuracy. Both results need to be above the PQL for the analyte to be considered to be 'meeting the PQL'. If one result from the sample or duplicate is  $>5x$  DL and one result is  $<5x$  DL, then the 'PQL is not met'. An analyte with results below the PQL indicates that the parameter being analyzed is not present in a sufficient amount to be reliably quantified. Typically, as parameters approach their detection limit, higher variability is more likely to occur. A RPD  $>25\%$  is flagged for further comment or consideration.

### 2.4.2 Laboratory Quality Control Sample Analysis

Overall quality control sample analysis from method blanks, laboratory duplicates, matrix spikes, and blank spikes met the Maxxam acceptability criteria and consequently the data were issued.

### 2.4.3 Field Variability

During the 2017 monitoring program field duplicates were collected to measure field variability between simultaneous grab samples. A total of nine field duplicates were collected during the quarterly sampling events between March 2017 and November 2017. For all nine field duplicates, analytes with RPD  $>25\%$  and meeting the PQL are provided in Table 2-3, while analytes that were  $>25\%$  and did not meet the PQL are listed in Table 2-4. In general, relative to each other the simultaneous grab samples have low variability. Dissolved trace metals and ammonia exceeded the 25% RPD threshold in between one and three of the nine duplicate samples. In general, these RPD exceedances were not excessive (typically 27% to 47% RPD; Table 2-3) and were not restricted to any particular constituent, sampling event or monitoring well, suggestive of natural variability at any given sampling location. That one third of the ammonia-N duplicate results returned an RPD  $>25\%$  might suggest that this parameter may have more marked natural variation than other analytes; however, only 10% of the 20 duplicates collected during the 2016 sampling program returned ammonia-N concentrations that had an RPD  $>25\%$  and met the PQL (AEG, 2017).

**Table 2-3: Duplicate Analytes with RPD  $>25\%$  and Meeting the PQL**

Analyte	Number of times RPD $>25\%$ and PQL met	RPD	Analyte	Number of times RPD $>25\%$ and PQL met	RPD
Aluminum (Al), dissolved	2	44%, 88%	Lead (Pb), dissolved	1	32%
Ammonia (N)	3	35%, 39%, 44%	Manganese (Mn), dissolved	1	37%
Antimony (Sb), dissolved	1	27%	Nickel (Ni), dissolved	1	28%
Copper (Cu), dissolved	2	29%, 47%	Zinc (Zn), dissolved	2	32%, 106%

**Table 2-4: Duplicate Analytes with RPD >25% and Not Meeting the PQL**

Analyte	Number of times RPD >25% and PQL not met	Analyte	Number of times RPD >25% and PQL not met
Aluminum (Al), dissolved	3	Cyanide, Weak Acid Dissociable	1
Ammonia (N)	3	Dissolved Organic Carbon	1
Antimony (Sb), dissolved	3	Fluoride	4
Arsenic (As), dissolved	1	Phosphorus (P), dissolved	3
Chloride	2	Thallium (Tl), dissolved	2
Cobalt (Co), dissolved	2	Total Acidity	2
Copper (Cu), dissolved	1	Zinc (Zn), dissolved	1

#### 2.4.4 Field and Travel Blanks

Additional field quality control samples include field blanks and trip blanks, where de-ionized water is handled, processed and analyzed in the same manner as the site water samples. Blanks can provide an indication of sample contamination occurring in the field (field blank) or lab (method blanks) and at any point in between (trip blanks). Concentrations of parameters should not be detectable, though a PQL of >2 times the reportable detection limit allows for slight “noise” around the detection limit.

Field blanks were processed by taking de-ionized water (analyte free media) to the sample station, opening it and exposing it to ambient air and ‘collecting’ it in the sample bottles. These samples were treated the same as the actual water samples, preserved and filtered as necessary, and their analysis can provide an indication of contamination that may be affecting the actual samples.

Four field blanks were collected between March 2017 and November 2017. Field blank analytes with concentrations >2 times the DL are shown in Table 2-5. Dissolved antimony, nitrate, and nitrite were detected at 2.8 to 3.1x their respective detection limits in the field blanks. These results are not considered concerning given the concentrations detected were only marginally above the 2x threshold and were limited to very few parameters. Furthermore, the trip blank concentrations detected (i.e. ≤3.1 times the detection limit) are so low that they are unlikely to materially affect the interpretation of the groundwater sample data.

**Table 2-5: Field Blank Analytes >2x DL**

Analyte	Result / DL (where >2)	Month Analyte was > 2x DL
Antimony (Sb), dissolved	2.8	September 2017
Nitrate (N)	3.1	June 2017
Nitrite and Nitrate, as N	3.1	June 2017

Trip blanks (sample of de-ionized water) are supplied and prepared by the lab and are meant to accompany the sample bottles provided by the lab for the monitoring program. The trip blank travels with the sample bottles to the sample stations and is returned unopened back to the lab with the collected samples. The purpose of the trip blank is to identify any potential contamination (e.g., cross contamination from other samples or ambient air conditions) to which the samples may be exposed. Four trip blanks were analyzed between March 2017 and November 2017. Of these, three analytes had a

concentration >2 times the DL: total lead, which was 10 times the detection limit, alkalinity, bicarbonate HCO<sub>3</sub> at 2.3x DL, and barium at 3x DL. The corresponding March 2017 field blank did not have elevated lead concentrations, nor did any of the samples collected during this event. Such contamination is likely related to the bottles, preservative, and/or laboratory handling, as the bottles were not opened in the field or during transport; however, sporadic contamination during fieldwork cannot be ruled out.

Since laboratory method blanks showed no notable results >2 times the DL, it can be assumed that the original lab water is not a source of contamination. For the purposes of this data quality assessment, periodic field and trip blank results >2 times the DL do not call sample results into question; rather the relevance and potential for actual sample results to have been affected have been considered when interpreting results.

## 2.5 GUIDELINES

Groundwater quality samples results were compared to the Yukon Contaminated Sites Regulation (YCSR) Schedule 3 Generic Numerical Water Standards for groundwater (YG, 2002). The standard values are dependent on the applicable primary water use, of which there are four: aquatic life, irrigation, livestock, and drinking water. Aquatic life (column II) for freshwater was selected as the primary use at the KZK site. The YCSR Standards or applicable formulas to calculate the standard are provided in Table 2-6. Although the YCSR Standards for the protection of freshwater aquatic life have been used for comparison to groundwater concentrations, it is noted that the quality of groundwater at KZK is reflective of natural conditions.

Groundwater samples results were also compared to the Federal Interim Groundwater Quality Guidelines (FIGWQG) (FCSAP, 2012) for those constituents which do not have a YCSR standard (pH, chloride, aluminum and iron). The FIGWQG are intended to be used as an interim measure until Canadian Environmental Quality Guidelines (CEQG) for groundwater are developed by the Canadian Council of Ministers of the Environment (CCME). The guidelines are primarily risk-based numerical guidelines set at levels at which it is believed that unacceptable adverse effects on environmental or human health will not occur (FCSAP, 2012). There are three tiers to the guidelines and Tier 1 was used as it allows for direct application of the generic numerical guideline. Furthermore, there are different values for different land uses; agricultural, residential/parkland, commercial and industrial. Industrial was selected as the land use most comparable. The FIGWQG values or applicable formulas to calculate the guideline are listed below in Table 2-6.



**Table 2-6: Summary of YCSR Standards and FIGWQG Guidelines Used for Comparative Purposes**

Parameter	YCSR Schedule 3 Column II Standards (Aquatic Life)	FIGWQG Industrial Tier 1 Guidelines
pH (field)	-	6.5-9 pH units
Chloride	-	120 mg/L
Fluoride	2 mg/L @ hardness < 50 mg/L of CaCO <sub>3</sub> 3 mg/L @ hardness ≥ 50 mg/L of CaCO <sub>3</sub>	
Sulphate, dissolved	1000 mg/L	
Ammonia (N)	1.31 mg/L @ pH ≥ 8.5 3.70 mg/L @ pH 8.0 to < 8.5 11.3 mg/L @ pH 7.5 to < 8.0 18.5 mg/L @ pH 7.0 to < 7.5 18.4 mg/L @ pH < 7.0	
Nitrite (N)	0.2 mg/L @ Cl < 2mg/L 0.4 mg/L @ CL 2 to < 4 mg/L 0.6 mg/L @CL 4 to < 6 mg/L	
Nitrate (N)	400 mg/L	
Aluminum (Al), dissolved	-	0.005 mg/L if pH < 6.5 0.1 mg/L if pH ≥ 6.5
Antimony (Sb), dissolved	0.2 mg/L	
Arsenic (As), dissolved	0.05 mg/L	
Barium (Ba), dissolved	10 mg/L	
Beryllium (Be), dissolved	0.053 mg/L	
Cadmium (Cd), dissolved	0.0001 mg/L @ hardness < 30 mg/L of CaCO <sub>3</sub> 0.0003 mg/L @ hardness 30 to > 90 mg/L of CaCO <sub>3</sub> 0.0005 mg/L @ hardness 90 to > 150 mg/L of CaCO <sub>3</sub> 0.0006 mg/L @ hardness 150 to < 210 mg/L of CaCO <sub>3</sub>	
Chromium (Cr), dissolved	0.01 mg/L	
Copper (Cu), dissolved	0.04 mg/L @ hardness 75 to > 100 mg/L of CaCO <sub>3</sub> 0.05 mg/L @ hardness 100 to > 125 mg/L of CaCO <sub>3</sub> 0.06 mg/L @ hardness 125 to > 150 mg/L of CaCO <sub>3</sub> 0.07 mg/L @ hardness 150 to > 175 mg/L of CaCO <sub>3</sub> 0.08 mg/L @ hardness 175 to > 200 mg/L of CaCO <sub>3</sub> 0.09 mg/L @ hardness ≥ 200 mg/L of CaCO <sub>3</sub>	
Iron (Fe), dissolved	-	0.3 mg/L
Lead (Pb), dissolved	0.04 mg/L @ hardness < 50 mg/L of CaCO <sub>3</sub> 0.05 mg/L @ hardness 50 to > 100 mg/L of CaCO <sub>3</sub> 0.06 mg/L @ hardness 100 to > 200 mg/L of CaCO <sub>3</sub> 0.11 mg/L @ hardness 200 to < 300 mg/L of CaCO <sub>3</sub> 0.16 mg/L @ hardness ≥ 300 mg/L of CaCO <sub>3</sub>	
Mercury (Hg), dissolved	0.001 mg/L	
Molybdenum (Mo), dissolved	10 mg/L	
Nickel (Ni), dissolved	0.25 mg/L @ hardness < 60 mg/L of CaCO <sub>3</sub> 0.65 mg/L @ hardness 60 to > 120 mg/L of CaCO <sub>3</sub> 1.10 mg/L @ hardness 120 to < 180 mg/L of CaCO <sub>3</sub> 1.50 mg/L @ hardness ≥ 180 mg/L of CaCO <sub>3</sub>	
Selenium (Se), dissolved	0.01 mg/L	
Silver (Ag), dissolved	0.0005 mg/L @ hardness ≤ 100 mg/L of CaCO <sub>3</sub> 0.015 mg/L @ hardness > 100 mg/L of CaCO <sub>3</sub>	
Thallium (Tl), dissolved	0.003 mg/L	
Titanium (Ti), dissolved	1 mg/L	
Uranium (U), dissolved	3 mg/L	
Zinc (Zn), dissolved	0.075 mg/L @ hardness < 90 mg/L of CaCO <sub>3</sub> 0.150 mg/L @ hardness 90 to > 100 mg/L of CaCO <sub>3</sub> 0.900 mg/L @ hardness 100 to > 200 mg/L of CaCO <sub>3</sub> 1.650 mg/L @ hardness 200 to < 300 mg/L of CaCO <sub>3</sub> 2.400 mg/L @ hardness ≥ 300 mg/L of CaCO <sub>3</sub>	

## 2.6 DATA QUALITY ASSESSMENT

All water quality data has been compiled into an EQWin® software database. This continually growing database allows for the assessment of water quality trends for specific parameters of interest. Water quality data are reviewed after each monitoring event in comparison to the previously collected data. Results that show variance from historical data are reviewed in detail to determine if lab rechecks may be required or if they are representative of the station water quality. Following a lab recheck, the data point(s) may be removed if there is compelling evidence to do so (e.g., field notes regarding potential sample contamination or well integrity issues etc.). To date, limited variance has been observed in the 2017 sample data compared to the historical dataset and no data have been removed from the database.

During the data assessment it was noticed that dissolved iron concentrations within the pit area were not consistent between the 2015 and 2016 data. In general, the 2016 dissolved iron concentrations were markedly lower than the 2015 dataset. This is ascribed to different sampling approaches employed for the dissolved samples collected in 2015 versus 2016. In 2015, the samples were filtered and preserved in the field; however, in order to achieve low level detection limits, Maxxam advised AEG not to filter and preserve in the field. Instead, the 2016 samples for dissolved metals were submitted to Maxxam unfiltered and unpreserved for filtration and acidification in the laboratory. Field filtering and preserving was restarted in November 2016 for all future sampling events. The lower dissolved iron concentrations observed in the 2016 samples is most likely due to precipitation of iron-bearing phases during transit to Maxxam, removing a portion of dissolved iron from the sample prior to processing in the laboratory. This would be most prominent in samples collected from anoxic wells where the majority of dissolved iron would be present as Fe(II). Upon exposure to the atmosphere, the Fe(II) would oxidize quickly at the circumneutral to mildly alkaline pH of the groundwaters, and the resulting Fe(II) would hydrolyse to precipitate iron (oxyhydr)oxides. Given the uncertainty associated with the dissolved iron dataset, the dissolved iron results from May to July 2016 and September to November 2016 have been removed from the dataset.

Otherwise, the duplicate, field and trip blank data and variance analysis suggest the sample dataset is suitable for use.

### 3 RESULTS AND DISCUSSION

#### 3.1 BOREHOLE HYDRAULIC TESTING COMPILATION

During 2015, borehole hydraulic conductivity tests were conducted by EBA, and the associated methodologies and test analyses are reported in EBA (2016). These tests included two long-term pumping tests at water wells, slug tests in completed monitoring wells, and bedrock packer injection tests in open boreholes. Results of the 2015 slug and packer tests are summarized in Table 3-1.

**Table 3-1: 2015 Slug Tests and Packer Tests**

Drillhole ID	Slug Tests				Packer Tests			
	Geologic Material	Top of Screen (m) <sup>a</sup>	Bottom of Screen (m) <sup>a</sup>	Hydraulic Conductivity (m/s)	Geologic Material	Top of Interval (m) <sup>a</sup>	Bottom of Interval (m) <sup>a</sup>	Hydraulic Conductivity (m/s)
MW15-01	Bedrock	10	18.8	1.20 x 10 <sup>-6</sup>	Bedrock	12.5	20.0	1.00 x 10 <sup>-6</sup>
MW15-02	Bedrock	23	31.7	-	Bedrock	12.5	32.0	1.90 x 10 <sup>-7b</sup>
MW15-03S	Overburden	4.1	7.1	8.50 x 10 <sup>-6</sup>	-	-	-	-
MW15-03D	Bedrock	10.1	16	1.90 x 10 <sup>-6</sup>	-	-	-	-
MW15-04	-	-	-	-	Bedrock	16.4	26.9	4.20 x 10 <sup>-7</sup>
MW15-04S	Overburden	11.2	14.1	1.10 x 10 <sup>-5</sup>	-	-	-	-
MW15-04D	Bedrock	27.1	32.9	9.20 x 10 <sup>-7</sup>	-	-	-	-
MW15-05S	Overburden	4.6	7.6	-	-	-	-	-
MW15-05D	Bedrock	22.4	29.8	1.30 x 10 <sup>-6</sup>	Bedrock	22.5	30.0	6.90 x 10 <sup>-8</sup>
MW15-06	Overburden	6.5	9.4	1.50 x 10 <sup>-6</sup>	-	-	-	-
MW15-07S	Overburden	8.1	11	4.50 x 10 <sup>-6</sup>	-	-	-	-
MW15-07D	Bedrock	26.3	32.1	-	Bedrock	16.5	33.0	1.90 x 10 <sup>-7</sup>
MW15-08S	-	-	-	-	-	-	-	-
MW15-08D	Bedrock	29.8	35.6	1.30 x 10 <sup>-7</sup>	Bedrock	19.5	36.0	4.30 x 10 <sup>-7</sup>
MW15-09S	Overburden	11.4	17.3	1.60 x 10 <sup>-6</sup>	-	-	-	-
MW15-09D	Bedrock	35.1	40.9	-	Bedrock	34.5	39.0	1.00 x 10 <sup>-5</sup>
MW15-10S	Overburden	6.6	9.6	2.00 x 10 <sup>-6</sup>	-	-	-	-
MW15-10D	Bedrock	25.7	31.5	-	Bedrock	28.5	33.0	4.80 x 10 <sup>-6</sup>
MW15-11S	Overburden	4.15	7.05	3.60 x 10 <sup>-5</sup>	-	-	-	-
MW15-11D	Bedrock	20.6	35.2	-	-	-	-	-

<sup>a</sup> All reported depths refer to vertical depth below ground surface

<sup>b</sup> Poor quality data, provided for qualitative purposes only

- Test not conducted or results unreliable

During 2015, long-term pumping tests were conducted at WW15-01 and WW15-02 to estimate the bulk hydraulic conductivities of the permeable overburden and fractured bedrock units. The results are presented in Table 3-2.

**Table 3-2: 2015 Long-Term Pumping Tests**

Well	Geologic Material	Method	Transmissivity (T)	Test Interval Length	Hydraulic Conductivity (K)	Storativity (S)	Best Estimate $K^{(a)}$
			[m <sup>2</sup> /s]	[m]	[m/s]	[unitless]	[m/s]
Pumping Well WW15-01	Overburden	Cooper-Jacob	$5.1 \times 10^{-4}$	4.2	$1.2 \times 10^{-4}$	(b)	$1.1 \times 10^{-4}$
	Overburden	Theis Recovery	$3.8 \times 10^{-4}$	4.2	$9.0 \times 10^{-5}$	(b,c)	
	Overburden	Mean	$4.5 \times 10^{-4}$	4.2	$1.1 \times 10^{-4}$	n/a	
Observation Well BH95G-23	Overburden	Cooper-Jacob	$5.1 \times 10^{-4}$	4.2	$1.2 \times 10^{-4}$	$6.4 \times 10^{-4}$ (d)	
	Overburden	Theis Recovery	$4.0 \times 10^{-4}$	4.2	$9.6 \times 10^{-5}$	(c)	
	Overburden	Mean	$4.6 \times 10^{-4}$	4.2	$1.1 \times 10^{-4}$	n/a	
Pumping Well WW15-02	Bedrock	Cooper-Jacob	$7.6 \times 10^{-5}$	34	$2.2 \times 10^{-6}$	(b)	$1.7 \times 10^{-6}$
	Bedrock	Theis Recovery	$3.9 \times 10^{-5}$	34	$1.1 \times 10^{-6}$	(b,c)	
	Bedrock	Mean	$5.8 \times 10^{-5}$	34	$1.7 \times 10^{-6}$	n/a	

(a) Mean of individual hydraulic conductivity, K, results

(b) Storativity cannot be reliably measured from pumping well data

(c) Storativity cannot be measured from Theis recovery analysis

(d) Artesian storage coefficient

During 2016, KP performed packer injection tests in 16 drill holes to evaluate the hydraulic conductivity of bedrock at multiple depths along each open hole to create a profile of the hydraulic properties. The packer tests were conducted in locations of proposed infrastructure, such as the storage facilities and pit to support the geotechnical evaluation for the Prefeasibility Study Report (KP, 2016b). The methodology, data, and results are provided in the *2016 Geotechnical Site Investigation Data Report* (KP, 2016a). These results are summarized in Table 3-3. The locations of these wells are shown on Figure 2-1.

**Table 3-3: 2016 Bedrock Packer Test Results**

Drillhole ID	Top of Interval (m bgs)	Bottom of Interval (m bgs)	Hydraulic Conductivity (m/s)	Drillhole ID	Top of Interval (m bgs)	Bottom of Interval (m bgs)	Hydraulic Conductivity (m/s)
K16-379	7.1	15.7	$7. \times 10^{-6}$	K16-410	8.2	14.7	$1. \times 10^{-5}$ <sup>4</sup>
	13.7	24.7	$2. \times 10^{-6}$		15	22.2	$1. \times 10^{-5}$
	24.2	35.2	$2. \times 10^{-6}$		21.7	31.2	$3. \times 10^{-7}$
	31.7	39.7	$1. \times 10^{-6}$	K16-411	23.5	28.1	$3. \times 10^{-6}$
K16-387	6.5	16	$4. \times 10^{-7}$		26.1	34.1	$8. \times 10^{-7}$
	14	25	$4. \times 10^{-7}$	K16-412	20.5	26.7	$4. \times 10^{-7}$
	23	34	$3. \times 10^{-7}$		32.5	38.7	$3. \times 10^{-6}$
K16-389	13	21	$6. \times 10^{-7}$	MW16-12D	8.2	19.2	$8. \times 10^{-6}$
	21	31.5	$1. \times 10^{-6}$		17.2	28.2	$3. \times 10^{-6}$
	31	42	$7. \times 10^{-7}$	MW16-13	3.5	9.9	$5. \times 10^{-5}$ <sup>5</sup>
K16-390	9.6	16.1	$1. \times 10^{-6}$		7.9	18.9	$9. \times 10^{-8}$ <sup>5</sup>
	13.6	23.6	$4. \times 10^{-7}$		16.9	27.9	$1. \times 10^{-7}$ <sup>5</sup>
	23.1	38.6	$2. \times 10^{-7}$ <sup>1</sup>	MW16-14	13.2	22.2	$9. \times 10^{-6}$
K16-392	7.7	19.2	$1. \times 10^{-6}$		20.2	31.2	$1. \times 10^{-5}$
	17.2	28.2	$1. \times 10^{-6}$ <sup>2</sup>		28.2	40.2	$2. \times 10^{-6}$
	25.2	37.2	$1. \times 10^{-5}$	MW16-15D	10.2	18.2	$4. \times 10^{-7}$
	35.2	46.2	<sup>3</sup>		16.2	27.2	$5 \times 10^{-7}$
K16-395	4.2	13.2	$2. \times 10^{-6}$		27.2	42.2	$2. \times 10^{-6}$
	11.2	22.2	$6. \times 10^{-7}$	MW16-16	6	13.3	$5. \times 10^{-6}$
	20.2	32.7	$7. \times 10^{-7}$		11.3	22.3	$1. \times 10^{-5}$ <sup>4</sup>
	32.2	46.2	$4. \times 10^{-7}$		20.3	31.3	$1. \times 10^{-6}$ <sup>4</sup>
K16-402	8.1	18.1	$2. \times 10^{-7}$ <sup>6</sup>		29.3	40.3	$3. \times 10^{-6}$
	16.1	27.1	$1. \times 10^{-7}$	MW16-17	5.1	13.1	$4 \times 10^{-7}$
	25.1	37.6	$2. \times 10^{-5}$		11.1	22.1	$7. \times 10^{-7}$
	37.1	48.1	$3. \times 10^{-6}$		20.1	31.1	$7. \times 10^{-7}$
	46.1	60.1	$3. \times 10^{-6}$				
	58.1	70.6	$4. \times 10^{-6}$				

bgs Vertical depth below ground surface.

- Pressure applied during testing exceeded the maximum allowable injection pressure ( $P_{MAX}$ ).  $P_{MAX}$  is calculated in the literature as the vertical distance from the ground surface to the top of the test interval multiplied by a factor of safety of 0.98 PSI/m - 1.64 PSI/m (Read and Stacey, 2009). Test results do not appear to have been affected by the high pressure applied as they are consistent with other testing.
- Estimated hydraulic conductivity less certain because injected flow not well constrained during testing.
- Shut-in pressure and artesian flow recorded only.
- Water level at or below transducer (top of test interval) based on plotted transducer data. Initial water level assumed to be at the mid-point of the test interval for analysis. Hydraulic conductivity estimated provided for qualitative purposes only as the initial water level assumed and testing methodology/analysis valid only for saturated conditions.
- Estimate of hydraulic conductivity less certain because of small head applied during testing.

AEG performed short-term (low flow rate) pumping tests in seven new monitoring wells that were installed in 2016, and these test results are summarized in Table 3-4. The eighth well installed (MW16-13) was not tested as the well froze shortly after installation. The well locations are shown on Figure 2-1, and associated data plots, equations, and inputs used to estimate hydraulic conductivity are provided in Appendix A.

No additional pumping or packer tests were conducted in 2017 or 2018.

**Table 3-4: 2016 Short-Term Pumping Tests**

Well ID	Geologic material	Top of test interval <sup>(a)</sup>	Bottom of test interval <sup>(a)</sup>	Saturated test interval length <sup>(a)</sup>	Pumping duration	Average pumping rate	Specific capacity transmissivity	Theis recovery transmissivity	Best estimate transmissivity <sup>(g)</sup>	Best estimate hydraulic conductivity <sup>(b)</sup>
				L	T	Q	T	T	T	K
		[m bgs]	[m bgs]	[m]	[min]	[L/sec]	[m <sup>2</sup> /day]	[m <sup>2</sup> /day]	[m <sup>2</sup> /day]	[m/s]
MW16-12S	Overburden	2.60	4.16	1.56	26.08	0.0309	0.736	1.125	0.930	6.9 x 10 <sup>-6</sup>
MW16-15S	Overburden	3.61	5.26	1.65	27.17	0.0263	> 21 <sup>(f)</sup>	<sup>(e)</sup>	> 21	> 1.5 x 10 <sup>-4</sup>
MW16-12D	Bedrock	20.45	26.83	6.38	30.05	0.0833	4.232		4.232	7.7 x 10 <sup>-6</sup>
MW16-14D	Bedrock	30.75	37.83	7.08	27.83	0.0735	0.929	0.570	0.750	1.2 x 10 <sup>-6</sup>
MW16-15D	Bedrock	28.80	36.06	7.26	29.55	0.0610	1.483	1.039	1.261	2.0 x 10 <sup>-6</sup>
MW16-16D	Bedrock	31.30	38.38	7.08	<sup>(c)</sup>	<sup>(c)</sup>	<sup>(d)</sup>	<sup>(d)</sup>	<sup>(d)</sup>	<sup>(d)</sup>
MW16-17	Bedrock	20.30	27.11	6.81	30.12	0.0536	0.750	1.068	0.909	1.5 x 10 <sup>-6</sup>

bgs Vertical depth below ground surface

a Test interval length is generally from the top to the bottom of the sand pack. If the static water level is below the top of sand pack, the test interval is from the static water level to the bottom of the sand pack.

b Average hydraulic conductivity of geologic materials within the test interval.

c Three brief intermittent pumping periods over a total duration of 34.7 minutes.

d Cannot be analyzed due to oscillations and discontinuous pumping.

e Recovery too rapid for reliable analysis.

f Insufficient drawdown; analysis provides lower-bound transmissivity.

g Average of specific capacity and Theis recovery transmissivities if both values calculated.

### 3.1.1 Overburden Hydraulic Conductivity

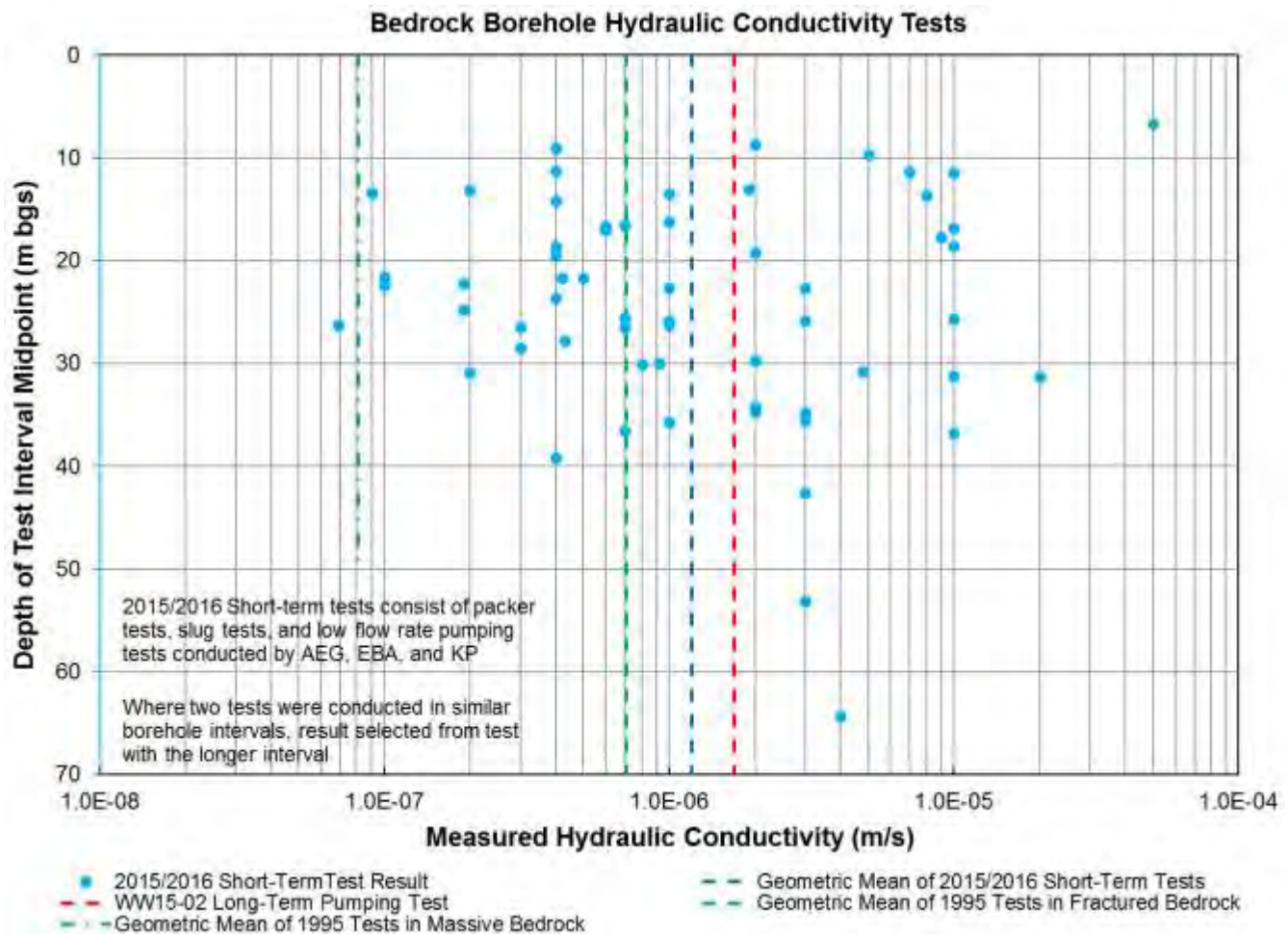
Overburden at the KZK site generally consists of two material types:

- Fine-grained lower permeability sediments composed of silts and fine sands; and
- Coarse-grained higher permeability sands and gravels.

Results of the ten 2015/2016 tests conducted in the overburden are bimodal, reflecting the presence of these two material types. Eight tests were conducted in wells completed in the fine-grained overburden, and the geometric mean of hydraulic conductivities measured by these tests is  $5.2 \times 10^{-6}$  m/s. The two tests conducted in sands and gravels have a geometric mean of  $1.3 \times 10^{-4}$  m/s (or 25 times greater than the fine-grained tests). For comparison, the geometric mean of the 1995 tests conducted in "overburden" was  $4.1 \times 10^{-6}$  m/s, which is similar to, but somewhat lower than, the geometric mean of the coarse-grained geometric mean of the 2015/2016 tests.

### 3.1.2 Bedrock Hydraulic Conductivity

Based on borehole tests conducted during 2015/2016, Figure 3-1 presents a plot of measured bedrock hydraulic conductivity versus the depth of the test interval midpoint. The short-term tests consist of the packer tests, slug tests, and low flow rate pumping tests presented in previous sections. In many open boreholes, a series of packer tests was performed at different depths to create a vertical profile of bedrock hydraulic conductivity. Many of these holes were subsequently completed as monitoring wells and tested for hydraulic conductivity using well testing methods. At seven locations, a tested monitoring well had a completion interval that was similar to the borehole interval previously packer tested, resulting in two hydraulic conductivity values for essentially the same depth interval. To avoid double-counting these occurrences on Figure 3-1, the plotted point is the hydraulic conductivity value that was measured for the longest of the two test intervals, regardless of the test methodology. As shown on Figure 3-1, most of the bedrock hydraulic conductivities lie within a range of  $1 \times 10^{-7}$  and  $1 \times 10^{-5}$  m/s. For the depth range of 10 to 70 m below ground surface, there is no apparent trend of increasing or decreasing hydraulic conductivity with depth. The geometric mean of the plotted tests is  $1.2 \times 10^{-6}$  m/s, which is similar to the result of the long-term bedrock pumping test conducted in water well WW15-02 by EBA ( $1.7 \times 10^{-6}$  m/s). For comparison, the plot shows the geometric mean of 1995 tests conducted in "upper fractured bedrock" ( $7.1 \times 10^{-7}$  m/s), which is similar to, but somewhat lower than, the geometric mean of the 2015/2016 tests. Also shown is the geometric mean of two 1995 tests performed in relatively unfractured "massive bedrock" ( $8.1 \times 10^{-8}$  m/s), which is at the low end of the 2015/2016 values.



**Figure 3-1: Measured Bedrock Hydraulic Conductivity versus Depth**

### 3.2 GROUNDWATER ELEVATIONS

Groundwater elevation was continuously measured using Solinst M10 levelloggers installed in eight monitoring wells across the site. These wells are BH95G-2, BH96G-22, BH95G-33D, BH95G-131, MW15-01, MW15-04D, MW15-04S, and MW15-07S. A barometric pressure logger was installed at BH95G-131 to provide data for correcting the water level readings to account for variable atmospheric pressure. Levelloggers were installed during October/November 2015 for most wells, and during May 2016 for MW15-04D and MW15-04S. No new levelloggers were installed in 2017. Plots of the data logger elevations and manual water readings are presented in Figure 3-2 through Figure 3-9 (data are presented up to November 2017). The plots of all the water levels collected across the site are provided in Appendix B. Comparison of the levellogger and manual readings show good correspondence.

The continuously monitoring wells exhibited the following seasonal general trends:

- Rising water levels through the summer months (approximately May to August);
- Peak water levels reached between August and September, depending on the year;
- Falling water levels through the winter months (approximately October to March); and



- Lowest levels reached between April and May, depending on the year.

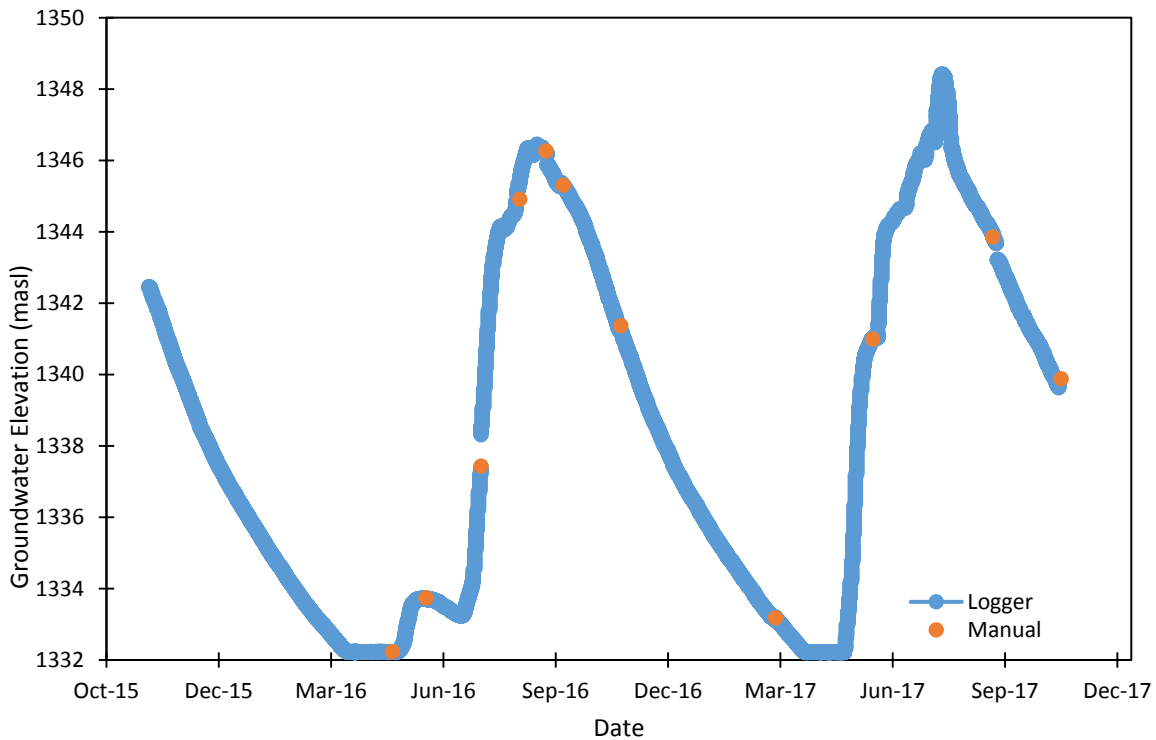
In most wells, the minimum and maximum water levels differed by 2 m to 8 m. However, there was a 16 m water level difference in BH95G-2 and approximately 1.5 m difference in MW15-07S. The BH95G-2 data show an extended horizontal line during April and May 2016, and again in 2017, when it is assumed that the water level briefly dropped below the logger level.

For well BH95G-131 (Figure 3-5), the anomalous raw data in June 2016 was affected by the sampling event and as such was removed (~1 day). The anomalous data in August 2016 was potentially affected by activity on site, such as exploration drilling, and as such was removed (less than 2 days).

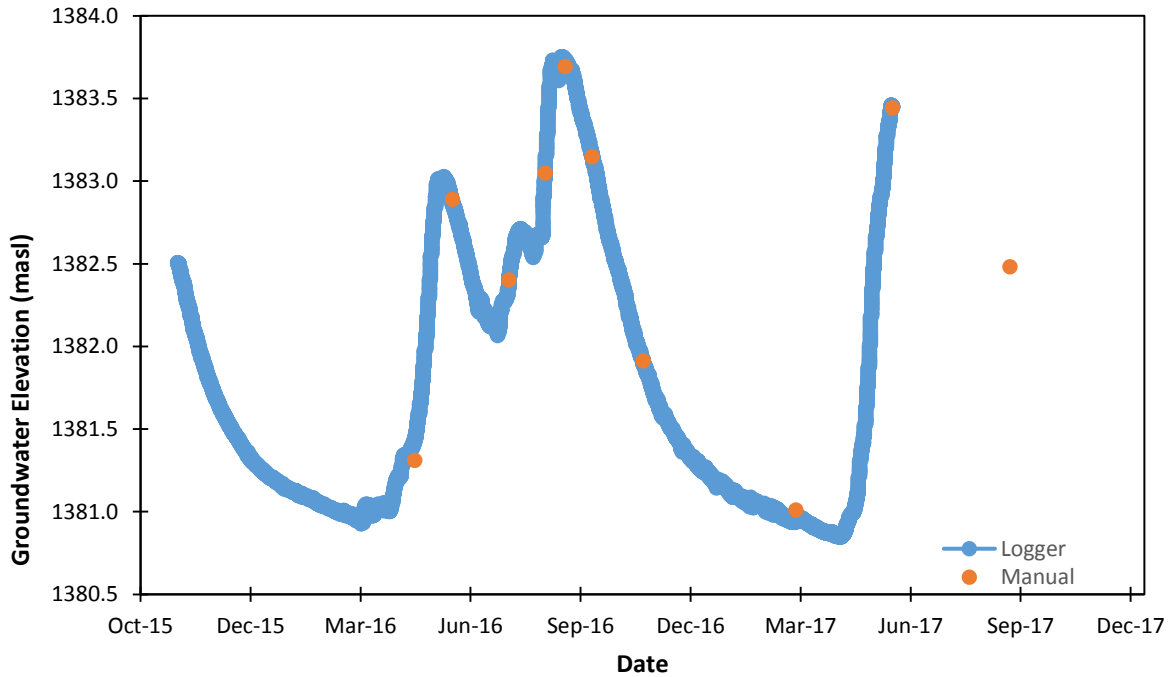
The levellogger data for MW15-01 are more complex, showing gross trends similar to the general trends discussed above, but with large superimposed fluctuations during the open-water months of April to September (Figure 3-6). This trend seems consistent between 2016 and 2017, and is likely due to this shallow water table being heavily influenced by snow melt and rain events.

MW15-07S was frozen during November 2017 so the hydrograph ends in September 2017. The gross trends in the levellogger data are similar to the general trends discussed above, but with several superimposed fluctuations during the fall of 2016 (Figure 3-9).

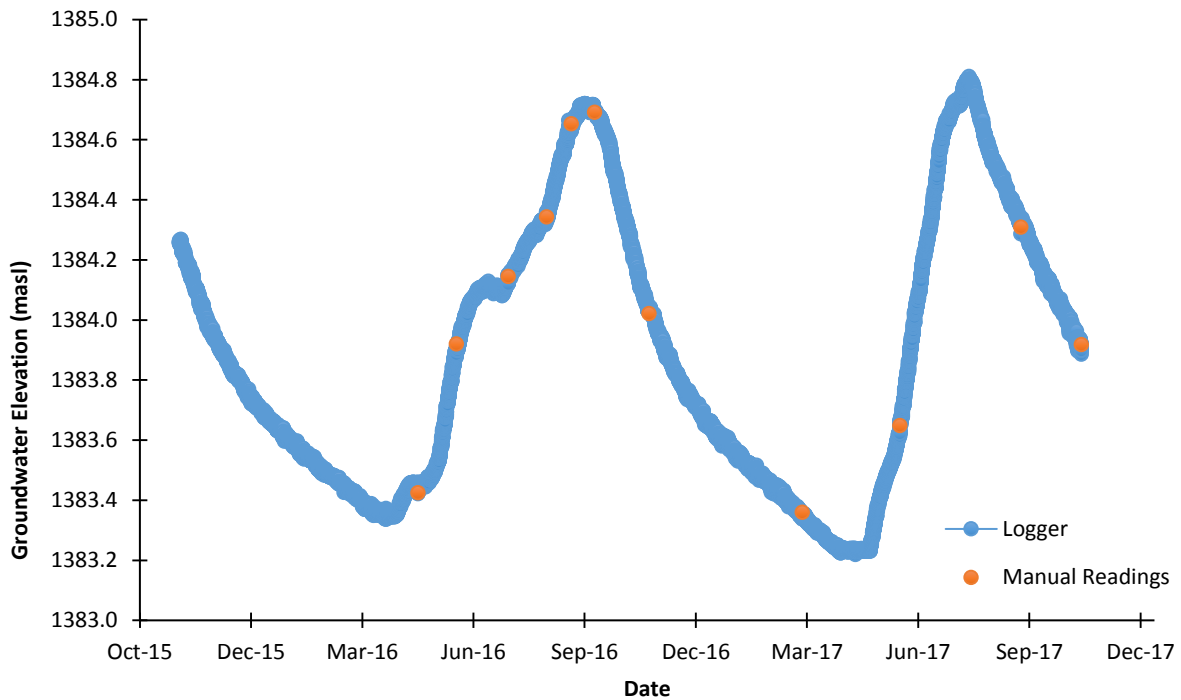
BH95G-22 was frozen in November 2017, so data are only available up to June 2017 (Figure 3-3).



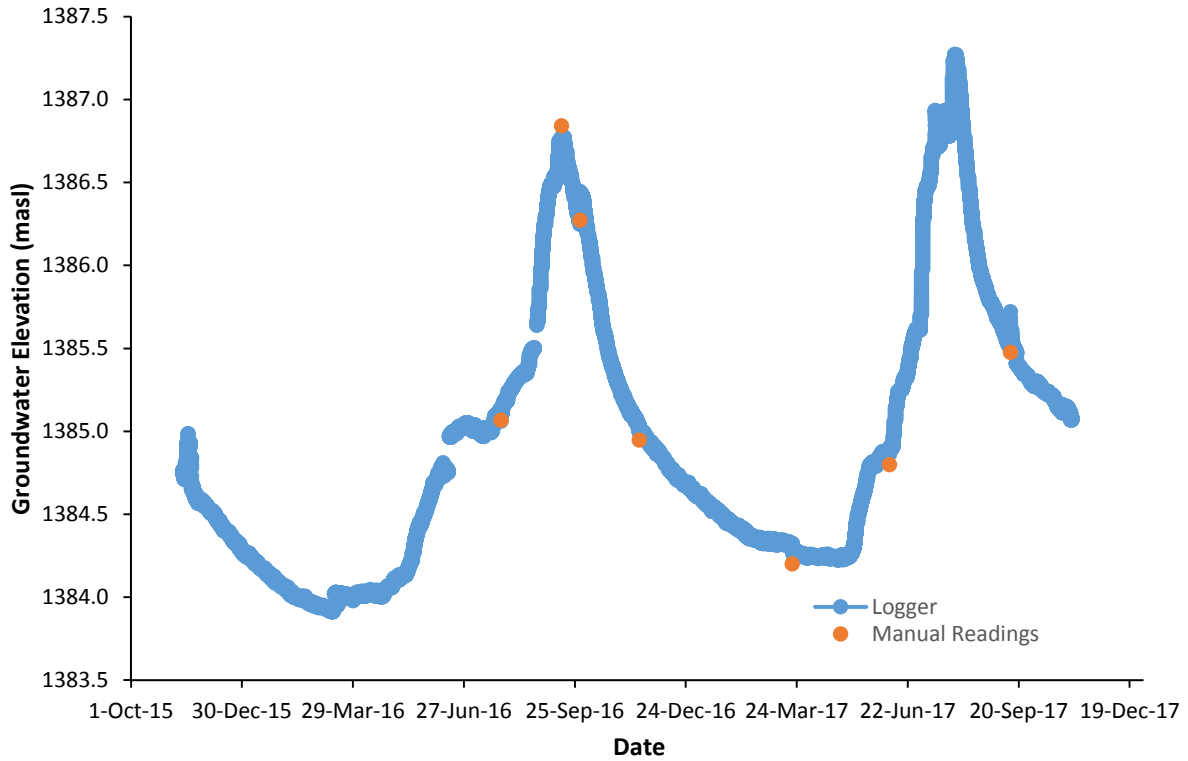
**Figure 3-2: BH95G-2 Groundwater Elevation Hydrograph (Nov 2015 to Nov 2017)**



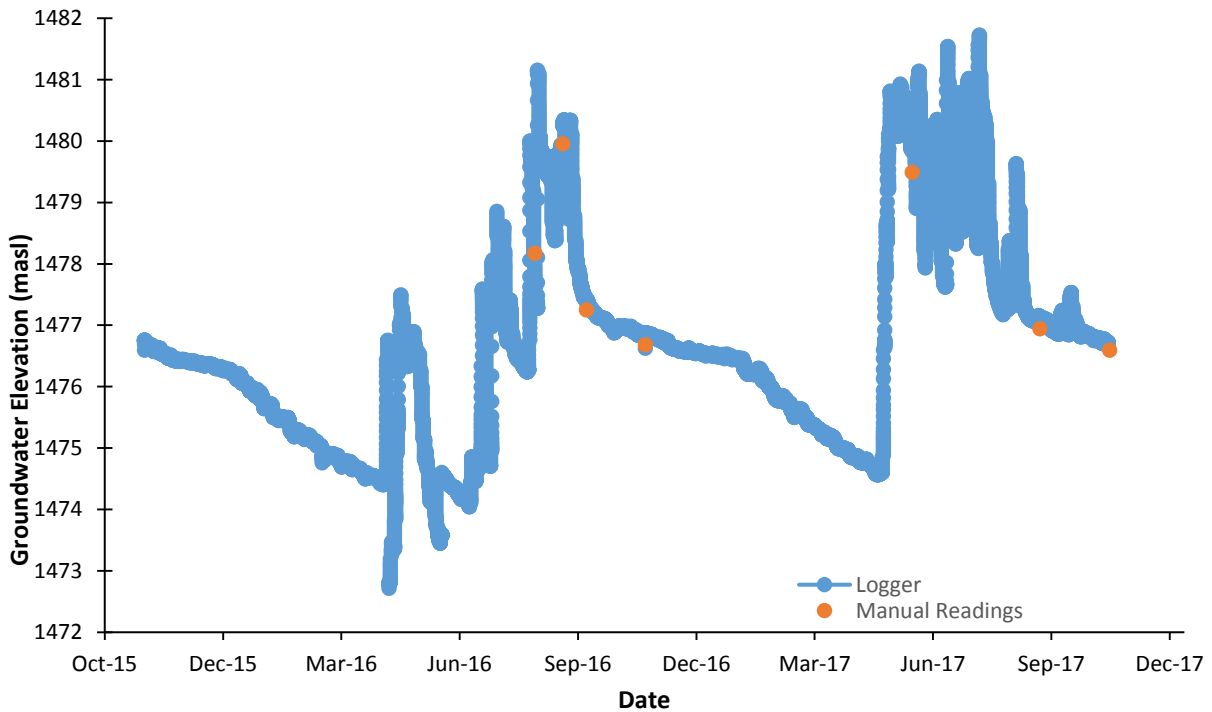
**Figure 3-3: BH95G-22 Groundwater Elevation Hydrograph (Nov 2015 to June 2017)**



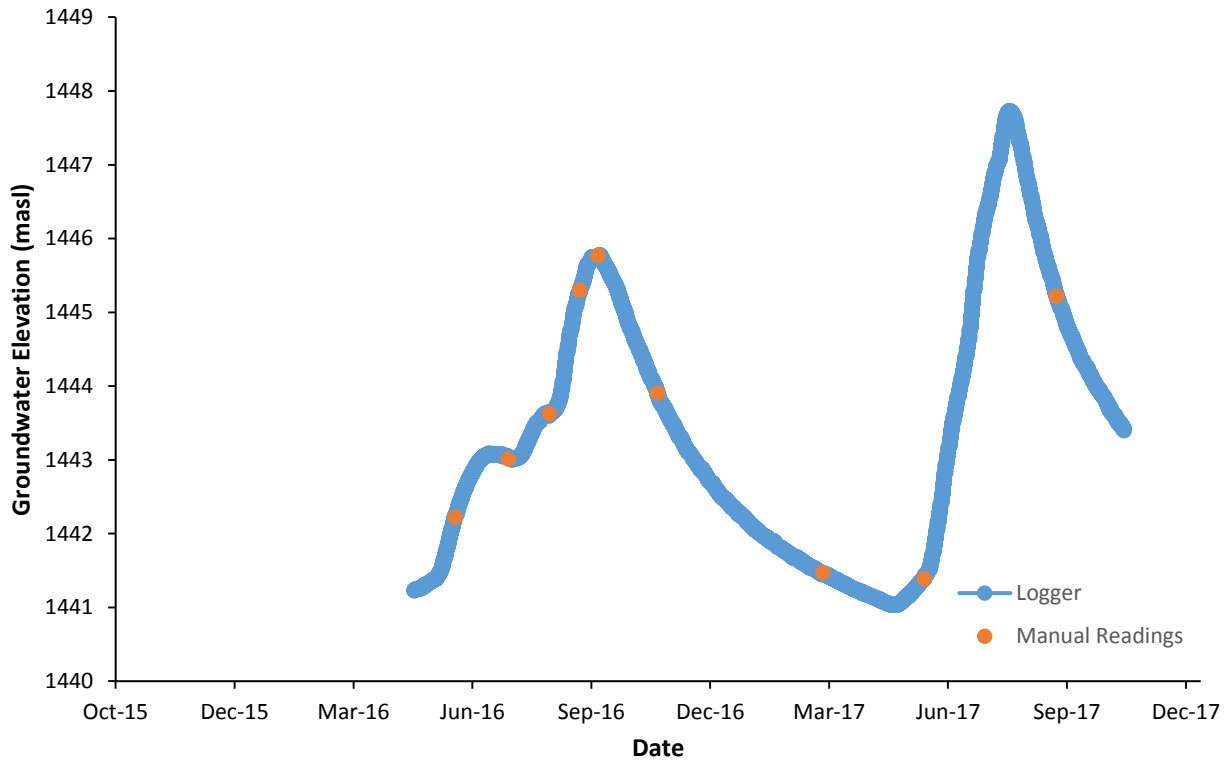
**Figure 3-4: BH95G-33D Groundwater Elevation Hydrograph (Nov 2015 to Nov 2017)**



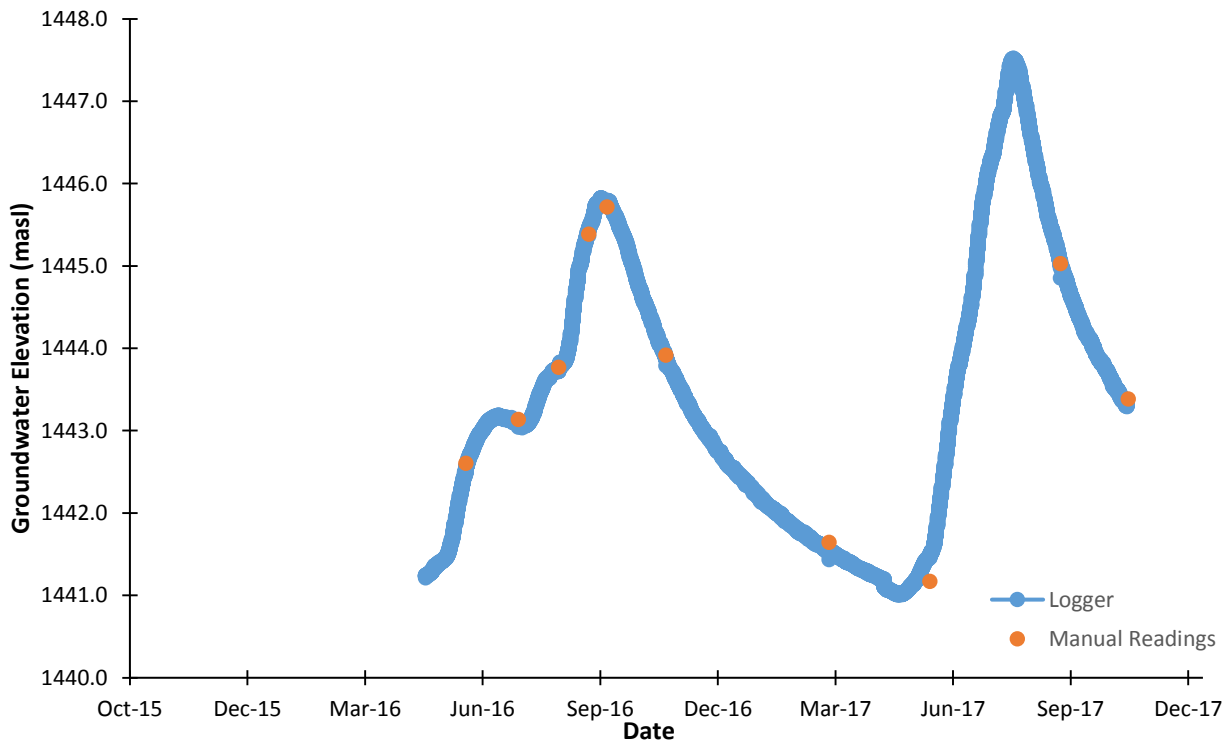
**Figure 3-5: BH95G-131 Groundwater Hydrograph (Nov 2015 to Nov 2017)**



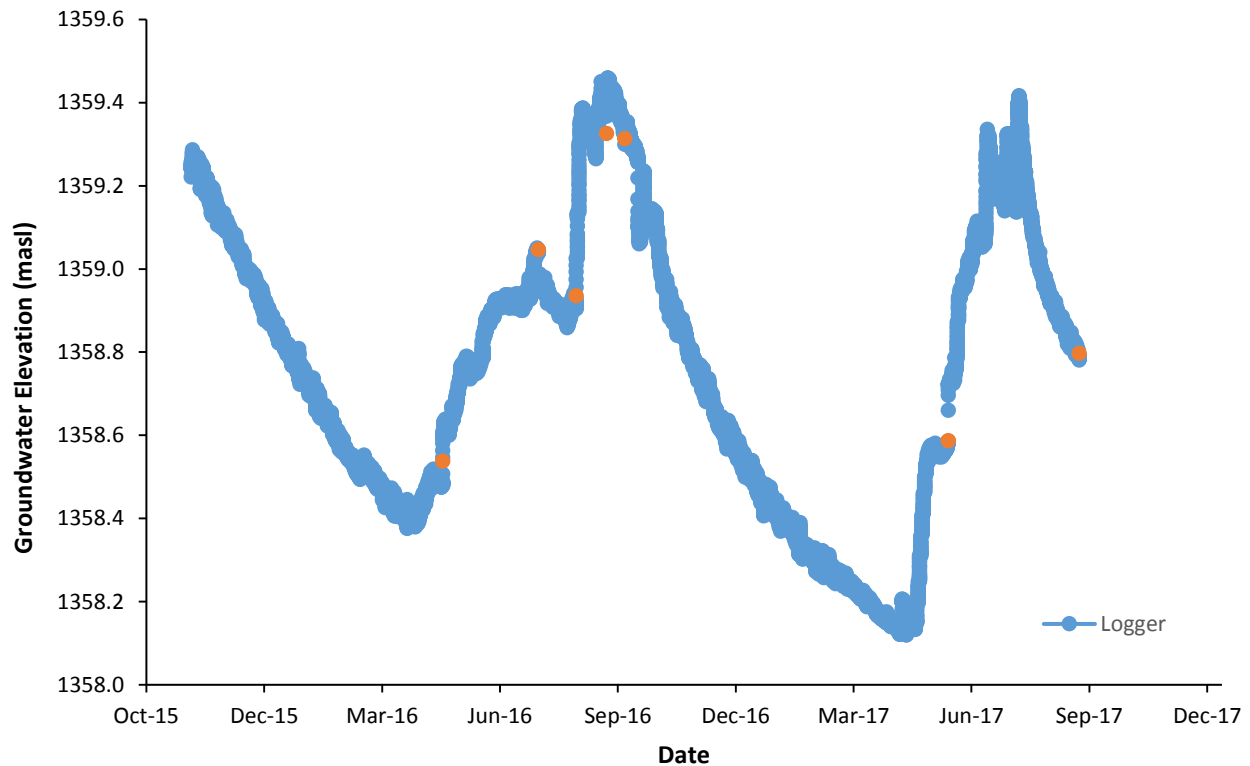
**Figure 3-6: MW15-01 Groundwater Elevation Hydrograph (Nov 2015 to Nov 2017)**



**Figure 3-7: MW15-04S Groundwater Elevation Hydrograph (May 2015 to Nov 2017)**



**Figure 3-8: MW15-04D Groundwater Elevation Hydrograph (May 2015 to Nov 2017)**



**Figure 3-9: MW15-07S Groundwater Elevation Hydrograph (Nov 2015 to Nov 2017)**

### 3.3 GROUNDWATER QUALITY

To simplify the discussion of water quality data, results are delineated by geography in terms of areas around proposed Project areas being:

- ABM open pit area;
- Class A Storage Facility (Area A);
- Class B Storage Facility (Area B); and
- and Class C Storage Facility (Area C).

The in situ parameters and anions (sulphate, chloride, fluoride, nitrite, nitrate) and nutrients (ammonia, phosphorus) are discussed for each area. There was no exceedance of the YCSR standards for anions and nutrients at any of the wells.

The groundwater trace element discussion is also presented by area and is largely focussed on constituents that exhibited YCSR standard exceedances and major and trace elements that may be related to ABM mineralization (i.e., aluminum, arsenic, cadmium, copper, iron, lead, selenium, and zinc). Of the 44 monitoring wells, only six wells exceeded the YCSR standards for dissolved metals, primarily dissolved cadmium.

All summary statistics tables are based on the water quality dataset collected between May 2015 and November 2017. Where results were below laboratory detection levels, one half the detection limit was used in the calculation of summary statistics

as well as presented on graphs. Figures that display the temporal changes in the concentration of metals of interest are presented in Appendix C, the summary statistics of all the wells by area are provided in Appendix D, all the raw data are provided in Appendix E, and the laboratory Certificates of Analysis are provided in Appendix F.

As a comparison to the current data set (2015-2017), the September 4<sup>th</sup>, 1995 data are presented where available, as only select parameters were analysed during the 1995 sampling event, as discussed in Section 1.2.2. Additionally, fewer metals were analysed in 1995, of which cadmium, copper, lead, and selenium had detection limits that were too high to be suitable for comparison with the 2015-2017 dataset. Nine of the eleven samples were collected from the ABM open pit area, five of which were from flowing, open boreholes. Of the other two samples from that period, one well is in the Class C Storage Facility area, and the other was in a location of proposed mine workings that are not part of the current mine plan.

### 3.3.1 ABM Open Pit Area

#### 3.3.1.1 *Setting*

The ABM open pit area contains the proposed ABM open pit and Krakatoa underground (Figure 2-1). It also includes the Fault Creek drainage and the headwater ponds of Geona Creek. The ABM open pit area is in the south end of the KZK property in a broad valley. Fourteen monitoring wells populate this area, which comprise a combination of wells screened in overburden (six wells) and bedrock (eight wells). Four of these wells are frozen for most of the year (BH95G-21, BH95G-29, MW15-11D, MW15-11S). Wells BH95G-23 and BH95G-24 each have a single data point in August 2015; however, further sampling was not possible due to ice and frost heaving resulting in pinched or frozen wells.

#### 3.3.1.2 *Physical Parameters and Nutrients*

The bedrock and overburden wells in the ABM open pit area were generally pH circumneutral (pH range 5.98 to 8.07, as shown in Table 3-5, Table 3-6, and the in situ parameter summary table provided in Appendix D-1. Only one sample returned a pH measurement (pH 5.98 in well BH95G-22) that was outside the FIGWQG pH range of 6.5 to 9.0; the YCSR standards do not have a defined pH range. The average pH from ABM open pit area wells sampled on 4 September 1995 data was slightly alkaline with an average of 7.97, which is just higher than the maximum recorded pH within the 2015-2017 dataset (8.07). Well water dissolved oxygen levels ranged from 2 to 104% saturation, suggesting the groundwater ranged from sub-oxic/anoxic to oxic. Temperature varied seasonally between -0.1 and 10°C, and five of the fourteen wells were frozen for most or all of the year.

No anions or nutrients within the ABM open pit area wells exceeded YCSR standards; the plots of these parameters for the pit area wells can be found in Appendix C. Overall, fluoride appears to be the parameter that fluctuates the least in any given well, with relatively consistent concentrations in each well. The highest concentrations of fluoride were in monitoring well BH95G-146, which ranged from 0.28 to 0.31 mg/L, and the next highest were in BG95G-129 which ranged from 0.18 to 0.22 mg/L. These were followed by MW15-11S and MW15-11D, which had similar concentrations to each other (0.14 to 0.19 mg/L). The trends for the all the monitoring wells in terms of fluoride concentrations were fairly constant over the period of record, with little to no seasonality apparent.

The range of sulphate concentrations observed for the pit area was 32.6 to 279 mg/L, well below the YCSR standard (1000 mg/L). There was a distinct split in sulphate concentrations between monitoring wells: higher sulphate concentrations (170 to 280 mg/L) were observed in samples collected from wells BH95G-131, BH95G-146, BH95G-25D, and BH95G-25S, which are located towards the centre of the ABM Pit area (Figure 2-1). The remainder of the wells had dissolved sulphate

concentrations that were typically less than 100 mg/L. These relatively elevated sulphate concentrations may be related to leaching of the orebody and/or sulphidic rocks proximal to the mineralization. Three of the four wells with dissolved sulphate concentrations in excess of 100 mg/L were bedrock wells: BH95G-146 typically had the highest dissolved sulphate concentrations, ranging from 232 to 279 mg/L, followed by BH95G-25D, ranging from 220 to 260 mg/L, and BH95G-131, ranging from 215 to 247 mg/L. Well BH95G-25S was the fourth well that consistently exceeded the FIGWQG, with concentrations ranging from 167 to 212 mg/L, but it is a shallow overburden well.

Two samples collected from MW15-11S returned sulphate concentrations greater than 100 mg/L, at 128 mg/L and 138 mg/L respectively, but were less than 100 mg/L for the rest of the events in 2016 and 2017 (the lowest concentration was 61.5 mg/L). BH95G-24 has a single data point recorded in August 2015 (135 mg/L sulphate) but samples could not be collected from this well for the rest of 2015, 2016 or 2017, as the well was either broken or frozen. BH95G-129, a deep bedrock well, had relatively consistent dissolved sulphate concentrations ranging between 33.4 mg/L and 54.6 mg/L, which also encompassed the dissolved sulphate range for wells BH95G-21, BH95G-22 and BH95G-29. The average sulphate concentration for samples collected from the wells in the open pit area on 4<sup>th</sup> September 1995 (57.5 mg/L) was within the minimum and maximum range of the 2015 to 2017 data (32.6 to 279 mg/L), but below the 2015 to 2017 average (123 mg/L).

Ammonia-N concentrations did not exceed the YCSR ammonia guideline (1.31 to 18.4 mg/L) in any well over the period of record, which ranged between 0.009 and 1.2 mg/L. Ammonia-N concentrations in individual wells were often variable; for example, concentrations fluctuated by an order of magnitude over the period of record in wells BH95G-21 (0.019 to 0.27 mg/L), BH95G-22 (0.011 to 0.51 mg/L), MW15-11S (0.048 to 0.64 mg/L), BH95G-29 (0.06 to 1.2 mg/L), and BH95G-146 (0.022 to 0.78 mg/L). Ammonia-N levels in the remaining monitoring wells displayed more limited variation. The average data on 4 September 1995 from the open pit wells for ammonia-N (0.018 mg/L) was within the minimum and maximum range of the 2015 to 2017 data (0.009 to 1.2 mg/L), but well below the 2015 to 2017 average (0.12 mg/L).

**Table 3-5: Summary Statistics for In situ Parameters ABM Open Pit Area**

	Number of samples	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	ORP (field)
Station Name		pH units	µS/cm	°C	mg/L	%	mV
BH95G-129	7-8	6.82-7.90 (7.53)	353-387 (372)	0.95-3.40 (2.16)	1.30-4.10 (2.70)	12.0-31.0 (21.4)	-76.5 to 213 (3.80)
BH95G-131	10-11	7.05-7.66 (7.24)	1070-1160 (1121)	1.50-4.90 (3.14)	0.67-5.80 (3.58)	20.0-45.2 (30.3)	-51.8 to 153 (1.40)
BH95G-146	5-7	6.67-7.76 (7.43)	740-771 (758)	2.90-4.70 (3.60)	1.10-3.38 (2.40)	10.0-31.4 (21.9)	-57.5 to -19.4 (-43.5)
BH95G-21	9-10	7.30-7.96 (7.56)	400-411 (405)	0.70-4.30 (2.00)	0.00-9.40 (2.50)	12.0-77.0 (27.1)	-82 to 246 (-11.2)
BH95G-22	13-14	5.98-7.82 (7.28)	315-391 (349)	1.17-10.0 (3.50)	6.27-11.4 (8.34)	53.5-96.0 (76.0)	68.4 to 390 (201)
BH95G-23	0-1	7.02-7.02 (7.02)	267-267 (267)	0.50-0.50 (0.50)	1.14-1.14 (1.14)	- ( )	- ( )
BH95G-24	0-1	7.24-7.24 (7.24)	768-768 (768)	0.60-0.60 (0.60)	0.82-0.82 (0.82)	- ( )	- ( )
BH95G-25D	12-13	7.00-7.64 (7.18)	1010-1080 (1045)	1.00-3.80 (2.0)	0.00-6.57 (2.01)	7.0-57.0 (20.0)	-42.3 to 175 (8.92)
BH95G-25S	12-13	7.13-7.66 (7.28)	867-981 (932)	0.10-3.30 (1.60)	0.00-11.3 (3.38)	2.0-76.0 (23.4)	-91.6 to 111 (-37.1)
BH95G-29	4-5	7.35-7.56 (7.45)	428-441 (436)	-0.10-3.40 (2.20)	0.80-2.10 (1.24)	8-20 (12.5)	-56.2 to -36.3 (-48.0)

	Number of samples	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	ORP (field)
MW15-11D	3	7.41-7.55 (7.50)	546-567 (560)	2.00-2.50 (2.20)	1.60-2.70 (2.20)	13-21 (17.7)	-60.5 to -37.0 (-51.9)
MW15-11S	8-9	7.21-7.79 (7.51)	373-387 (379)	1.40-3.80 (2.50)	1.00-13.1 (3.00)	9.0-104 (26.8)	-81.3 to 173 (-29.5)
MW16-15D	9	7.40-8.07 (7.71)	373-387 (379)	1.40-3.80 (2.40)	1.2-9.9 (2.11)	11-85 (26.1)	-53.3 to 206 (6.2)
MW16-15S	7	6.92-7.82 (7.21)	256-279 (264)	1.10-8.30 (3.60)	7.2-10.6 (8.28)	61.3-88.0 (72.4)	118 to 320 (184)
<p>## - ## is the minimum and maximum range for the well for 2015-2017 data            (##) is the average concentration, concentrations less than the DL were taken as ½ DL values            - Indicates no data available for this parameter            Range of sample numbers due to lack of temperature, % dissolved oxygen, and ORP measurements for 2015 sampling</p>							

**Table 3-6: Summary Statistics for YCSR – Schedule 3 Anions and Nutrients ABM Open Pit Area**

	Chloride	Fluoride	Sulphate dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total-colourimetric	Phosphorus Total Dissolved
Station Name	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
YCSR – Schedule 3		2-3	1000	1.31-18.4	0.2-2	400		
BH95G-129								
Average	0.925	0.210	40.9	0.037	0.0015	0.0017	0.0201	0.0138
Minimum	0.250	0.180	33.4	0.031	0.0010	0.0010	0.0068	0.00350
Maximum	2.50	0.220	54.6	0.048	0.0023	0.0055	0.0424	0.0372
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	8	8	8	7
BH95G-131								
Average	0.970	0.086	228	0.039	0.0010	0.0160	0.203	0.0512
Minimum	0.570	0.0690	215	0.031	0.0010	0.0010	0.0106	0.00750
Maximum	1.90	0.0990	247	0.054	0.0010	0.156	0.785	0.178
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	11	11	11	11	11	11	11	10
BH95G-146								
Average	0.444	0.300	251	0.157	0.0013	0.0021	0.110	0.0894
Minimum	0.250	0.280	232	0.022	0.0010	0.0010	0.0034	0.0010
Maximum	0.800	0.310	279	0.780	0.0021	0.0053	0.429	0.433
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	7	7	7	7	7	7	7	7
BH95G-21								
Average	0.796	0.0930	47.3	0.060	0.0019	0.0036	1.19	0.167
Minimum	0.250	0.0830	46.0	0.019	0.0010	0.0010	0.0072	0.0010
Maximum	1.90	0.100	48.6	0.270	0.0072	0.0100	7.33	0.7000
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of samples	10	10	10	10	10	10	10	10
BH95G-22								
Average	0.61	0.06	44.3	0.070	0.0060	0.3530	1.37	0.408
Minimum	0.250	0.05	35.1	0.011	0.0010	0.1050	0.0158	0.0025
Maximum	1.30	0.07	52.8	0.510	0.0260	0.7680	6.61	3.27



	Chloride	Fluoride	Sulphate dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total-colourimetric	Phosphorus Total Dissolved
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of samples	14	14	14	14	14	14	14	12
<b>BH95G-23</b>								
Average	0.25	0.06	72.8	0.500	0.0010	0.0010	0.0918	0.0214
Minimum	0.25	0.06	72.8	0.500	0.0010	0.0010	0.0918	0.0214
Maximum	0.25	0.06	72.8	0.500	0.0010	0.0010	0.0918	0.0214
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of samples	1	1	1	1	1	1		
<b>BH95G-24</b>								
Average	0.63	0.07	135	0.062	0.0062	0.0054	0.0065	0.0040
Minimum	0.63	0.07	135	0.062	0.0062	0.0054	0.0065	0.0040
Maximum	0.63	0.07	135	0.062	0.0062	0.0054	0.0065	0.0040
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	1	1	1	1	1	1	1	1
<b>BH95G-25D</b>								
Average	1.05	0.09	238	0.093	0.0019	0.0061	0.187	0.0770
Minimum	0.25	0.08	220	0.055	0.0010	0.0010	0.0059	0.0034
Maximum	2.00	0.10	260	0.200	0.0058	0.0530	0.626	0.365
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	13	13	13	13
<b>BH95G-25S</b>								
Average	0.94	0.12	190	0.310	0.0021	0.0018	0.625	0.129
Minimum	0.51	0.11	167	0.160	0.0010	0.0010	0.0047	0.0024
Maximum	1.30	0.14	212	0.910	0.0095	0.0041	3.28	0.843
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	13	13	13	13
<b>BH95G-29</b>								
Average	1.18	0.12	47.6	0.330	0.0053	0.0015	1.43	0.891
Minimum	0.88	0.11	44.0	0.060	0.0010	0.0010	0.0316	0.0010
Maximum	1.60	0.13	50.2	1.200	0.0159	0.0022	3.35	2.31
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	5	5	5	5	5	5	5	5
<b>MW15-11D</b>								
Average	1.11	0.16	67.8	0.114	0.0010	0.0015	0.0272	0.0150
Minimum	0.84	0.15	63.1	0.071	0.0010	0.0010	0.0080	0.0041
Maximum	1.30	0.17	74.5	0.190	0.0010	0.0025	0.0376	0.0351
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	3	3	3	3	3	3	3	3
<b>MW15-11S</b>								
Average	3.62	0.15	91.9	0.153	0.0048	0.0290	0.182	0.0243
Minimum	0.92	0.13	61.5	0.048	0.0010	0.0010	0.0046	0.0050
Maximum	24.0	0.19	138	0.640	0.0216	0.0871	0.930	0.0696
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	9	9	9	9	9	9	9	7
<b>MW16-15D</b>								

	Chloride	Fluoride	Sulphate dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total-colourimetric	Phosphorus Total Dissolved
Average	0.74	0.10	71.0	0.040	0.0015	0.0015	0.274	0.0959
Minimum	0.25	0.09	66.8	0.023	0.0010	0.0010	0.0219	0.0181
Maximum	1.60	0.13	82.6	0.054	0.0041	0.0033	0.693	0.567
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of samples	9	9	9	9	9	9	9	9
MW16-15S								
Average	0.82	0.05	39.7	0.028	0.0014	0.525	0.799	0.368
Minimum	0.25	0.05	32.6	0.0094	0.0010	0.362	0.211	0.0184
Maximum	1.20	0.06	44.6	0.061	0.0036	0.902	1.76	1.52
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	7	7	7	7	7	7	7	7

### 3.3.1.3 Metals

The only parameters that exceeded the YCSR standards in the ABM open pit area were dissolved cadmium, arsenic, and zinc (Table 3-7 and Appendix D-1). The YCSR exceedances were in three wells: BH95G-23, BH95G-24 and MW16-15S; dissolved cadmium exceeded YCSR (0.0001 to 0.0006 mg/L) in all samples from these wells while dissolved arsenic and zinc concentrations exceeded YCSR (0.05 mg/L for arsenic and 0.075 to 2.4 mg/L for zinc) only in BH95G-23. It should be noted that only one sample was collected from each of BH95G-23 and BH95G-24 wells.

Dissolved cadmium concentrations in well MW16-15S consistently exceeded the YCSR standard, with dissolved cadmium concentrations that ranged between 0.0017 mg/L and 0.0021 mg/L. The sole samples collected from wells BH95G-23 (0.0017 mg/L) and BH95G-24 (0.0038 mg/L) also both exceeded both the YCSR standards. The monitoring well with the next highest concentrations of dissolved cadmium was BH95G-22 (0.00007 to 0.00019 mg/L), which was an order of magnitude lower than MW16-15S. The majority of dissolved cadmium concentrations measured in the other wells were well below 0.0001 mg/L.

The wells that displayed the highest dissolved cadmium concentrations also returned the highest dissolved zinc levels, suggesting a common source for these two elements in the ABM open pit area (i.e., buried mineralization). Only the single sample from well BH95G-23 returned a zinc concentration (2.0 mg/L) that exceeded the YCSR standard. The sole sample from well BH95G-24 (0.85 mg/L) was the next highest recorded dissolved zinc concentration, followed by well MW16-15S (0.096 to 0.16 mg/L). The majority of the remaining well samples were below 0.01 mg/L. Groundwater samples collected from wells BH95G-131, BH95G-146, and BH95G-22 appeared to have dissolved zinc concentrations that followed a muted water elevation change, with similar concentration patterns over the period of record. All the zinc concentrations in waters abstracted from these wells were below the FIGWQG. The average zinc concentration from the 4<sup>th</sup> September 1995 dataset was 0.484 mg/L, which is within the minimum and maximum ranged collected in the 2015 to 2017 dataset (<0.0001 to 2.03 mg/L).

Dissolved arsenic exceeded the YCSR standard (0.05 mg/L) for the single sample collected from well BH95G-23 (0.075 mg/L). The next highest dissolved arsenic concentrations were observed in well MW16-15D (0.012 to 0.019 mg/L). Dissolved arsenic concentrations in the remainder of the wells were below 0.01 mg/L and exhibited limited variation. The lowest dissolved arsenic levels were observed in well BH95G-22, ranging from 0.00002 to 0.0003 mg/L. The average arsenic concentration

from the 4<sup>th</sup> September 1995 dataset was 0.033 mg/L, within the minimum and maximum ranged collected in the 2015-2017 dataset (0.000024 to 0.075 mg/L).

Within the ABM open pit area there were no exceedances of the FIGWQG for dissolved aluminum (0.1 mg/L if pH  $\geq$ 6.5, 0.005 mg/L if pH <6.0). Note that there is no YCSR standard for dissolved aluminum. Overall, the range of aluminum concentrations varied by two orders of magnitude between all the pit wells. Samples collected from wells MW15-11S, BH95G-21, BH95G-22, and BH95G-131 ranged by an order of magnitude each within the period of record. The highest concentration recorded was in MW15-11S in November 2015 (0.046 mg/L), but otherwise had lower concentrations between 0.00077 and 0.0030 mg/L. Well BH95G-22 had two sampling events with higher dissolved aluminum concentrations in May 2015 (0.038 mg/L) and November 2015 (0.03 mg/L), but generally ranged between 0.00089 and 0.013 mg/L. MW16-15D, a new well in the pit area with nine samples, generally had consistent concentrations ranging between 0.0026 and 0.013 mg/L. Samples collected from wells BH95G-131, and BH95G-25S were below the detection limit (0.0005 mg/L) for most of the samples recorded. The average aluminum concentration from the 4<sup>th</sup> September 1995 dataset was 0.013 mg/L, within the minimum and maximum ranged collected in the 2015 to 2017 dataset (<0.0005 to 0.046 mg/L).

Dissolved copper concentrations were generally highest in well MW16-15S (0.0033 to 0.0055 mg/L), which also exhibited elevated cadmium and zinc concentrations. Samples from well BH95G-22 generally had the next highest dissolved copper concentrations (0.00055 to 0.0064 mg/L). The dissolved copper concentrations in the remainder of the samples were generally well below 0.001 mg/L.

The concentrations of dissolved iron within the ABM open pit area monitoring wells spanned three orders of magnitude, from 0.0034 mg/L to 7.62 mg/L. BH95G-25S returned the highest dissolved iron concentration and, apart from well BH95G-23 which only yielded one sample (6.48 mg/L dissolved iron), had the highest average concentration (5.75 mg/L). Wells BH95G-22 and MW16-15S returned the lowest dissolved iron concentrations with average concentrations of 0.0309 and 0.0209 mg/L, respectively. These were the only wells for which dissolved iron concentrations were consistently below the FIGWQG (0.3 mg/L; there is no YCSR standard for iron). Overall, there was no distinction between overburden and bedrock wells.

The highest dissolved selenium concentrations were observed in wells MW16-15S (0.0023 and 0.0032 mg/L) and BH95G-22 (0.00046 to 0.00088 mg/L). Aside from a sporadic concentration of 0.0014 mg/L in well MW15-11S, the dissolved selenium concentrations observed in the remainder of the wells were less than 0.0002 mg/L. Dissolved lead concentrations were highest in BH95G-131 and varied by an order of magnitude over the period of record (0.000084 mg/L to 0.0019 mg/L). Dissolved lead concentrations in BH95G-22 well waters also spanned an order of magnitude over the period of record (<0.00005 mg/L to 0.00027 mg/L).

There was no evidence of a distinction between the bedrock and overburden wells in terms of groundwater quality with the three years of baseline data collected. The pit area had higher sulphate concentrations than the other areas around the KZK site, likely due to the mineralization.

**Table 3-7: Summary Statistics for Metals ABM Open Pit Area**

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
YCSR – Schedule 3		0.05	0.0001-0.0006	0.02-0.09		0.04-0.16	0.01	0.075-2.4
<b>BH95G-129</b>								
Average	0.00234	0.00331	0.0000123	0.000125	0.47	0.0000119	0.000020	0.00281
Minimum	0.00055	0.000904	0.0000025	0.000025	0.31	0.0000025	0.000020	0.00005
Maximum	0.00527	0.00678	0.0000510	0.000273	0.63	0.0000440	0.000020	0.00663
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	3	8	8	8
<b>BH95G-131</b>								
Average	0.00290	0.00252	0.0000416	0.000413	1.29	0.000793	0.000048	0.00529
Minimum	0.00025	0.00053	0.0000025	0.000025	0.012	0.0000710	0.000020	0.00155
Maximum	0.0136	0.00710	0.000289	0.00298	2.15	0.00194	0.000165	0.0198
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	11	11	11	11	6	11	11	11
<b>BH95G-146</b>								
Average	0.00138	0.00109	0.0000067	0.000104	1.08	0.0000073	0.000046	0.00263
Minimum	0.00025	0.000296	0.0000025	0.000025	0.98	0.0000025	0.000020	0.00050
Maximum	0.00315	0.00452	0.0000250	0.000275	1.15	0.0000250	0.000200	0.0103
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	7	7	7	7	3	7	7	7
<b>BH95G-21</b>								
Average	0.00486	0.00113	0.0000066	0.000133	0.40	0.0000267	0.000034	0.00287
Minimum	0.00052	0.000691	0.0000025	0.000025	0.0034	0.0000025	0.000020	0.00005
Maximum	0.0236	0.00156	0.0000150	0.000242	0.643	0.0000854	0.000077	0.0194
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	10	10	10	10	6	10	10	10
<b>BH95G-22</b>								
Average	0.00786	0.000119	0.000124	0.00129	0.0309	0.0000782	0.000671	0.00611
Minimum	0.00070	0.000024	0.0000740	0.000549	0.0024	0.0000025	0.000461	0.00330
Maximum	0.0380	0.000302	0.000194	0.00644	0.0855	0.000274	0.000879	0.00792
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	8	13	13	13
<b>BH95G-23</b>								
Average	0.00583	0.0747	0.00169	0.000119	6.48	0.000361	0.000020	2.03
Minimum	0.00583	0.0747	0.00169	0.000119	6.48	0.000361	0.000020	2.03
Maximum	0.00583	0.0747	0.00169	0.000119	6.48	0.000361	0.000020	2.03
Count Over YCSR	0	1	1	0	0	0	0	1
% Over YCSR	0	100	100	0	0	0	0	100
# of Samples	1	1	1	1	1	1	1	1
<b>BH95G-24</b>								
Average	0.00139	0.0103	0.00375	0.000408	0.571	0.00406	0.000020	0.845
Minimum	0.00139	0.0103	0.00375	0.000408	0.571	0.00406	0.000020	0.845
Maximum	0.00139	0.0103	0.00375	0.000408	0.571	0.00406	0.000020	0.845
Count Over YCSR	0	0	1	0	0	0	0	0

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
% Over YCSR	0	0	100	0	0	0	0	0
# of Samples	1	1	1	1	1	1	1	1
BH95G-25D								
Average	0.00143	0.000973	0.0000044	0.000346	1.56	0.0000160	0.000020	0.00930
Minimum	0.00025	0.00047	0.0000025	0.000025	0.971	0.0000025	0.000020	0.00375
Maximum	0.00500	0.00166	0.0000100	0.00370	2.21	0.0000658	0.000020	0.0192
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	7	13	13	13
BH95G-25S								
Average	0.00103	0.00412	0.0000049	0.000064	5.75	0.0000081	0.000020	0.00081
Minimum	0.00025	0.00127	0.0000025	0.000025	2.06	0.0000025	0.000020	0.00005
Maximum	0.00380	0.00824	0.0000100	0.000116	7.62	0.0000280	0.000020	0.00380
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	7	13	13	13
BH95G-29								
Average	0.00306	0.00576	0.0000099	0.000096	0.661	0.000132	0.000076	0.00192
Minimum	0.00109	0.00419	0.0000025	0.000025	0.438	0.0000140	0.000020	0.00110
Maximum	0.00966	0.00782	0.0000310	0.000141	0.884	0.000481	0.000154	0.00457
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	5	5	5	5	2	5	5	5
MW15-11D								
Average	0.00177	0.000291	0.0000025	0.000025	0.969	0.0000220	0.000020	0.00066
Minimum	0.00085	0.000154	0.0000025	0.000025	0.969	0.0000025	0.000020	0.00027
Maximum	0.00296	0.000438	0.0000025	0.000025	0.969	0.0000610	0.000020	0.00105
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	3	3	3	3	1	3	3	3
MW15-11S								
Average	0.00816	0.00130	0.0000326	0.000244	1.45	0.0000334	0.000194	0.00264
Minimum	0.00077	0.000273	0.0000025	0.000025	0.114	0.0000025	0.000020	0.00005
Maximum	0.0462	0.00284	0.000171	0.00109	3.24	0.000179	0.00135	0.0135
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	5	8	8	8
MW16-15D								
Average	0.00663	0.0161	0.0000235	0.000057	0.340	0.0000108	0.000037	0.00436
Minimum	0.00262	0.0123	0.0000025	0.000025	0.0411	0.0000025	0.000020	0.00005
Maximum	0.0127	0.0191	0.0000960	0.000151	0.531	0.0000320	0.000090	0.0303
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	9	9	9	9	5	9	9	9
MW16-15S								
Average	0.00503	0.000255	0.00188	0.00421	0.0209	0.000258	0.00271	0.123
Minimum	0.00219	0.000155	0.00166	0.00327	0.0155	0.0000670	0.00225	0.0955
Maximum	0.0117	0.000484	0.00212	0.00546	0.029	0.000550	0.00315	0.164
Count Over YCSR	0	0	7	0	0	0	0	0
% Over YCSR	0	0	100	0	0	0	0	0
# of Samples	7	7	7	7	3	7	7	7

\* See Table 2.6 for YCSR equation

### 3.3.2 Class A Storage Facility Area

#### 3.3.2.1 Setting

The Class A Storage Facility area, defined for the purposes of characterizing the groundwater quality across the KZK site, contains the proposed Class A Storage Facility, water management ponds, and camp, as shown on Figure 2-1. The Class A Storage Facility is on the western slope of the valley with Geona Creek flowing through the bottom of the valley. Thirteen monitoring wells characterize this area, a combination of wells screened in overburden (four wells) and bedrock (nine wells). Of the 13 monitoring wells, two were damaged due to ice and frost heaving such that sampling was not possible in 2017 (MW15-09D and MW15-08D) and six wells were frozen for all or part of the year (MW15-09S, MW15-08S, MW15-07S, MW15-07D, MW16-14D, and MW16-13).

#### 3.3.2.2 Physical Parameters and Nutrients

The bedrock and overburden wells in the Class A Storage Facility area were generally circumneutral (pH range 7.22 to 8.63; Table 3-8; Appendix D-2), with the exception of three wells. Samples from well MW15-09D (5.68 pH, only one sample collected as well was broken) and paired wells MW15-10S (pH 5.82 to 6.24) and MW15-10D (pH 5.8 to 6.17) returned pH measurements below the FIGWQG pH range of 6.5 to 9.0. These lower pH wells are located proximal to the KZ-9 east seep, which is characterized by low pH water (pH 5.8 to 6.0) (AEG, 2017); this suggests groundwater found in wells MW15-10S and MW15-10D also feeds this seep. Well water dissolved oxygen levels ranged from 6 to 95% saturation, suggesting the groundwaters ranged from sub-oxic/anoxic to oxic. The dissolved oxygen content of waters from well MW15-10S were on the lower end of this dissolved oxygen range (19 to 36% saturation) and overlapped that for the KZ-9 East Seep (21 to 54% saturation) (AEG, 2017), compatible with the hypothesis that this seep is supplied by groundwater sampled by well MW15-10S. Temperature varied seasonally between -0.1 and 5.9°C, and six of the thirteen wells were frozen for most or all the year.

No YCSR standard for anions or nutrients were exceeded in any wells within the Class A Storage Facility area; the plots of these parameters for the Class A Storage Facility area wells can be found in Appendix C. Fluoride were highest in monitoring well MW15-10D, ranging from 1.2 mg/L to 1.4 mg/L. The lowest concentrations were observed in wells BH95G-2 (0.04 to 0.063 mg/L) and MW15-08S (0.084 to 0.093 mg/L). The remainder of the wells returned fluoride concentrations between 0.16 and 0.73 mg/L. Overall, fluoride concentrations were very stable over the period of record in all the monitoring wells, with no seasonality apparent. In general, fluoride concentrations were higher in bedrock wells than shallow wells with the exception of well BH95G-2.

All samples collected from the Class A monitoring wells returned ammonia-N concentrations that were below the YCSR standard. The highest concentrations were typically observed in the paired monitoring wells MW15-10S (0.033 to 0.67 mg/L; average 0.39 mg/L), and MW15-10D (0.18 to 0.30 mg/L; average 0.25 mg/L). The remainder of the wells in the Class A Storage Facility area returned ammonia-N concentrations that were generally between 0.01 mg/L and 0.1 mg/L. This is consistent with the September 1995 sample from well BH95G-13D, which returned an ammonia-N concentration of 0.01 mg/L.

**Table 3-8: Summary Statistics for In situ Parameters Class A Storage Facility Area**

	Number of Samples	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	ORP (field)
Station Name		pH units	µS/cm	°C	mg/L	%	mV
BH95G-15D	5	7.26-7.69 (7.47)	346-359 (352)	0.6-6.4 (2.4)	1.46-8.51 (4.53)	12.1-71.5 (38.3)	88.2 to 375 (237)
BH95G-2	10-15	7.25-7.87 (7.56)	263-586 (508)	-0.1-3 (1.5)	3.40-6.88 (4.76)	28-58.8 (40.1)	35.1 to 400 (213)
MW15-07D	7-8	7.34-8.05 (7.59)	383-415 (400)	0.5-4.1 (2.7)	0.9-8.2 (3.92)	7.0-63.1 (34.1)	-59.4 to 135 (-8.6)
MW15-07S	9-11	7.23-7.93 (7.6)	373-393 (384)	0.0-5.9 (2.6)	0.48-10.7 (4.57)	10-95 (48.7)	-66.8 to 161 (-16.5)
MW15-08D	0-2	7.22-7.28 (7.25)	539-540 (540)	3.3-3.3 (3.3)	5.27-6.1 (5.68)	- ( )	- ( )
MW15-08S	5-6	7.35-7.68 (7.51)	366-385 (378)	1.1-4.7 (2.1)	8.2-10.6 (8.98)	70-79 (74.4)	57.3 to 147 (108)
MW15-09D	1-2	5.68-7.74 (6.71)	813-813 (813)	0.6-6.6 (3.6)	4.23-5.53 (4.88)	45.2-45.2 (45.2)	54.7 to 54.7 (54.7)
MW15-09S	8-9	7.28-8.04 (7.56)	402-422 (414)	-0.3-3.5 (2.1)	0.4-4.2 (1.91)	6-35 (17.5)	-89.6 to 199 (-21.4)
MW15-10D	9-12	5.82-6.43 (6.1)	2780-3090 (2933)	-0.1-2.3 (1.6)	2.12-9.9 (4.72)	24.5-86 (43.1)	-7 to 126 (39.5)
MW15-10S	6-7	5.8-6.46 (6.06)	503-853 (681)	-0.1-4.8 (3.1)	2.1-4.1 (3.24)	19-37 (27.9)	59.3 to 148 (92.2)
MW16-13	0	Well is Frozen					
MW16-14D	5	7.43-8.63 (7.78)	448-472 (460.4)	1.7-3.0 (2.4)	0.9-4.5 (1.94)	8-40 (16.7)	-32.1 to 152 (33)
MW16-17	8	7.59-8.53 (7.91)	266-365 (339)	1.3-3.0 (2.0)	0.76-10.1 (3.56)	6.5-84 (30)	-63.2 to 303 (45.4)

## - ## is the minimum and maximum range for the well for 2015-2016 data

(##) is the average concentration, concentrations less than the DL were taken as ½ DL values

- Indicates no data available for this parameter

Range of sample numbers due to lack of temperature, % dissolved oxygen, and ORP measurements for 2015 sampling

**Table 3-9: Summary Statistics for YCSR – Schedule 3 Anions and Nutrients Class A Storage Facility Area**

	Chloride	Fluoride	Sulphate dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total-colourimetric	Phosphorus, Total Dissolved
Station Name	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
YCSR – Schedule 3	-	2-3	1000	1.31-18.4	0.2-2	400		
BH95G-15D								
Average	0.53	0.14	14.6	0.025	0.0020	0.590	0.635	0.288
Minimum	0.25	0.14	13.5	0.010	0.0010	0.567	0.106	0.0505
Maximum	0.71	0.15	16.0	0.053	0.0052	0.603	1.16	1.11
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	5	5	5	5	5	5	5	5
BH95G-2								
Average	0.78	0.05	40.9	0.037	0.0021	0.484	0.963	0.216
Minimum	0.25	0.04	7.4	0.005	0.0010	0.360	0.0069	0.0048
Maximum	1.20	0.06	55.5	0.130	0.0085	1.36	8.66	1.02

	Chloride	Fluoride	Sulphate dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total-colourimetric	Phosphorus, Total Dissolved
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	15	15	15	15	15	15	15	14
<b>MW15-07D</b>								
Average	0.58	0.34	30.0	0.052	0.0018	0.0010	0.101	0.0977
Minimum	0.25	0.33	27.3	0.043	0.0010	0.0010	0.0022	0.0021
Maximum	1.10	0.36	31.9	0.072	0.0057	0.0010	0.681	0.720
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	8	8	8	8
<b>MW15-07S</b>								
Average	0.64	0.30	32.3	0.049	0.0020	0.0017	0.513	0.0137
Minimum	0.25	0.28	30.4	0.020	0.0010	0.0010	0.0028	0.0020
Maximum	1.00	0.31	33.7	0.130	0.0064	0.0048	2.50	0.0442
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	11	11	11	11	11	11	11	10
<b>MW15-08D</b>								
Average	1.13	0.57	44.5	0.120	0.0010	0.0029	0.0421	0.0423
Minimum	0.96	0.54	43.9	0.120	0.0010	0.0010	0.0048	0.0050
Maximum	1.30	0.61	45.0	0.130	0.0010	0.0047	0.0795	0.0796
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	2	2	2	2	2	2	2	2
<b>MW15-08S</b>								
Average	0.94	0.09	25.8	0.117	0.0019	0.257	0.164	0.113
Minimum	0.57	0.08	23.9	0.011	0.0010	0.215	0.0026	0.0010
Maximum	1.50	0.09	28.2	0.410	0.0048	0.276	0.505	0.518
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	6	6	6	6	6	6	6	6
<b>MW15-09D</b>								
Average	1.10	0.73	15.3	0.100	0.0010	0.0021	1.16	0.0054
Minimum	1.10	0.73	15.3	0.100	0.0010	0.0021	1.16	0.0054
Maximum	1.10	0.73	15.3	0.100	0.0010	0.0021	1.16	0.0054
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	1	1	1	1	1	1	1	1
<b>MW15-09S</b>								
Average	0.77	0.24	18.5	0.070	0.0048	0.0746	0.206	0.0282
Minimum	0.55	0.22	17.2	0.016	0.0020	0.0360	0.0050	0.0060
Maximum	1.20	0.29	20.9	0.320	0.0072	0.138	1.19	0.142
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	9	9	9	9	9	9	9	9
<b>MW15-10D</b>								
Average	3.00	1.30	6.0	0.250	0.0018	0.0036	0.127	0.0223
Minimum	1.10	1.20	0.3	0.180	0.0010	0.0010	0.0122	0.0058
Maximum	4.00	1.40	12.0	0.300	0.0100	0.0100	0.483	0.0630
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	12	12	12	12	12	12	12	11



	Chloride	Fluoride	Sulphate dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total-colourimetric	Phosphorus, Total Dissolved
MW15-10S								
Average	1.16	0.19	32.2	0.386	0.0077	0.107	2.51	0.160
Minimum	0.58	0.16	28.1	0.033	0.0010	0.0435	0.0148	0.0054
Maximum	2.50	0.22	47.8	0.670	0.0142	0.184	13.4	0.974
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	7	7	7	7	7	7	7	7
MW16-13								
n/a	Well is Frozen							
MW16-14D								
Average	0.68	0.23	87.7	0.049	0.0019	0.0024	0.0763	0.0183
Minimum	0.25	0.23	81.7	0.031	0.0010	0.0010	0.0230	0.0029
Maximum	0.96	0.24	92.8	0.059	0.0053	0.0079	0.220	0.0413
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	5	5	5	5	5	5	5	5
MW16-17								
Average	0.65	0.53	31.4	0.049	0.0017	0.0078	0.339	0.163
Minimum	0.25	0.47	28.7	0.031	0.0010	0.0010	0.0380	0.0156
Maximum	1.10	0.57	34.3	0.060	0.0067	0.0283	0.710	0.632
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	8	8	8	7

### 3.3.2.3 Metals

Only the YCSR Schedule 3 standards for dissolved cadmium and cobalt were exceeded in Class A Storage Facility area wells (Table 3-10 and Appendix D-2). Dissolved cadmium concentrations in excess of the YCSR standard (hardness dependent; 0.0001-0.0006 mg/L) were observed in all 15 samples from BH95G-2 (0.0012 to 0.0017 mg/L) and five of seven samples from MW15-10S (0.00087 to 0.0014 mg/L). The YCSR standard for cobalt (0.009 mg/L) was only exceeded in one sample from MW15-10S (0.0122 mg/L in June 2016).

Dissolved cadmium concentrations in the Class A Storage Facility area monitoring wells varied by nearly three orders of magnitude. The highest concentrations were observed in wells BH95G-2 (0.0012 to 0.0017 mg/L) and MW15-10S (0.00087 to 0.0014 mg/L), which exhibited YCSR standard exceedances for 100% and 71% of samples, respectively. Dissolved cadmium concentrations varied between below detection (<0.000005 mg/L) and 0.00017 mg/L in the other wells in the Class A Storage Facility area, and generally exhibited an order of magnitude range in concentration. All samples collected in wells MW15-07D and MW-16-17 were either at or below the detection limit. Similarly, the dissolved cadmium concentration in the September 1995 sample from well BH95G-13D was below detection (<0.00001 mg/L).

Overall, the Class A Storage Facility area had dissolved aluminum concentrations that varied by nearly four orders of magnitude between all the monitoring wells. The highest concentrations were generally observed in well MW15-10D (0.0095 to 0.44 mg/L), consistent with its mildly acidic pH range (5.8 to 6.2) which increases aluminum solubility. All the samples collected from this well exceeded the FIGWQG (there is no YCSR standard for aluminum). The FIGWQG dissolved aluminum guideline was also exceeded in samples from the other two wells that exhibited mildly acidic pH – the sole sample from well MW15-09D (0.17 mg/L) and three of the seven samples collected from well MW15-10S (0.0013 to 0.016 mg/L). The

highest dissolved aluminum concentration was observed in a single sample collected from well MW15-09S (1.5 mg/L), but this was significantly higher than the concentration range observed for other samples collected from this well (<0.0005 to 0.0085 mg/L). The dissolved aluminum concentration in the majority of samples collected from the remainder of the wells were below 0.01 mg/L. The September 1995 sample from well BH95G-13D was also in the lower range with a dissolved aluminum concentration of 0.007 mg/L.

Concentrations of dissolved arsenic ranged between 0.00001 and 0.012 mg/L for all the samples collected in the Class A Storage Facility area. The highest concentrations were observed in wells MW15-10S (0.0021 to 0.012 mg/L), MW16-14D (0.0031 to 0.0041 mg/L), MW15-07S (0.0011 to 0.0051 mg/L), the two samples from MW15-08D (0.0026 and 0.0050 mg/L), and the sole samples from MW15-09D (0.0085 mg/L). The dissolved arsenic concentrations in samples collected from the remaining wells were below 0.002 mg/L, consistent with the single sample collected from well BH95G-13D in September 1995 (0.00026 mg/L).

The highest dissolved copper concentrations that approached the hardness-dependent YCSR standard (0.009 mg/L based on median hardness of 255 mg/L for the Class A Storage Facility area wells) were observed for single samples collected from wells MW15-10S (0.036 mg/L) and MW15-09S (0.021 mg/L). However, these were between one and two orders of magnitude above the next highest dissolved copper concentration observed for these wells. The majority of well water samples returned dissolved copper levels between the detection limit (i.e., <0.00005 mg/L) and 0.001 mg/L. The dissolved copper concentration for the September 1995 sampling event at well BH95G-13D (0.0002 mg/L) is consistent with this range.

Like copper, a sporadically high dissolved lead concentration was observed for one sample from well MW15-09S (0.018 mg/L) which was the highest lead concentration observed for all the Class A Storage Facility area wells and two orders of magnitude higher than the other samples collected from this well. The next highest dissolved lead concentrations were generally in samples from well MW15-10D, although these varied by two orders of magnitude (0.000008 to 0.00035 mg/L). The dissolved lead concentrations in the majority of samples collected from the remainder of the wells were below 0.0001 mg/L; the September 1995 sample from well BH95G-13D was below detection (<0.0001 mg/L).

Although the guideline was not exceeded for any samples collected to date, the dissolved selenium concentrations in samples from three monitoring wells within the Class A Storage Facility area were within an order of magnitude of the YCSR threshold (0.01 mg/L): BH95G-2 had the highest concentrations (0.0014 /L to 0.0073 mg/L), followed by MW15-10S (0.0017 to 0.0024 mg/L) and MW15-08S (0.0014 to 0.0022 mg/L). Well MW15-09S (0.00063 to 0.0020 mg/L) also returned occasional samples that were within tenfold of the YCSR standard. In general, dissolved selenium concentrations showed very little fluctuation over the period of record within the Class A Storage Facility area groundwater monitoring wells. The exceptions to this were MW15-08D (only two data points available of <0.00004 and 0.0003 mg/L) and MW15-07S (<0.00004 to 0.00085 mg/L). The remainder of the wells in the Class A Storage Facility area ranged from <0.00004 to 0.0002 mg/L. The dissolved selenium concentration in the September 1995 sample from well BH95G-13D was below detection (<0.00005 mg/L).

Dissolved zinc concentrations ranged between <0.0001 and 0.050 mg/L in wells located in the Class A Storage Facility area. Although the highest concentration was recorded in the October 2016 sample in MW16-14D (0.050 mg/L), the other four samples collected from this well ranged between 0.00037 and 0.0048 mg/l, over an order of magnitude lower. Dissolved zinc concentrations measured in samples collected from well BH95G-2 exhibited little fluctuation and generally returned the highest concentrations for each sampling event, ranging from 0.015 to 0.028 mg/L. Well MW15-09S had a single spike in dissolved zinc concentrations relative to the rest of the sampling sites in June 2016 when the concentration was 0.028 mg/L, but otherwise ranged from below the detection limit (<0.0001 mg/L) to 0.0017 mg/L. Samples from the paired wells MW15-10S (0.0049 to 0.019 mg/L) and MW15-10D (0.0020 to 0.022 mg/L) shared a similar dissolved zinc concentration span.

The remainder of the monitoring wells in the Class A Storage Facility area generally had dissolved zinc concentrations below 0.001 mg/L. The September 1995 sample was similarly low, returning 0.002 mg/L dissolved zinc.

Dissolved iron concentrations exceeded the FIGWQG guideline (0.3 mg/L; there is no YCSR for iron) in all samples collected from four wells: MW15-10D, MW15-09D, MW15-10S, and MW15-08S. The highest dissolved iron concentrations were observed in MW15-10D (24.4 to 36.6 mg/L; average 28.0 mg/L), the lone sample from MW15-09D (12.3 mg/L) and MW15-10S (2.15 to 4.25 mg/L; average 3.01 mg/L). All three of these wells also returned the lowest pH range (5.7 to 6.2), which likely helped maintain iron in solution. Overall, the majority of the monitoring wells in the Class A Storage Facility area had relatively stable dissolved iron concentrations; however, there were a few exceptions. Dissolved iron concentration spanned two orders of magnitude in wells BH95G-2 (<0.001 to 0.0244 mg/L), MW15-09S (0.0114 to 1.31 mg/L) and MW16-17 (0.0078 to 0.247 mg/L). Dissolved iron concentrations in BH95G-15D were below the detection level (i.e., <0.001 mg/L) and MW15-08S returned a relatively very low maximum concentration of 0.0045 mg/L. The dissolved iron concentration from the September 1995 sampling of well BH95G-13D (0.32 mg/L) was in the mid-range of the 2015 to 2017 dataset for the Class A Storage Facility area. There was no apparent difference in iron concentrations between the overburden and bedrock wells.

Within the Class A Storage Facility area there was no evidence of a distinction between the bedrock and overburden wells in terms of trace element water quality with the three years of baseline data collected.

**Table 3-10: Summary Statistics for Metals in Class A Storage Facility Area**

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
Station Name	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
YCSR – Schedule 3		0.05	0.0001-0.0006	0.02-0.09	-	0.04-0.16	0.01	0.075-2.4
BH95G-15D								
Average	0.00064	0.000110	0.0000360	0.000158	0.00050	0.0000170	0.00326	0.00109
Minimum	0.00025	0.000064	0.0000290	0.000025	0.00050	0.0000080	0.00303	0.00090
Maximum	0.00108	0.000187	0.0000530	0.000377	0.00050	0.0000420	0.00377	0.00132
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	5	5	5	5	3	5	5	5
BH95G-2								
Average	0.00377	0.000097	0.00149	0.00101	0.00912	0.0000359	0.00479	0.0214
Minimum	0.00025	0.000065	0.00123	0.000129	0.0005	0.0000025	0.00136	0.0147
Maximum	0.0244	0.000163	0.00165	0.00309	0.0244	0.000105	0.00729	0.0278
Count Over YCSR	0	0	15	0	0	0	0	0
% Over YCSR	0	0	100	0	0	0	0	0
# of Samples	15	15	15	15	9	15	15	15
MW15-07D								
Average	0.00354	0.000074	0.0000025	0.000061	0.365	0.0000249	0.000020	0.00054
Minimum	0.00067	0.000010	0.0000025	0.000025	0.0901	0.0000025	0.000020	0.00005
Maximum	0.0124	0.00025	0.0000025	0.000149	0.498	0.0000830	0.000020	0.00119
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	4	8	8	8
MW15-07S								
Average	0.00434	0.00217	0.0000065	0.000107	0.367	0.0000133	0.000100	0.00106
Minimum	0.00025	0.00113	0.0000025	0.000025	0.0818	0.0000025	0.000020	0.00005
Maximum	0.0239	0.00507	0.0000190	0.000248	0.592	0.0000570	0.000845	0.00438
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
# of Samples	11	11	11	11	6	11	11	11
MW15-08D								
Average	0.00358	0.00379	0.0000250	0.000056	0.609	0.0000160	0.000146	0.00235
Minimum	0.00356	0.00262	0.0000180	0.000025	0.563	0.0000120	0.000020	0.00161
Maximum	0.00361	0.00496	0.0000320	0.000087	0.655	0.0000190	0.000272	0.00309
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	2	2	2	2	2	2	2	2
MW15-08S								
Average	0.00247	0.00035	0.0000830	0.000637	0.0044	0.0000940	0.00178	0.00201
Minimum	0.00059	0.00025	0.0000130	0.000106	0.0043	0.0000070	0.00148	0.00029
Maximum	0.00408	0.00045	0.000124	0.000910	0.0045	0.000240	0.00217	0.00412
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	6	6	6	6	2	6	6	6
MW15-09D								
Average	0.170	0.00848	0.0000080	0.000416	12.3	0.000121	0.000062	0.00568
Minimum	0.170	0.00848	0.0000080	0.000416	12.3	0.000121	0.000062	0.00568
Maximum	0.170	0.00848	0.0000080	0.000416	12.3	0.000121	0.000062	0.00568
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	1	1	1	1	1	1	1	1
MW15-09S								
Average	0.170	0.00061	0.0000909	0.00237	0.492	0.00197	0.00103	0.00402
Minimum	0.00025	0.00013	0.0000025	0.000025	0.0114	0.0000025	0.000625	0.00005
Maximum	1.51	0.00177	0.000544	0.0207	1.31	0.0177	0.00202	0.0284
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	9	9	9	9	4	9	9	9
MW15-10D								
Average	0.178	0.00052	0.0000594	0.000419	28.0	0.000346	0.000067	0.00599
Minimum	0.00948	0.00011	0.0000125	0.000025	24.4	0.0000080	0.000020	0.00197
Maximum	0.438	0.00167	0.000172	0.00216	36.6	0.00136	0.00020	0.0217
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	12	12	12	12	7	12	12	12
MW15-10S								
Average	0.00582	0.00587	0.000865	0.00592	3.01	0.000116	0.00208	0.0131
Minimum	0.00134	0.00080	0.000154	0.000182	2.15	0.0000025	0.00172	0.00493
Maximum	0.0162	0.01170	0.00139	0.0358	4.25	0.000287	0.00242	0.0191
Count Over YCSR	0	0	5	0	0	0	0	0
% Over YCSR	0	0	71.4	0	0	0	0	0
# of Samples	7	7	7	7	3	7	7	7
MW16-13								
n/a	Well is Frozen							
MW16-14D								
Average	0.00273	0.00367	0.0000281	0.000101	0.121	0.0000086	0.000020	0.0114
Minimum	0.00099	0.00312	0.0000025	0.000025	0.0306	0.0000025	0.000020	0.00037
Maximum	0.00445	0.00410	0.0000990	0.000327	0.223	0.0000140	0.000020	0.0496
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	5	5	5	5	3	5	5	5
MW16-17								
Average	0.00819	0.00059	0.0000029	0.000358	0.0888	0.0000046	0.000126	0.00048

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
Minimum	0.00173	0.00017	0.0000025	0.000025	0.0078	0.0000025	0.000020	0.00020
Maximum	0.0188	0.00131	0.0000050	0.000965	0.247	0.0000110	0.000292	0.00094
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	5	8	8	8

\* See Table 2.6 for YCSR standard

### 3.3.3 Class B Storage Facility Area

#### 3.3.3.1 Setting

The Class B Storage Facility area contains the proposed Class B Storage Facility, Process Plant, and the Run of Mine (ROM) and the Low Grade Ore (LGO) stockpiles, as shown on Figure 2-1. The Class B Storage Facility is on the western slope of the valley with Geona Creek flowing through the bottom of the valley. Seven monitoring wells characterise this area; a combination of wells screened in overburden (two wells) and bedrock (five wells). Of the seven monitoring wells, BH95G-33s is dry, and three of the wells (MW15-02, MW16-12S, and MW16-12D) were frozen part of the years.

#### 3.3.3.2 Physical Parameters and Nutrients

The bedrock and overburden wells in the Class B Storage Facility area were generally circumneutral to mildly alkaline (pH range 6.27 to 8.50), as shown in Table 3-11, Table 3-12 and the in situ summary table provided in Appendix D-3. All the well water samples were within the FIGWQG pH range of acceptability (6.5 to 9.0) with the exception of two of the five samples collected from well MW16-12D, which had a pH range of 6.27 to 6.83. Well water dissolved oxygen levels ranged from 4 to 100% saturation, suggesting the groundwaters ranged from sub-oxic/anoxic to oxic. Temperature varied seasonally between -0.2 and 8°C, and three of the seven wells were frozen for most or all of the years monitored.

No wells from within the Class B Storage Facility area returned exceedances of YCSR standards for anions or nutrients. The plots of these parameters for the Class B Storage Facility area wells can be found in Appendix C. Fluoride concentrations were highest in samples collected from the paired wells MW16-12S (0.72 to 1.1 mg/L) and MW16-12D (0.01 to 1.1 mg/L). Fluoride concentrations in the remainder of the wells were an order of magnitude lower (0.032 to 0.12 mg/L). The trends for all the monitoring wells in terms of fluoride concentrations were fairly constant over the period of record, with little to no seasonality apparent over the period of record.

In the Class B Storage Facility area, no wells had dissolved sulphate concentrations greater than the YCSR standard (1000 mg/L). Sulphate concentrations in most wells ranged between 32 and 138 mg/L. The lowest concentrations were observed in the paired wells MW16-12S (<0.5 mg/L to 11.9 mg/L) and MW16-12D (all samples were below the detection limit <0.5 mg/L). Overall, sulphate concentrations showed limited fluctuations over the period of record.

No wells in the Class B Storage Facility area exceeded the YCSR standard for ammonia-N. Concentrations ranged between <0.005 and 0.4 mg/L, with the highest concentrations observed in the paired wells MW16-12D (0.27 to 0.40 mg/L) and MW16-12S (0.085 to 0.38 mg/L). The majority of samples collected in the remainder of the wells were below 0.1 mg/L and approximately two orders of magnitude lower than the YCSR standard.

**Table 3-11: Summary Statistics for In situ Parameters Class B Storage Facility Area**

	Number of Samples	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	ORP (field)
Station Name		pH units	µS/cm	°C	mg/L	%	mV
BH95G-32	10-14	6.59-8.12 (7.53)	352-410 (393)	0.3-5.9 (2.2)	0.00-6.45 (2.36)	8.0-54.0 (23.8)	-41.2 to 320 (67.1)
BH95G-33D	11-15	7.39-7.8 (7.56)	408-480 (455)	-0.2-7.8 (2.6)	3.56-13.4 (6.04)	3.9-109 (50.0)	17.0 to 325 (127.4)
BH95G-33S	0	Well is dry					
MW15-01	10-13	7.48-8.50 (7.86)	307-551 (403)	-0.9-3.9 (1.0)	2.70-11.8 (8.33)	46.3-108 (76.8)	11.0 to 360 (140)
MW15-02	6-7	7.37-8.15 (7.74)	323-463 (436)	0-2.6 (1.4)	4.90-14.5 (7.44)	42.0-117 (65.0)	87.9 to 154 (121)
MW16-12D	5	6.27-6.83 (6.53)	1510-1610 (1538)	2.5-3.7 (3.0)	1.23-6.20 (3.31)	9.3-38.0 (23.5)	23.0 to 164 (60.7)
MW16-12S	4	6.53-6.91 (6.66)	1360-1610 (1515)	2.2-5.3 (3.5)	3.30-5.40 (4.70)	30.0-47.0 (41.5)	-115 to -26.3 (-55.7)

## - ## is the minimum and maximum range for the well for 2015-2016 data

(##) is the average concentration, concentrations less than the DL were taken as ½ DL values

Range of sample numbers due to lack of temperature, % dissolved oxygen, and ORP measurements for 2015 sampling

**Table 3-12: Summary Statistics for YCSR – Schedule 3 Anions and Nutrients Class B Storage Facility Area**

	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total- colourimetric	Phosphorus, Total Dissolved
Station Name	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
YCSR – Schedule 3		2-3	1000	1.31-18.4	0.2-2	400		
BH95G-32								
Average	0.59	0.038	34.6	0.0762	0.0016	0.0549	0.697	0.0317
Minimum	0.25	0.032	32.0	0.0062	0.0010	0.0270	0.0010	0.0010
Maximum	0.92	0.041	36.8	0.290	0.0058	0.0755	4.34	0.145
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	14	14	14	14	14	14	14	13
BH95G-33D								
Average	0.57	0.054	68.3	0.0311	0.0020	0.206	0.662	0.0602
Minimum	0.25	0.045	62.3	0.0025	0.0010	0.164	0.0068	0.0010
Maximum	1.00	0.062	77.0	0.120	0.0041	0.276	3.48	0.243
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	15	15	15	15	15	15	15	14
BH95G-33S								
n/a	Well is Dry							
MW15-01								
Average	0.65	0.095	71.9	0.0355	0.0032	0.362	0.673	0.0315
Minimum	0.25	0.086	36.2	0.0025	0.0010	0.189	0.0029	0.0021
Maximum	1.40	0.120	138	0.130	0.0078	0.464	7.34	0.0997
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	13	13	13	12
MW15-02								
Average	0.63	0.089	56.5	0.0103	0.0010	0.247	0.0891	0.0019
Minimum	0.25	0.085	37.4	0.0025	0.0010	0.212	0.0010	0.0010
Maximum	0.88	0.092	65.6	0.0190	0.0010	0.399	0.612	0.0048
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	7	7	7	7	7	7	7	7
MW16-12D								
Average	1.56	0.882	0.25	0.300	0.0013	0.0010	0.117	0.115
Minimum	0.71	0.012	0.25	0.270	0.0010	0.0010	0.0132	0.0076
Maximum	2.20	1.10	0.25	0.400	0.0023	0.0010	0.223	0.252
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	5	5	5	5	5	5	5	5
MW16-12S								
Average	2.00	0.890	4.03	0.226	0.0052	0.0039	0.709	0.625
Minimum	1.20	0.720	0.25	0.0850	0.0024	0.0010	0.308	0.0682
Maximum	2.70	1.10	11.9	0.380	0.0100	0.0100	1.62	1.66
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	4	4	4	4	4	4	4	4



### 3.3.3.3 Metals

The only exceedance of YCSR – Schedule 3 standards within Class B Storage Facility Area wells was for dissolved cobalt (Appendix D-4), which was elevated relative to the YCSR standard (0.009 mg/L) in the MW16-12S well only and exceeded in each of the four samples (ranging from 0.026 to 0.072 mg/L).

Water quality results were also compared to the FIGWQGs for dissolved aluminum and iron owing to an absence of YCSR standards for these metals – dissolved aluminum and iron FIGWQG exceedances were observed for at least one sampling event for monitoring wells located in the Class B Storage Facility area.

The highest dissolved iron concentrations were found in wells MW16-12S (17.2 to 101 mg/L; average 59.1 mg/L) and MW16-12D (3.57 to 4.1 mg/L; average 3.88 mg/L), which all exceeded the FIGWQG guideline (0.3 mg/L). Dissolved iron concentrations in the remainder of the wells (<0.001 to 0.17 mg/L) were between one to three orders of magnitude lower and were all below the FIGWQG threshold.

Within the Class B Storage Facility Area there was one exceedance of the FIGWQG for dissolved aluminium concentrations (0.1 mg/L if pH  $\geq$ 6.5, 0.005 mg/L if pH <6.5). MW16-12D exceeded the FIGWQG in a single event in August 2016 (0.012 mg/L). This well is compared to the lower FIGWQG, as pH in this well ranged from 6.27 to 6.53. MW16-12D had four additional sampling events which ranged between 0.0017 to 0.0107 mg/L. The pH measured in the other Class B wells was >6.5. The aluminum FIGWQG at this pH is 0.1 mg/L; all the dissolved aluminum concentrations were lower than the FIGWQG by an order of magnitude or more (observed range of <0.0005 to 0.0142 mg/L).

The highest dissolved arsenic concentrations were recorded in two samples from well MW16-12S (0.026 and 0.0034 mg/L), which were one to two orders of magnitude higher than the other two samples collected from this well (0.00019 and 0.00021 mg/L). The dissolved arsenic concentration in the majority of samples from the other wells in the Class B Storage Facility area ranged between 0.0001 and 0.001 mg/L, except for well MW16-12D, which returned samples with the lowest dissolved arsenic content (0.00001 to 0.00006 mg/L).

Samples from two monitoring wells regularly returned dissolved selenium concentrations that were within an order of magnitude of the YCSR standard (0.01 mg/L): BH95G-33D (0.0038 to 0.0079 mg/L; average 0.0055 mg/L) and MW15-02 (0.00037 to 0.0020 mg/L; average 0.0016 mg/L). Wells BH95G-32 and MW15-01 abstracted groundwaters with dissolved selenium concentrations that varied between 0.00026 and 0.0015 mg/L, whereas the lowest concentrations were observed in the paired wells MW16-12D and MW16-12S, which were typically below detection (<0.00004 mg/L). Overall, dissolved selenium concentrations had very little fluctuation in concentrations over the period of record within the Class B Storage Facility area monitoring wells.

Dissolved zinc concentrations were generally highest in the samples collected from well MW16-12S (0.016 to 0.10 mg/L), although the highest concentration recorded for the Class B Storage Facility area was in a single sample collected from the paired deep well MW16-12D (0.24 mg/L). Dissolved zinc concentrations in the remainder of the samples varied between <0.0001 and 0.005 mg/L.

Dissolved copper concentrations in samples collected within the Class B Storage Facility area were below 0.001 mg/L, and at least two orders of magnitude below the hardness-dependent YCSR standard. Well MW15-01 had dissolved copper concentrations that ranged from 0.00007 to 0.0007 mg/L, and changed by an order of magnitude over the period of record. Samples collected from well BH95G-32 had a similar range with dissolved copper concentrations that varied between 0.00008 and 0.0006 mg/L. Well BH95G-33D also ranged by an order of magnitude over the period of record with dissolved copper

concentrations that ranged from 0.00007 to 0.0009 mg/L. The remainder of the wells generally had concentrations below 0.0001 mg/L.

Samples collected from well BH95G-32 had the highest dissolved cadmium concentrations over the period of record, ranging from 0.00002 to 0.00013 mg/L. Dissolved cadmium concentrations in well MW16-12S ranged from 0.000012 to 0.000038 mg/L and those in well MW15-01 ranged from below the detection limit (<0.000005 mg/L) to 0.000025 mg/L. The remainder of the wells all had dissolved cadmium concentrations that were generally below 0.00001 mg/L.

The highest dissolved lead concentration was recorded for the MW15-01 June 2017 sample (0.00024 mg/L), which otherwise ranged between <0.000005 and 0.000025 mg/L. For most sampling events, BH95G-32 generally had the highest concentrations of dissolved lead, ranging from below the detection limit (<0.000005 mg/L) to 0.00014 mg/L. The remainder well water samples ranged from <0.000005 to 0.00004 mg/L.

Overall, for metals there was no evidence of a distinction between the bedrock and overburden wells in terms of water quality with the three years of baseline data collected. Although there was significant fluctuation in some metal concentrations, the data collected to date do not indicate distinct seasonal trends.

**Table 3-13: Summary Statistics for Metals in Class B Storage Facility Area**

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
Station Name	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
YCSR – Schedule 3		0.05	0.0001-0.0006	0.02-0.09		0.04-0.16	0.01	0.075-2.4
BH95G-32								
Average	0.00347	0.00025	0.0000590	0.000213	0.0846	0.0000406	0.000588	0.00128
Minimum	0.00129	0.00016	0.0000200	0.000079	0.0038	0.0000025	0.000304	0.00005
Maximum	0.0142	0.00038	0.000130	0.000599	0.169	0.000141	0.000835	0.00346
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	14	14	14	14	8	14	14	14
BH95G-33D								
Average	0.00143	0.00027	0.0000057	0.000209	0.00201	0.0000063	0.00551	0.00080
Minimum	0.00025	0.00014	0.0000025	0.000068	0.0005	0.0000025	0.00383	0.00005
Maximum	0.00506	0.00076	0.0000220	0.000899	0.0070	0.0000170	0.00791	0.00276
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	15	15	15	15	9	15	15	15
BH95G-33S								
n/a	Well is Dry							
MW15-01								
Average	0.00583	0.00019	0.0000123	0.000453	0.0232	0.0000249	0.000576	0.00138
Minimum	0.00204	0.00007	0.0000025	0.000072	0.0014	0.0000025	0.000260	0.00005
Maximum	0.0129	0.00088	0.0000250	0.000744	0.108	0.000241	0.00150	0.00503
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	7	13	13	13
MW15-02								
Average	0.00187	0.00073	0.0000048	0.000169	0.0012	0.0000201	0.00161	0.00066
Minimum	0.00069	0.00011	0.0000025	0.000058	0.0005	0.0000025	0.000371	0.00005
Maximum	0.00599	0.00089	0.0000140	0.000613	0.0022	0.0000820	0.00196	0.00130
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	7	7	7	7	4	7	7	7
MW16-12D								
Average	0.00574	0.00003	0.0000180	0.000065	3.88	0.0000214	0.000036	0.0503
Minimum	0.00169	0.00001	0.0000060	0.000025	3.57	0.0000025	0.000020	0.00117
Maximum	0.0116	0.00006	0.0000420	0.000125	4.1	0.000053	0.00010	0.242
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	5	5	5	5	3	5	5	5
MW16-12S								
Average	0.00254	0.00736	0.0000250	0.000050	59.1	0.0000050	0.000040	0.0596
Minimum	0.00025	0.00019	0.0000120	0.000025	17.2	0.0000025	0.000020	0.0155
Maximum	0.00780	0.0257	0.0000380	0.000125	101	0.0000125	0.000100	0.0994
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	4	4	4	4	2	4	4	4

\* See Table 2.6 for YCSR standard

### 3.3.4 Class C Storage Facility Area

#### 3.3.4.1 Setting

The Class C Storage Facility area contains the proposed Class C Storage Facility, the overburden stockpile and associated water collection ponds, as shown on Figure 2-1. The Class C Storage Facility is on the eastern slope of the valley with Geona Creek flowing through the bottom of the valley. A small tributary flows into Geona Creek through the proposed location of the Class C Storage Facility. Ten monitoring wells characterise this area; a combination of wells screened in overburden (four wells) and bedrock (six wells). Of the ten monitoring wells, MW15-05s is dry, and three of the wells (BH95G-30, BH95G-31, and MW15-06) were frozen part of the years that were monitored.

#### 3.3.4.2 Physical Parameters and Nutrients

The bedrock and overburden wells in the pit areas were generally circumneutral to mildly alkaline (pH range 6.06 to 8.1; Table 3-14), Table 3-15 and the in situ summary table provided in Appendix D-4. One sample from well MW15-03S returned a pH 6.06 which was below the lower FIGWQG boundary (pH 6.5). Well water dissolved oxygen levels ranged from 6 to 102% saturation, suggesting the groundwaters ranged from sub-oxic/anoxic to oxic. Temperature varied seasonally between -0.2 and 9.6°C, and three of the ten wells were frozen for most or all the years monitored.

Within the Class C Storage Facility area, no monitoring well samples exceeded the YCSR standards for the measured anions or nutrients (Table 3-15). The plots of these parameters for the Class C Storage Facility area wells can be found in Appendix C. Except for two low concentration outliers for single samples from wells MW16-16D (<0.01 mg/L) and BH95G-31 (0.011 mg/L), fluoride concentrations ranged between 0.054 and 0.24 mg/L. The highest fluoride concentrations were observed in samples collected from MW15-04D (0.20 to 0.24 mg/L), followed by MW15-03D (0.14 to 0.17 mg/L), and BH95G-30 (0.13 to 0.14 mg/L). Overall, fluoride concentrations showed limited variation in samples collected from each well over the period of record, with no seasonality apparent. With the exception of BH95G-31, higher fluoride concentrations were generally observed in the bedrock wells.

Sulphate concentrations also exhibited a relative narrow concentration range (8.5 to 42 mg/L) in wells located in the Class C Storage Facility area relative to the other areas (i.e., the ABM open pit and Class A and B Storage Facility areas). The highest concentrations were recorded in samples collected from wells MW16-16D (35 to 39 mg/L; average 37 mg/L) and MW15-05D (29 to 42 mg/L; average 32 mg/L), whereas the lowest concentrations were typically reported in wells MW15-03S (9.8 to 33 mg/L; average 15 mg/L) and MW15-04S (8.5 to 11 mg/L; average 9.7 mg/L). Overall, the sulphate concentrations in each well showed minimal variation over the period of record.

The ammonia-N concentrations for all samples ranged between <0.005 and 0.30 mg/L and were at least one order of magnitude below the pH-dependent YCSR standard. Concentrations were often highest for each sampling event in well MW15-03D (0.04 to 0.30 mg/L). Ammonia-N concentrations in each well were variable and generally spanned an order of magnitude over the sampling record for each well.

**Table 3-14: Summary Statistics for In situ Parameters Class C Storage Facility Area**

	Number of Samples	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	ORP (field)
Station Name		pH units	µS/cm	°C	mg/L	%	mV
BH95G-30	4-6	7.23-7.85 (7.61)	371-392 (385)	3.2-9.6 (5.9)	5.8-10.9 (8.35)	52.0-101 (73.7)	64.8 to 161 (103)
BH95G-31	6-8	7.71-8.1 (7.9)	273-300 (291)	-0.2-3.4 (2.1)	7.8-11.2 (9.12)	66.6-96.4 (76.5)	52.6 to 362 (169)
MW15-03D	11-14	6.66-7.87 (7.43)	386-395 (390)	0-6.2 (2.22)	0.52-3.76 (1.96)	6.0-34.1 (19.0)	-85.0 to 111 (-30.3)
MW15-03S	10-13	6.06-8.04 (7.53)	199-300 (271)	0.5-6.5 (2.53)	2.9-9.6 (7.34)	50.3-85.0 (71.8)	19.5 to 367 (103)
MW15-04D	10-14	7.4-7.79 (7.65)	280-344 (294)	0.9-4.6 (2.39)	1.12-280 (23.6)	9.6-30.0 (19.1)	-56.9 to 226 (12.5)
MW15-04S	10-14	7.49-7.92 (7.76)	231-245 (237.9)	0.3-5.9 (2.49)	7.12-11 (8.8)	61.0-101 (77.1)	28.7 to 349 (122)
MW15-05D	8-11	7.35-7.79 (7.57)	377-437 (389)	0-4.6 (1.6)	4.29-9.32 (7.24)	36-92.8 (64.0)	47.4 to 335 (130)
MW15-05S		Well is dry					
MW15-06	5-6	7.28-7.63 (7.43)	366-382 (372)	0.7-2.6 (1.7)	7.2-8.86 (8.39)	62.0-75.0 (71.2)	78.3 to 117 (90.7)
MW16-16D	6	7.47-7.74 (7.63)	414-443 (434)	1.1-3.3 (1.9)	1-6.87 (2.73)	8.0-58.2 (22.6)	-57.7 to 202 (27.7)

## - ## is the minimum and maximum range for the well for 2015-2016 data

(##) is the average concentration, concentrations less than the DL were taken as ½ DL values

**Table 3-15: Summary Statistics for YCSR – Schedule 3 Anions and Nutrients Class C Storage Facility Area**

	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total-colourimetric	Phosphorus, Total Dissolved
Station Name	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
YCSR – Schedule 3		2-3	1000	1.31-18.4	0.2-2	400		
BH95G-30								
Average	0.70	0.140	24.6	0.0260	0.0041	0.317	0.0562	0.0143
Minimum	0.25	0.130	22.4	0.0150	0.0010	0.279	0.0043	0.0030
Maximum	0.93	0.140	26.4	0.0470	0.0130	0.351	0.228	0.0438
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	6	6	6	6	6	6	6	6
BH95G-31								
Average	0.59	0.085	21.7	0.0737	0.0035	0.202	0.920	0.113
Minimum	0.25	0.011	14.8	0.0025	0.0010	0.161	0.0129	0.0028
Maximum	0.81	0.100	25.4	0.220	0.0075	0.230	4.67	0.372
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	8	8	8	8
MW15-03D								
Average	0.69	0.150	22.8	0.107	0.0010	0.0016	0.0062	0.0047
Minimum	0.25	0.140	21.1	0.0400	0.0010	0.0010	0.0027	0.0021

	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, Total- colourimetric	Phosphorus, Total Dissolved
Maximum	1.70	0.170	25.3	0.300	0.0010	0.0033	0.0151	0.0101
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	14	14	14	14	14	14	14	13
MW15-03S								
Average	0.85	0.077	14.5	0.0430	0.0032	0.109	1.79	1.08
Minimum	0.25	0.054	9.8	0.0110	0.0010	0.0454	0.0144	0.0027
Maximum	1.70	0.130	33.3	0.150	0.0093	0.235	9.38	9.24
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	13	13	13	12
MW15-04D								
Average	0.82	0.210	20.6	0.0390	0.0020	0.0085	1.36	0.0574
Minimum	0.25	0.200	17.8	0.0150	0.0010	0.0010	0.0059	0.0026
Maximum	2.60	0.240	34.8	0.110	0.0050	0.0256	9.09	0.513
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	14	14	14	14	14	14	14	13
MW15-04S								
Average	0.66	0.085	9.7	0.0460	0.0038	0.205	0.959	0.155
Minimum	0.25	0.078	8.5	0.0110	0.0010	0.155	0.0188	0.0023
Maximum	1.10	0.100	10.5	0.0900	0.0130	0.236	2.66	0.759
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	14	14	14	14	14	14	14	13
MW15-05D								
Average	0.74	0.130	31.5	0.0266	0.0034	0.222	0.109	0.0128
Minimum	0.25	0.110	29.0	0.0025	0.0010	0.122	0.0032	0.0010
Maximum	1.80	0.180	42.2	0.0560	0.0161	0.259	0.327	0.0353
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	11	11	11	11	11	11	11	10
MW15-05S								
n/a	Well is dry							
MW15-06								
Average	0.96	0.120	22.7	0.0435	0.0029	0.333	0.0690	0.0305
Minimum	0.67	0.110	21.8	0.0051	0.0010	0.307	0.0049	0.0025
Maximum	1.30	0.120	23.1	0.100	0.0072	0.356	0.173	0.105
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	6	6	6	6	6	6	6	6
MW16-16D								
Average	0.50	0.146	37.2	0.0240	0.0020	0.0012	0.145	0.0479
Minimum	0.25	0.005	35.0	0.0090	0.0010	0.0010	0.0241	0.0080
Maximum	0.67	0.180	38.9	0.0510	0.0058	0.0023	0.595	0.0908
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	6	6	6	6	6	6	6	6

### 3.3.4.3 Metals

Metals concentrations within the Class C Storage Facility area were generally quite low with no exceedances of YCSR standards. Dissolved aluminium and iron, which have no YCSR standards, exceeded their FIGWQG (Table 3-16 and Appendix D-4) in one or more samples.

Dissolved iron concentrations were generally lower in the Class C Storage Facility area than in other areas at the KZK site. The highest average dissolved iron concentration was in well MW15-03D (0.577 mg/L), from which the majority of samples exceeded the FIGWQG guideline (0.3 mg/L), whereas BH95G-30, MW15-05D and MW15-06 wells returned average dissolved iron concentrations less than 0.01 mg/L. Sporadic FIGWQG guideline exceedances were also observed in single samples collected from wells MW15-04S and MW16-16D; however, the dissolved iron concentrations observed in these wells spanned two to three orders of magnitude. There was no obvious correlation between dissolved iron concentration in overburden or bedrock wells.

Within the Class C Storage Facility area there was a single exceedance of the FIGWQG for dissolved aluminium (0.1 mg/L if pH > 6.5, 0.005 mg/L if pH < 6.5), which occurred in March 2016 at MW15-03S. Concentrations in MW15-03S, ranged from 0.0018 to 0.0266 mg/L, followed by MW15-03D, ranging from 0.00057 to 0.0144 mg/L. BH95G-30 had a spike in September 2015 of 0.013 mg/L, but ranged from 0.0005 to 0.0010 mg/L. The highest concentration recorded was in BH95G-31, which had a peak of 0.085 mg/L (November 2015), but otherwise ranged from 0.002 to 0.005 mg/L. The aluminum concentration from the 4<sup>th</sup> September 1995 data point was 0.015 mg/L, within the minimum and maximum ranged collected in the 2015 to 2017 dataset (0.0005 to 0.0852 mg/L).

Concentrations of dissolved arsenic were generally quite low, ranging between 0.000028 and 0.0033 mg/L for all wells and well below the YCSR standard (0.05 mg/L). The highest dissolved arsenic concentrations were generally encountered in wells MW15-03D and MW15-04D, which had very similar concentrations and trends over time with averages of 0.0019 and 0.0015 mg/L, respectively. The six samples collected from MW16-16D returned dissolved arsenic concentrations that ranged from 0.0001 to 0.00054 mg/L. Monitoring wells MW15-04S, MW15-03S, MW15-05D, and BH95G-31 had similar dissolved arsenic concentrations over the period of record, ranging from 0.00004 to 0.0003 mg/L with the exception of the MW15-04S September 2017 sample (0.0026 mg/L). The remainder of the wells were generally under 0.0001 mg/L. The arsenic concentration from the 4<sup>th</sup> September 1995 data point was 0.000006 mg/L, within the minimum and maximum range collected in the 2015 to 2017 dataset (0.0000025 to 0.00024 mg/L).

The September 2017 sampling event at well MW14-04S returned the highest dissolved copper concentration within the Class C Storage Facility area throughout the period of record (0.014 mg/L); dissolved copper levels in samples from this well otherwise ranged from <0.00005 to 0.0012 mg/L. A few wells had dissolved copper concentrations above 0.001 mg/L:

- BH95G-31 had a concentration of 0.0013 mg/L in November 2015;
- MW15-04S had a concentration of 0.0012 mg/L in November 2015;
- MW15-03S had a concentration of 0.0020 mg/L in March 2016;
- MW15-05D had a concentration 0.0017 mg/L in May 2016; and
- MW15-03D had a concentration of 0.0016 mg/L in August 2016.



Otherwise all dissolved copper concentrations were below 0.001 mg/L. The copper concentration from the 4th September 1995 data point was 0.0007 mg/L, within the minimum and maximum range collected in the 2015 to 2017 dataset (0.000025 to 0.002 mg/L).

Overall dissolved selenium concentrations had very little fluctuation in concentrations over the period of record within the Class C Storage Facility area, but displayed a wide span between <0.00004 and 0.0029 mg/L. Four monitoring wells within the Class C Storage Facility area consistently exceeded 0.001 mg/L with very similar concentration ranges (0.0010 to 0.0029 mg/L): BH95G-30, BH95G-31, MW15-05D, and MW15-06. MW15-04S dissolved selenium levels ranged from 0.00070 to 0.00085 mg/L, and were generally an order of magnitude higher than its companion nested bedrock well MW15-04D (0.00002 to 0.0004 mg/L). The same pattern occurred for nested wells MW15-03S and MW15-03D, where the shallow well returned dissolved selenium concentrations that ranged from 0.00017 to 0.00032 mg/L, whereas concentrations in the deeper MW15-03D well were an order of magnitude lower, ranging from 0.00002 to 0.00026 mg/L.

Monitoring wells BH95G-30 and MW15-06 are bedrock and overburden paired wells, respectively, that had the highest dissolved cadmium concentrations, ranging from 0.000095 to 0.00018 mg/L. The remainder of the Class C Monitoring wells had dissolved cadmium concentrations below 0.0001 mg/L.

Within the Class C Storage Facility area, dissolved zinc concentrations were at least two orders of magnitude below the hardness-dependent YCSR standard. Samples collected from well BH95G-30 generally had the highest and most consistent concentrations of dissolved zinc, ranging from 0.007 to 0.009 mg/L. MW15-05D had a higher concentration than BH95G-30 for one event in May 2016, and fluctuated by over an order of magnitude over the period of record (0.00053 to 0.011 mg/L). MW15-03S and MW15-04S also fluctuated significantly over the period of record with a range of 0.00005 to 0.0106 mg/L, and 0.00005 to 0.018 mg/L, respectively. The remainder of the Class C monitoring wells were generally below a dissolved zinc concentration of 0.001 mg/L. The zinc concentration from the 4<sup>th</sup> September 1995 data point was 0.003 mg/L, within the minimum and maximum range collected in the 2015 to 2017 dataset (0.00005 to 0.011 mg/L).

All dissolved lead concentrations were less than 0.003 mg/L except for MW15-04S in September 2017 with a concentration of 0.007 mg/L. Samples collected from well MW15-05D typically had the highest concentrations in the Class C Storage Facility area, ranging from 0.000008 to 0.00022 mg/L. BH95G-31 had a peak in November 2015 with a dissolved lead concentration of 0.00026 mg/L, but otherwise ranged from 0.000012 to 0.000047 mg/L. MW15-04D and MW15-03S had similar concentrations, ranging from below the detection limit (<0.000005 mg/L) to 0.00027 mg/L. BH95G-30 ranged from 0.000006 to 0.000084 mg/L. The remainder of the monitoring wells in the Class C Storage Facility area generally had dissolved lead concentrations below 0.00001 mg/L.

There was no evidence of a clear distinction between the bedrock and overburden wells in terms of water quality with the three years of baseline data collected. Higher concentrations in metals were more closely related to location and redox regime, over the difference between overburden and bedrock.

**Table 3-16: Summary Statistics for Metals in Class C Storage Facility Area**

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
Station Name	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
YCSR – Schedule 3		0.05	0.0001-0.0006	0.02-0.09		0.04-0.16	0.01	0.075-2.4
BH95G-30								
Average	0.00319	0.000052	0.000132	0.000470	0.0077	0.000031	0.00248	0.00788
Minimum	0.00050	0.000028	0.000095	0.000262	0.0005	0.000006	0.00211	0.00697
Maximum	0.0129	0.000085	0.000186	0.000623	0.0149	0.000084	0.00277	0.00926

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	6	6	6	6	2	6	6	6
<b>BH95G-31</b>								
Average	0.0134	0.000125	0.000020	0.000607	0.0194	0.000056	0.00150	0.00095
Minimum	0.00182	0.000048	0.000015	0.000334	0.0005	0.000012	0.00104	0.00005
Maximum	0.0852	0.000248	0.000023	0.00132	0.0875	0.000259	0.00175	0.00260
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	8	8	8	8	5	8	8	8
<b>MW15-03D</b>								
Average	0.00365	0.00186	0.0000035	0.000172	0.577	0.0000087	0.000037	0.00086
Minimum	0.00057	0.00106	0.0000025	0.000025	0.161	0.0000025	0.000020	0.00011
Maximum	0.0144	0.00327	0.0000100	0.00162	0.911	0.0000440	0.000256	0.00353
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	14	14	14	14	8	14	14	14
<b>MW15-03S</b>								
Average	0.00689	0.000186	0.0000160	0.000474	0.0347	0.0000420	0.000245	0.00132
Minimum	0.00182	0.000122	0.0000050	0.000072	0.0031	0.0000025	0.000173	0.00005
Maximum	0.0266	0.000270	0.0000330	0.00202	0.112	0.000260	0.000322	0.0106
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	13	13	13	13	7	13	13	13
<b>MW15-04D</b>								
Average	0.00326	0.00145	0.0000159	0.000171	0.130	0.0000331	0.000093	0.00165
Minimum	0.00078	0.000804	0.0000025	0.000025	0.0016	0.0000025	0.000020	0.00016
Maximum	0.0199	0.00184	0.0000400	0.000885	0.258	0.000271	0.000404	0.00956
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	14	14	14	14	8	14	14	14
<b>MW15-04S</b>								
Average	0.163	0.000388	0.0000211	0.00140	0.326	0.000530	0.000766	0.00195
Minimum	0.00160	0.000155	0.0000025	0.000025	0.0005	0.0000025	0.000701	0.00005
Maximum	2.24	0.00260	0.000214	0.0142	2.59	0.00736	0.000848	0.0183
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	14	14	14	14	8	14	14	14
<b>MW15-05D</b>								
Average	0.00292	0.000118	0.000065	0.000392	0.00552	0.0000970	0.00167	0.00315
Minimum	0.00053	0.000040	0.000027	0.000079	0.0005	0.0000080	0.00149	0.00053
Maximum	0.00750	0.000220	0.000197	0.00166	0.0106	0.000215	0.00182	0.0112
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	11	11	11	11	5	11	11	11
<b>MW15-05S</b>								
n/a	Well is dry							
<b>MW15-06</b>								
Average	0.00180	0.000059	0.000153	0.000429	0.00165	0.0000108	0.00262	0.00283
Minimum	0.00098	0.000037	0.000135	0.000341	0.001	0.0000025	0.00238	0.00143
Maximum	0.00255	0.000102	0.000175	0.000593	0.0023	0.0000170	0.00285	0.00400
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	6	6	6	6	2	6	6	6

Metal (dissolved)	Al	As	Cd	Cu	Fe	Pb	Se	Zn
MW16-16D								
Average	0.00305	0.000298	0.0000038	0.000041	0.319	0.0000097	0.000035	0.00143
Minimum	0.00070	0.000103	0.0000025	0.000025	0.0023	0.0000025	0.000020	0.00014
Maximum	0.00467	0.000538	0.0000080	0.000090	0.58	0.0000250	0.000111	0.00581
Count Over YCSR	0	0	0	0	0	0	0	0
% Over YCSR	0	0	0	0	0	0	0	0
# of Samples	6	6	6	6	4	6	6	6
* See Table 2.6 for YCSR standard								

### 3.3.5 Site Groundwater Quality Observations

#### 3.3.5.1 Physical Parameters and Nutrients

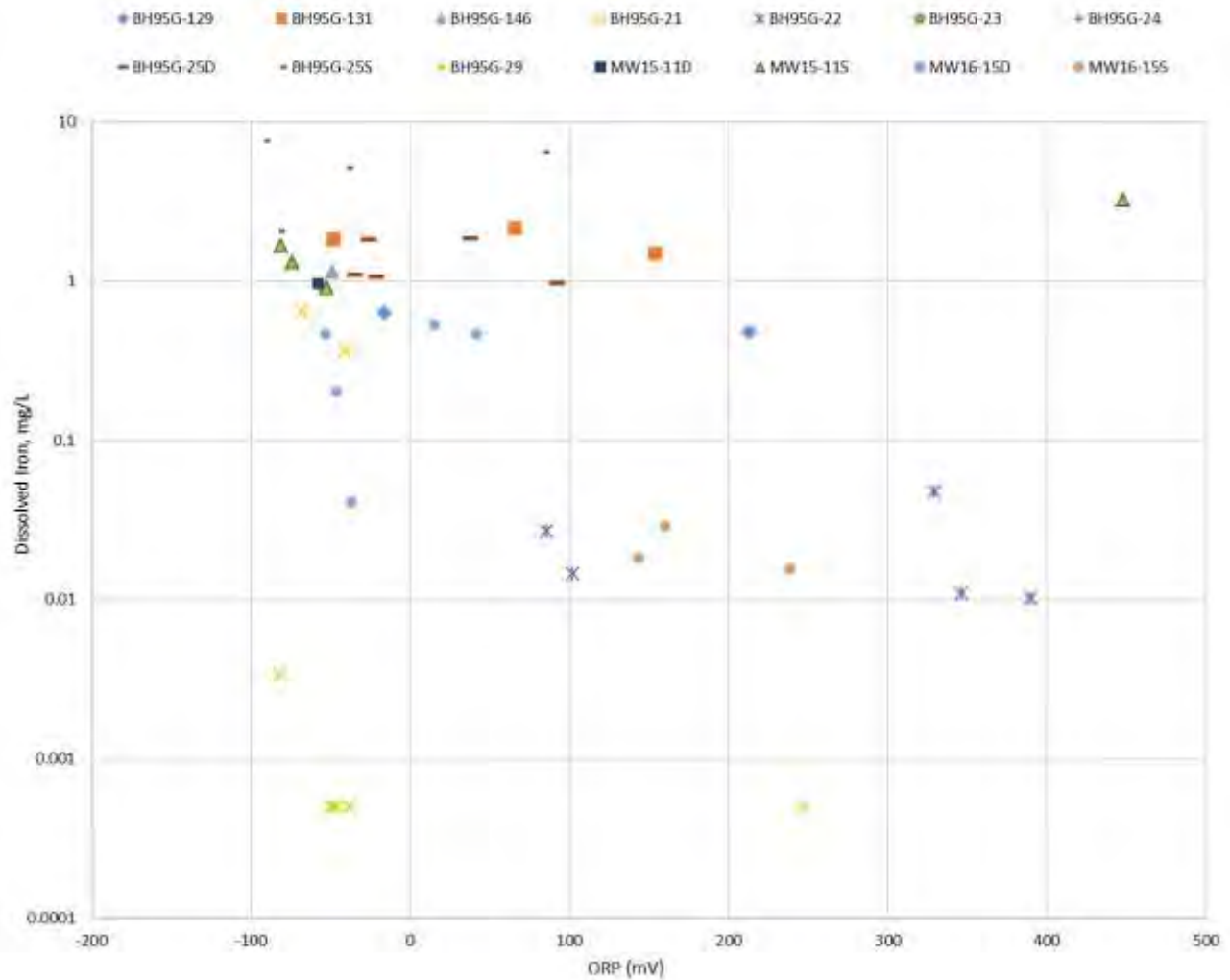
Throughout the KZK Project area field pH values ranged from 5.7 to 8.63, with an average pH value of 7.5, for both bedrock and overburden wells (Table 3-17). Field measured oxidation and reduction potential ranged from -115 mV to +448 mV indicating that some wells are screened in material with reducing conditions and others in oxidizing conditions. The higher dissolved iron concentrations in the ABM open pit area groundwater tended to occur at lower redox potential, as shown on Figure 3-10, suggesting the reducing conditions were responsible for the elevated iron levels observed.

Sulphate concentrations were generally much higher in the ABM open pit area, with maximum concentration of 280 mg/L and an average of 123 mg/L, relative to the rest of the Project area, which averaged 31 mg/L. Higher sulphate concentrations in the vicinity of the ABM open pit area is likely due to the oxidation of the sulphidic minerals in the deposit. Sulphate concentrations did seem to vary between overburden and bedrock wells across the site with deep wells tending to have slightly higher concentrations than shallow wells.

Ammonia was elevated in several wells spread across the entire KZK Project area and was not specific to a particular area, although the concentrations observed were generally higher in the ABM open pit area. Fluoride was elevated in many wells across the site, and was one of the few parameters to indicate a difference between bedrock and overburden concentrations, primarily in the Class A and Class C Storage Facility areas. Bedrock wells tended to have higher fluoride concentrations than the overburden wells likely reflecting the water-rock interaction and the leaching of fluoride from host rock minerals, such as mica. Fluoride concentrations across the site were the most consistent with little fluctuation relative to the other general parameters and metals.

#### 3.3.5.2 Metals

Many of the parameters summarized above fluctuated significantly over the period of record. There was very little indication that metals varied from bedrock wells compared to overburden wells. Dissolved cadmium, arsenic, zinc and cobalt were the only elements to exceed a YCSR – Schedule 3 standard; of these metals, cadmium exceeded most frequently (29 samples from five wells). Cadmium, arsenic, selenium, and zinc were also consistently elevated above the FIGWQG across the KZK site and are considered constituents of potential interest (COPI) for the KZK Project. Geochemical testing and the water quality modelling conducted for the site also indicate that these elements are COPI for meeting long term water quality objectives.



**Figure 3-10: ORP vs Dissolved Iron Concentration within the ABM Open Pit area**

Dissolved arsenic was slightly more elevated in the ABM open pit area, with an average concentration of 0.0038 mg/L, compared to the rest of the KZK Project area, with an average of 0.0009 mg/L. Dissolved zinc concentrations were higher in the ABM open pit area as well as in the wells that were located in the bottom of the valley beside Geona Creek, downgradient of the proposed ABM open pit. Similar to zinc, total iron was elevated in the ABM open pit area, as well as in the bottom of the Geona Creek valley. Cadmium and lead concentrations had similar concentrations in the pit compared to the rest of the Project area. Dissolved selenium was elevated across the KZK Project in numerous wells; however, concentrations in select wells were much higher in the Class A and B areas.

The concentrations of zinc within the pit area, are likely elevated compared to the rest of the KZK Project site due to the mineralization of this area. Elevated iron in the pit area may be related to oxidation of iron sulphide minerals in and around the mineral deposit, but are most likely governed by reducing conditions in these circumneutral groundwaters.

**Table 3-17: Summary Statistics Anions and Nutrients All Areas**

	pH (field) pH units	Specific Conductance (lab) µS/cm	Temperature (field) °C	Dissolved Oxygen (field) mg/L	Dissolved Oxygen (field) %	ORP (field) mV	Fluoride mg/L	Sulphate, dissolved mg/L	Ammonia (N) mg/L
<b>YCSR – Schedule 3 Standard</b>							2-3	1000	1.31-18.4
<b>ABM Open Pit Area</b>	5.98-8.07 (7.42)	256-1160 (639)	-0.2-10 (2.5)	0-13.1 (3.73)	2-104 (33.2)	-91.6-448 (32.46)	0.047-0.31 (0.12)	32.6-279 (123)	0.0094-1.2 (0.118)
<b>Class A Storage Facility Area</b>	5.68-8.63 (7.31)	263-3090 (783)	-0.3-6.6 (2.2)	0.4-10.7 (4.27)	6-95 (36.9)	-89.6-400 (71.46)	0.04-1.4 (0.39)	0.25-93 (30.3)	0.005-0.67 (0.108)
<b>Class B Storage Facility Area</b>	6.27-8.5 (7.51)	307-1610 (593)	-0.9-7.8 (2.1)	0-14.5 (5.46)	3.9-117 (48.5)	-115-360 (94.12)	0.012-1.1 (0.19)	0.25-138 (49.2)	0.0025-0.4 (0.077)
<b>Class C Storage Facility Area</b>	6.06-8.1 (7.65)	199-443 (328)	-0.2-9.6 (2.4)	0.5-280 (9.05)	6-101.8 (52.1)	-85-367 (73.21)	0.005-0.24 (0.13)	8.47-42 (21.3)	0.0025-0.3 (0.051)
## - ## is the minimum and maximum range for the well for 2015-2017 data (##) is the average concentration, concentrations less than the DL were taken as ½ DL values									

**Table 3-18: Summary Statistics Metals All Areas**

	Aluminum (Al), dissolved mg/L	Arsenic (As), dissolved mg/L	Cadmium (Cd), dissolved mg/L	Copper (Cu), dissolved mg/L	Iron (Fe), dissolved mg/L	Lead (Pb), dissolved mg/L	Selenium (Se), dissolved mg/L	Zinc (Zn), dissolved mg/L
<b>YCSR – Schedule 3 Standard</b>		0.05	0.0001 – 0.0006	0.02 – 0.09		0.04 – 0.16	0.01	0.075 – 2.4
<b>ABM Open Pit Area</b>	0.00025-0.046 (0.004)	0.000024-0.0747 (0.00379)	0.0000025-0.00375 (0.000197)	0.000025-0.0064 (0.00057)	0.0005 - 7.62 (1.43)	0.0000025-0.0041 (0.000163)	0.00002-0.0032 (0.00029)	0.00005-2.03 (0.038)
<b>Class A Storage Facility Area</b>	0.00025-1.51 (0.0466)	0.00001-0.0117 (0.00136)	0.0000025-0.00165 (0.000351)	0.000025-0.0358 (0.00105)	0.0005 - 36.6 (4.8)	0.0000025-0.0177 (0.000278)	0.00002-0.0073 (0.00143)	0.00005-0.05 (0.0071)
<b>Class B Storage Facility Area</b>	0.00025-0.014 (0.0034)	0.00001-0.0257 (0.00077)	0.0000025-0.00013 (0.000022)	0.000025-0.0009 (0.00024)	0.0005 - 101 (4.1)	0.0000025-0.0002 (0.000022)	0.00002-0.0079 (0.0019)	0.00005-0.242 (0.0093)
<b>Class C Storage Facility Area</b>	0.0005-2.24 (0.0289)	0.000028-0.0033 (0.00064)	0.0000025-0.000214 (0.000037)	0.000025-0.0142 (0.00049)	0.0005 - 2.6 (0.20)	0.0000025-0.0074 (0.000113)	0.00002-0.0029 (0.00084)	0.00005-0.018 (0.0021)

## 4 SUMMARY AND CONCLUSIONS

The main conclusions from the groundwater monitoring program are as follows:

- The hydraulic properties of the KZK were assessed as overburden and bedrock. Overburden at the KZK site generally consists of two material types:
  - Fine-grained lower permeability sediments composed of silts and fine sands; and
  - Coarse-grained higher permeability sands and gravels.

For bedrock, hydraulic conductivities generally range between  $1 \times 10^{-7}$  to  $1 \times 10^{-5}$  m/s. Bedrock at the depth range of 10 m to 70 m below ground surface does not appear to have increasing or decreasing hydraulic conductivities with depth. The geometric mean of these tests is  $1.2 \times 10^{-6}$  m/s, which corresponds to the long-term bedrock pumping test conducted by EBA ( $1.7 \times 10^{-6}$  m/s).

- Groundwater elevations across the site generally had a seasonality trend in both bedrock and overburden wells with varying levels of intensity. The seasonal patterns observed are:
  - Rising water levels through the summer months (approximately May to August);
  - Peak water levels reached between August and September, depending on the year;
  - Falling water levels through the winter months (approximately October to March); and
  - Lowest levels reached between April and May, depending on the year.

Water elevations fluctuated in most monitoring wells between 2 to 8 m. However, there is a 16 m water level difference in BH95G-2 and less than 1.5 m difference in MW15-07S.

- Project wide the field pH ranged from circumneutral to slightly alkaline, 5.68 to 8.63, with an average pH value of 7.39, for both bedrock and overburden wells.
- MW15-10S and MW15-10D, had lower pH values relative to the rest of the KZK Project monitoring wells, with a range of 5.80 to 6.46, and 5.82 to 7.38, respectively. These lower pH wells are located nearby the KZ-9 east seep, which is also characterized by low pH water (pH 5.8 to 6.0), suggesting groundwater found in wells MW15-10S and MW15-10D are fed from the same source as this seep.
- Sulphate concentrations were typically more elevated within the pit area, with a maximum sulphate concentration of 279 mg/L and an average of 123 mg/L. The remainder of the KZK Project site had average sulphate concentrations of 31 mg/L. Higher concentrations in the pit area is likely due to the oxidation of the sulphidic minerals in the deposit.
- Generally, concentrations of nutrients, anions, and metals did not vary between overburden and bedrock wells; with the exception of sulphate and fluoride. In both cases deeper wells had higher concentrations.
- No YCSR standard exceedances were observed for anions or nutrients in any KZK wells.
- Ammonia was elevated in wells throughout KZK Project area and was not specific to a particular area, although the concentrations observed were generally higher in the pit area.
- Cadmium, arsenic, zinc and cobalt were the only metals to exceed YCSR – Schedule 3 standards. Dissolved arsenic, zinc and cobalt exceedances were sporadic while dissolved cadmium was elevated in five wells in the ABM open pit and Class A Storage Facility area and exceeded its YCSR standard in 29 samples.



- Concentrations of iron and zinc were elevated in the pit area relative to the rest of the KZK Project. This is likely due to the mineralization of pit area. Elevated iron in the pit area may be related to oxidation of iron sulphide minerals in and around the ABM deposit, but are most likely governed by reducing conditions in these circumneutral groundwaters.

## 5 REFERENCES

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Yukon Government (YG). 2011. *Protocol No. 7: Groundwater Monitoring Well Installation, Sampling and Decommissioning*. Retrieved from: [http://www.env.gov.yk.ca/air-water-waste/contaminated\\_sites\\_regs.php](http://www.env.gov.yk.ca/air-water-waste/contaminated_sites_regs.php)

APPENDIX A  
2016 PUMPING TEST RESULTS

## KZK Pumping Tests Conducted by AEG

Well Information							Specific Capacity Analysis					Theis Recovery Analysis			Best-Estimate Values	
ID MW16-xxx	Geologic material	Borehole diameter	Riser pipe nominal diameter	Top of test interval (a)	Bottom of test interval (a)	Saturated test interval length (a) L m	Pumping duration $t_p$ min	Average pumping rate Q L/sec	Interpreted pumping drawdown $s_p$ m	Shape factor (b) F --	Computed transmissivity T m <sup>2</sup> /day	Change in residual drawdown per log cycle $\Delta s_{10}$ m	Average pumping rate Q L/sec	Computed transmissivity T m <sup>2</sup> /day	Best-estimate transmissivity (g) T m <sup>2</sup> /day	Best-estimate hydraulic conductivity (h) K m/sec
12S	Overburden	9.6	3.175	2.60	4.16	1.56	26.08	0.0309	3.35	5.8	0.736	0.435	0.0309	1.125	0.930	6.9E-06
12D	Bedrock	9.6	3.175	20.45	26.83	6.38	30.05	0.0833	1.57	5.8	4.232	(e)			4.232	7.7E-06
14D	Bedrock	9.6	3.175	30.75	37.83	7.08	27.83	0.0735	6.31	5.8	0.929	2.04	0.0735	0.570	0.750	1.2E-06
15S	Overburden	9.6	3.175	3.61	5.26	1.65	27.17	0.0263	< 0.1	5.8	> 21	(f)			> 21	> 1.5E-04
15D	Bedrock	9.6	3.175	28.80	36.06	7.26	29.55	0.0610	3.28	5.8	1.483	0.93	0.0610	1.039	1.261	2.0E-06
16D	Bedrock	9.6	3.175	31.30	38.38	7.08	(c)	(d)	(d)			(d)				
17	Bedrock	9.6	3.175	20.30	27.11	6.81	30.12	0.0536	5.7	5.8	0.750	0.795	0.0536	1.068	0.909	1.5E-06

- (a) Test interval length is generally from the top to the bottom of the sand pack. If the static water level is below the top of sand pack, the test interval is from the static water level to the bottom of the sand pack.
- (b) For typical well completions, the shape factor normally ranges from 5.4 to 6.2; a value of 5.8 is reasonable for practical application
- (c) Three brief pumping periods over a total duration of 34.7 minutes
- (d) Cannot be analyzed due to oscillations and discontinuous pumping
- (e) Recovery too rapid for reliable analysis
- (f) Insufficient drawdown for reliable analysis
- (g) Average of specific capacity and Theis recovery transmissivities if both values calculated
- (h) Average hydraulic conductivity of geologic materials within the test interval
- bgs Below ground surface

Specific Capacity Analysis

$$T = \frac{Q F}{2 \pi s_p}$$

Theis Recovery Analysis

$$T = \frac{2.303 Q}{4 \pi \Delta s_{10}}$$

Hydraulic Conductivity

$$K = \frac{T}{L}$$

### MW16-17 Pumping Test Hydrograph Raw Data

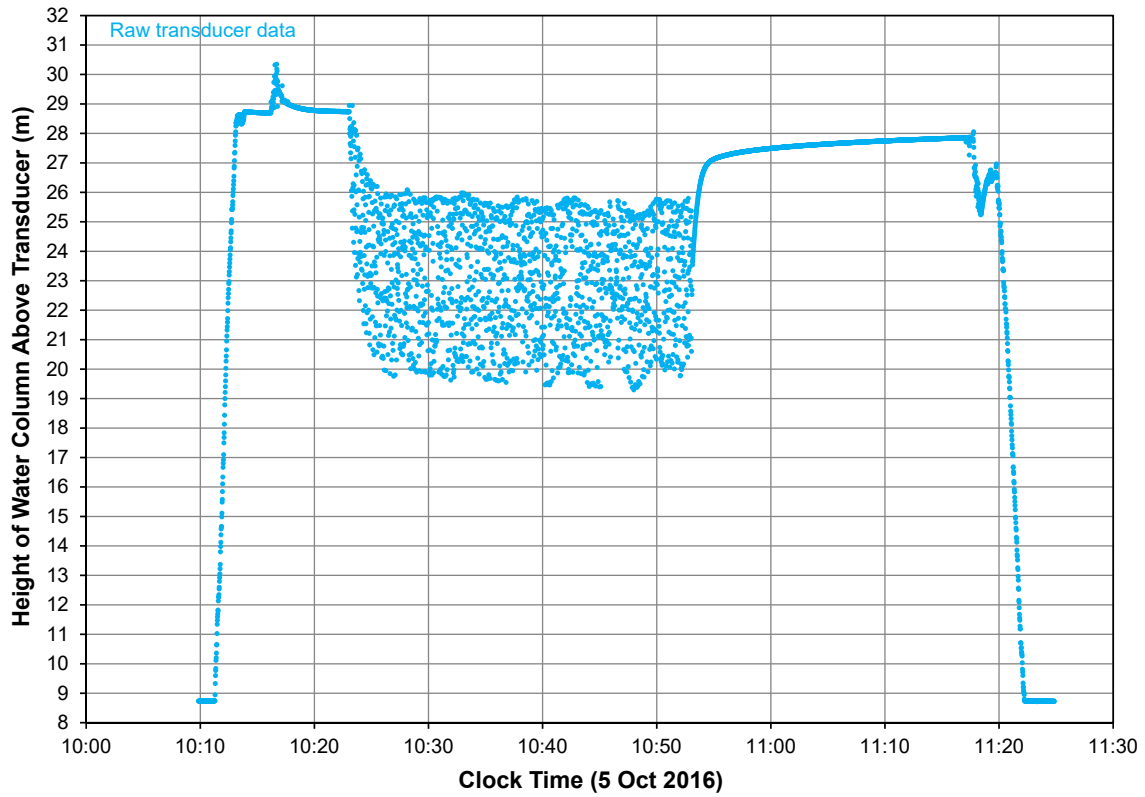


Figure A-1

### MW16-17 Pumping Test Hydrograph Moving Average

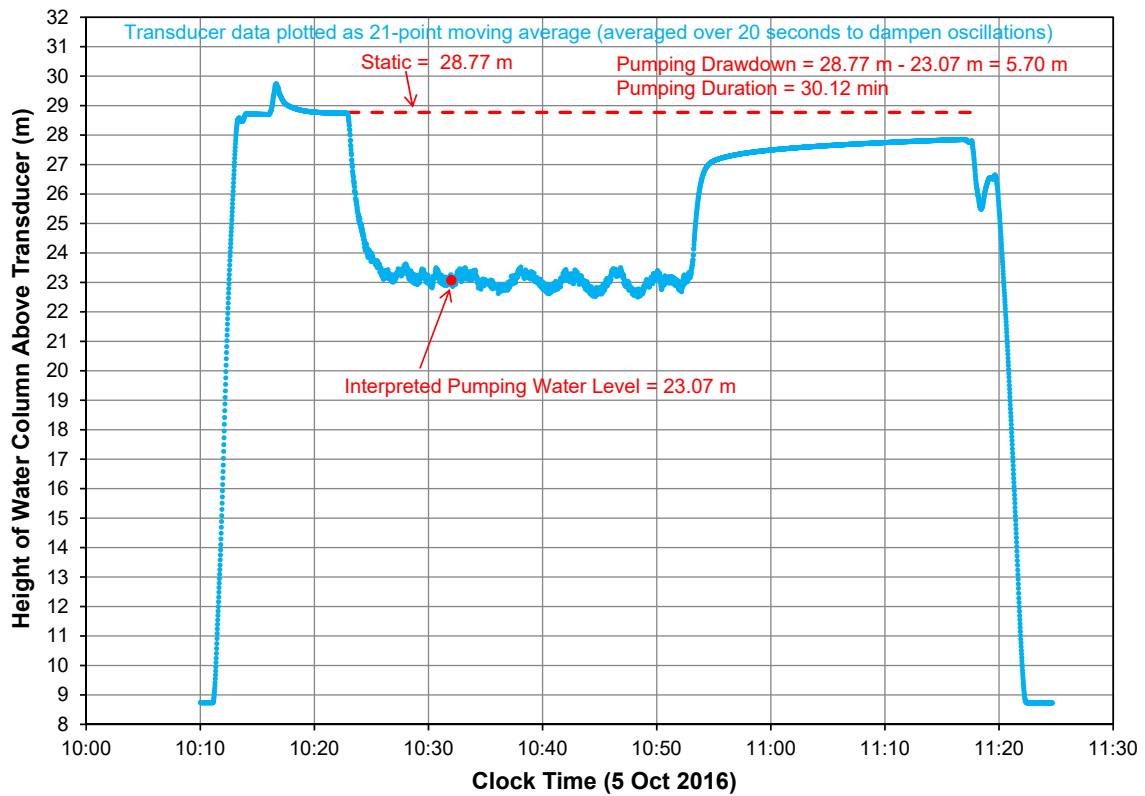


Figure A-2



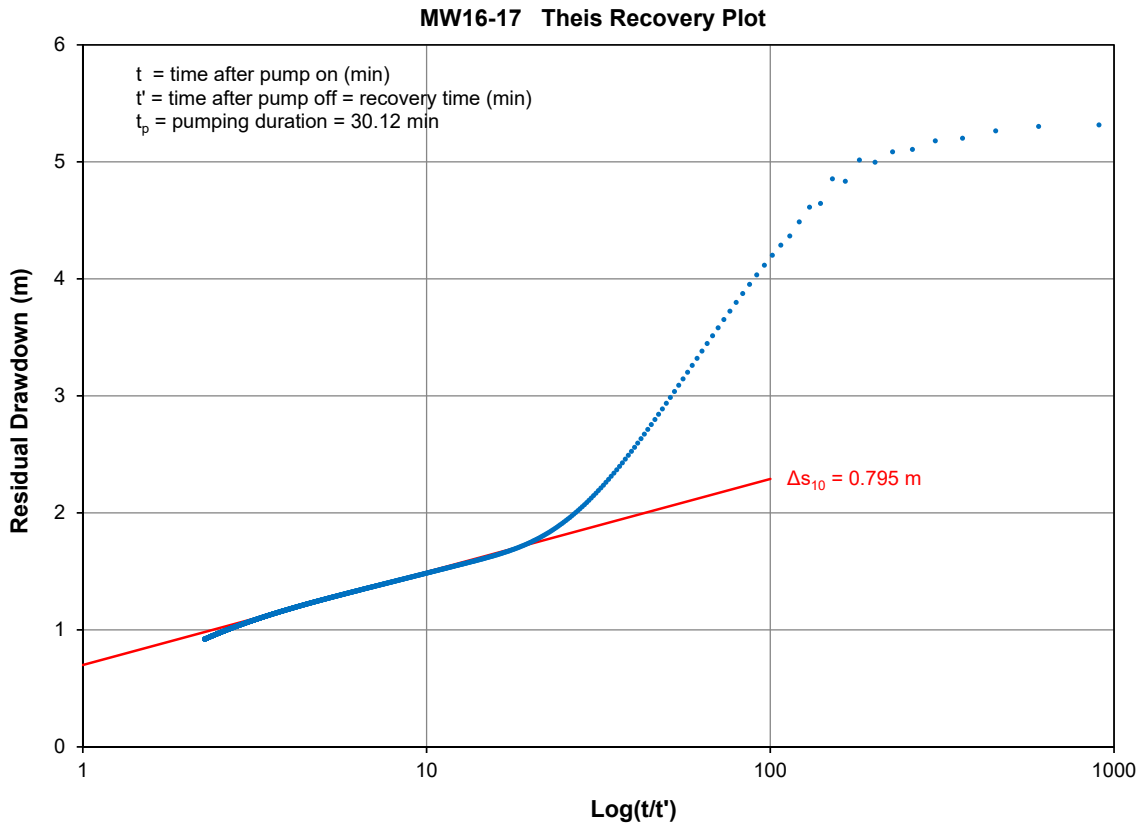


Figure A-3

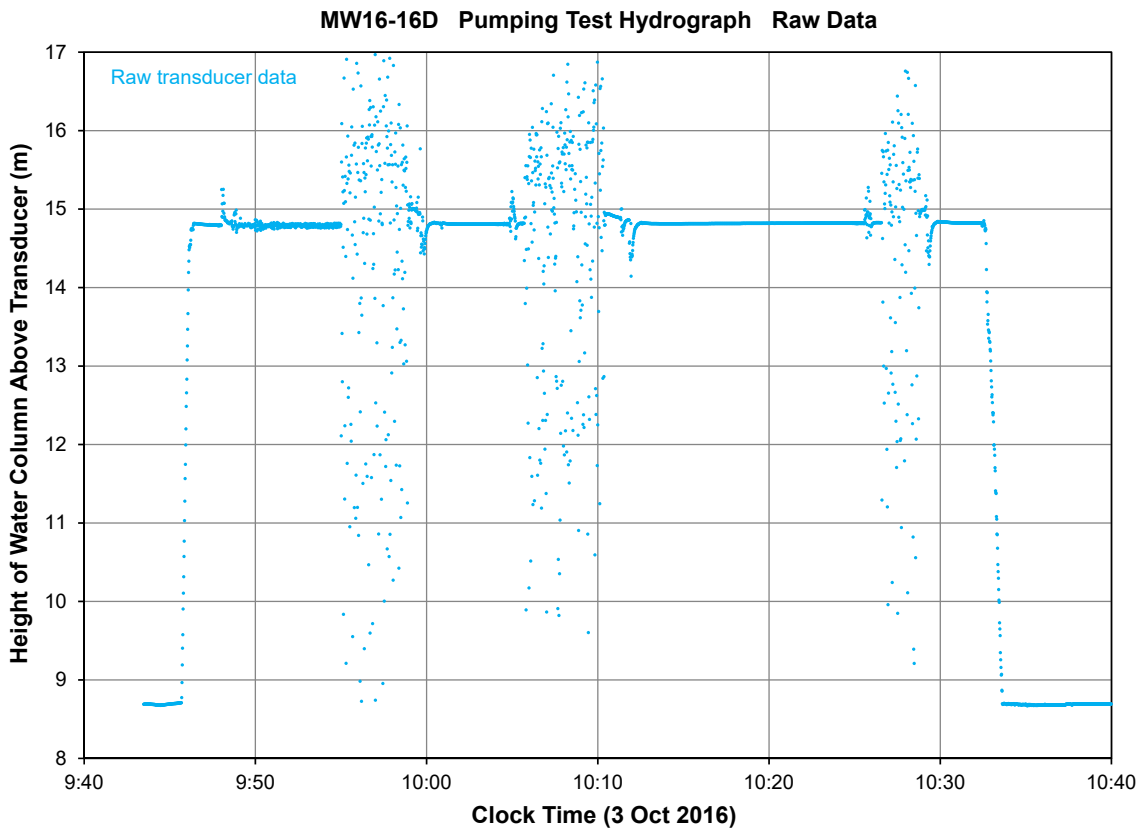


Figure A-4

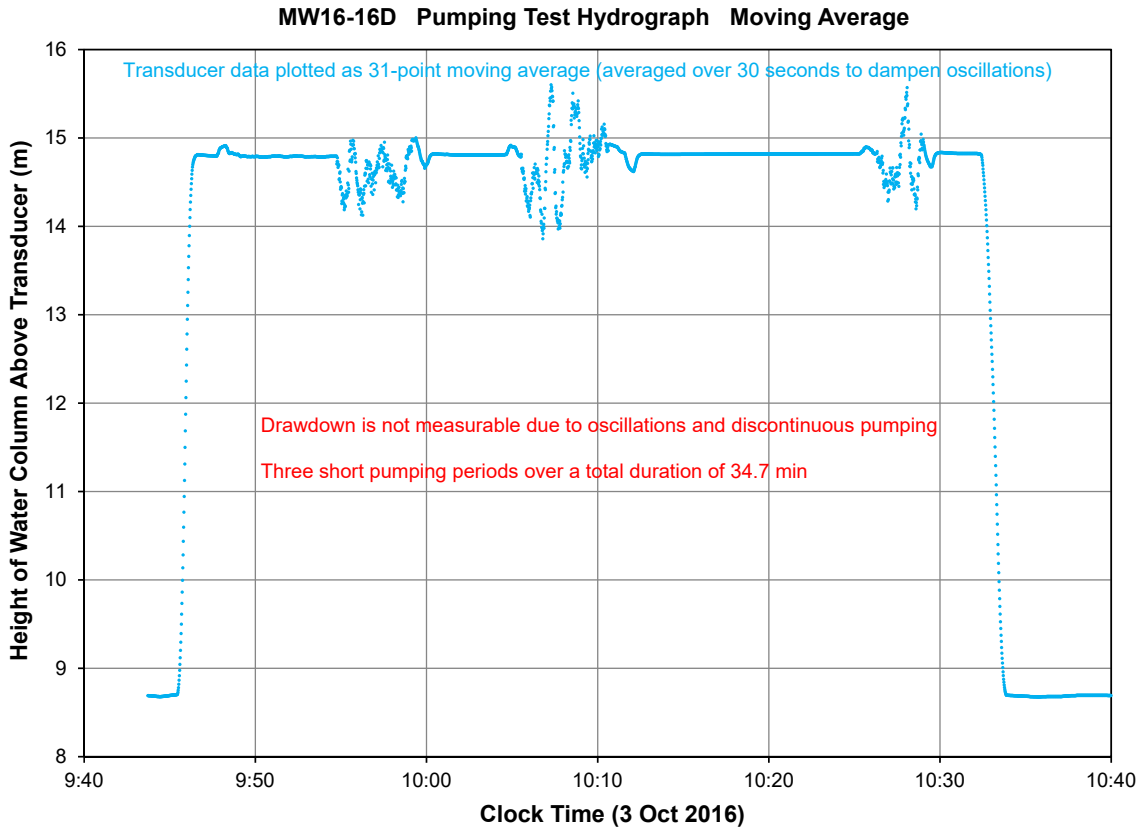


Figure A-5

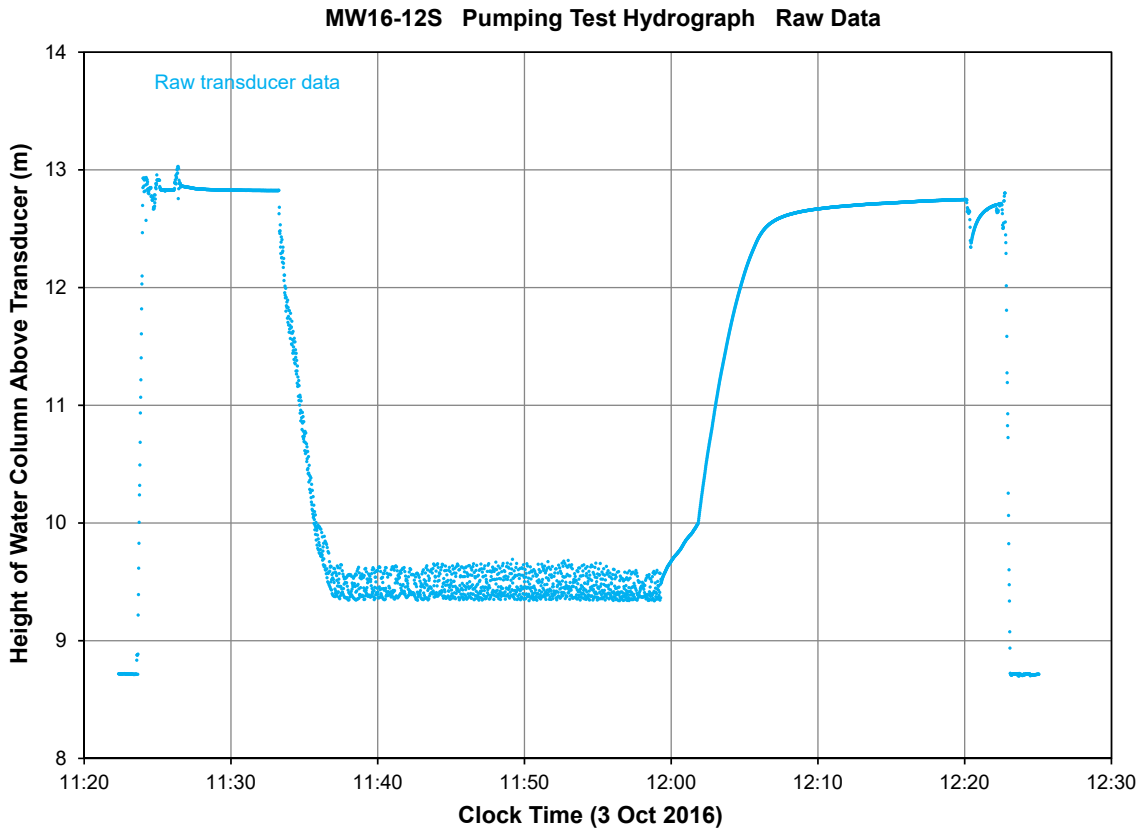


Figure A-6

MW16-12S Pumping Test Hydrograph Moving Average

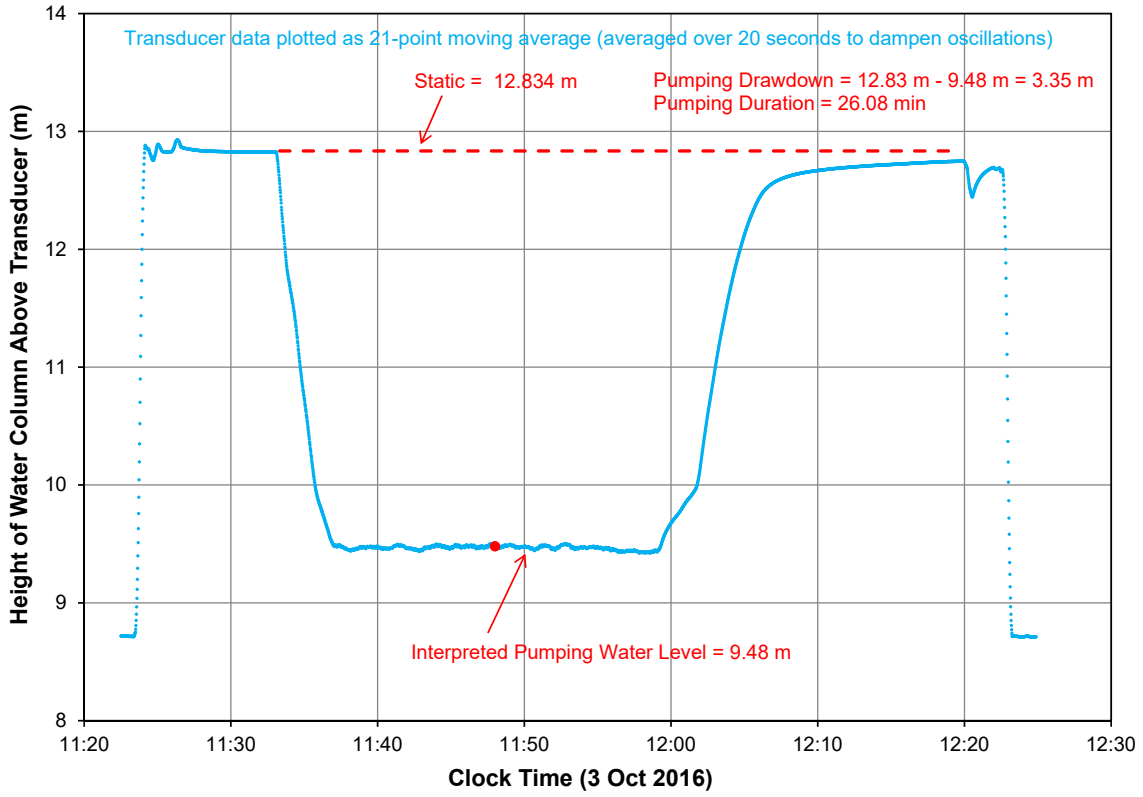


Figure A-7

MW16-12S Theis Recovery Plot

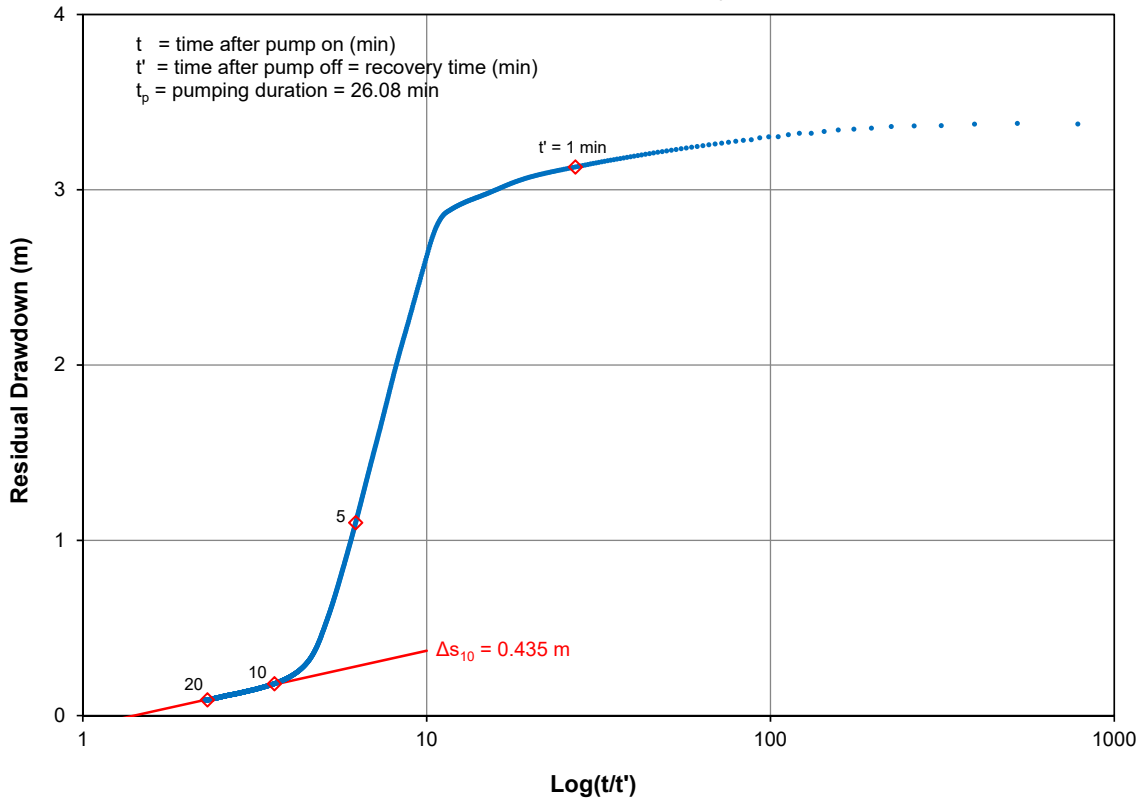


Figure A-8

### MW16-15S Pumping Test Hydrograph Raw Data

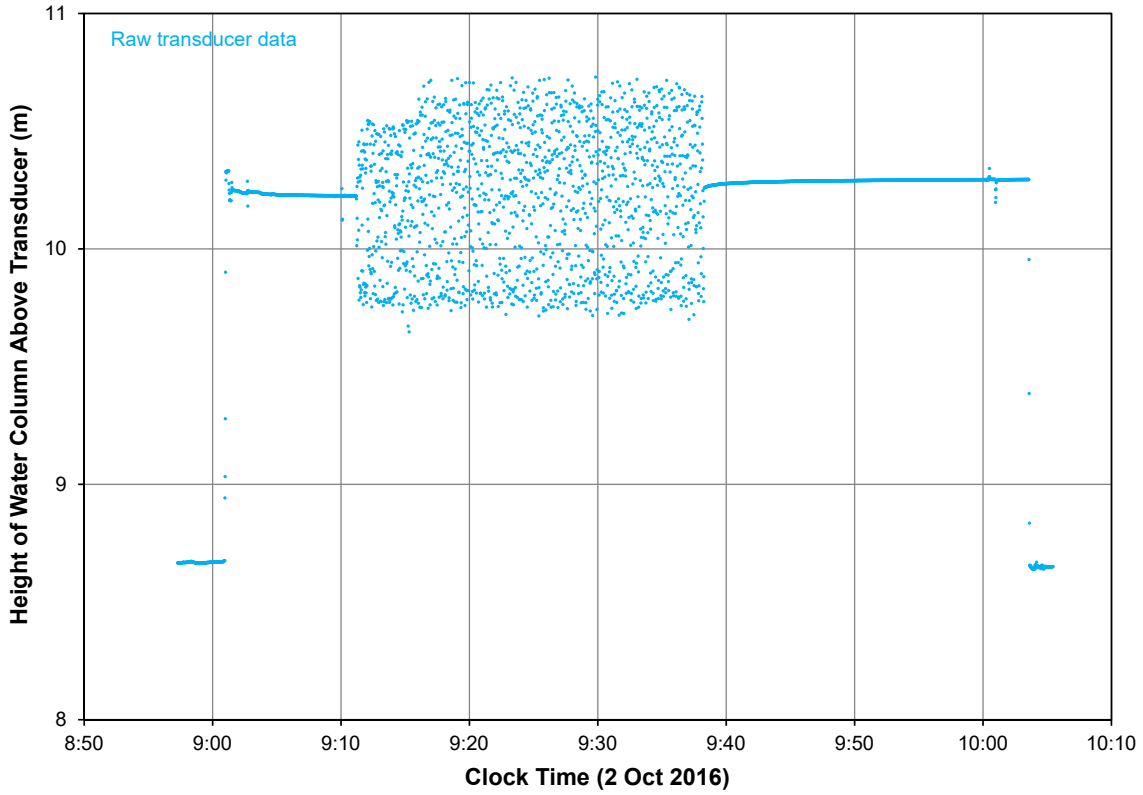


Figure A-9

### MW16-15S Pumping Test Hydrograph Moving Average

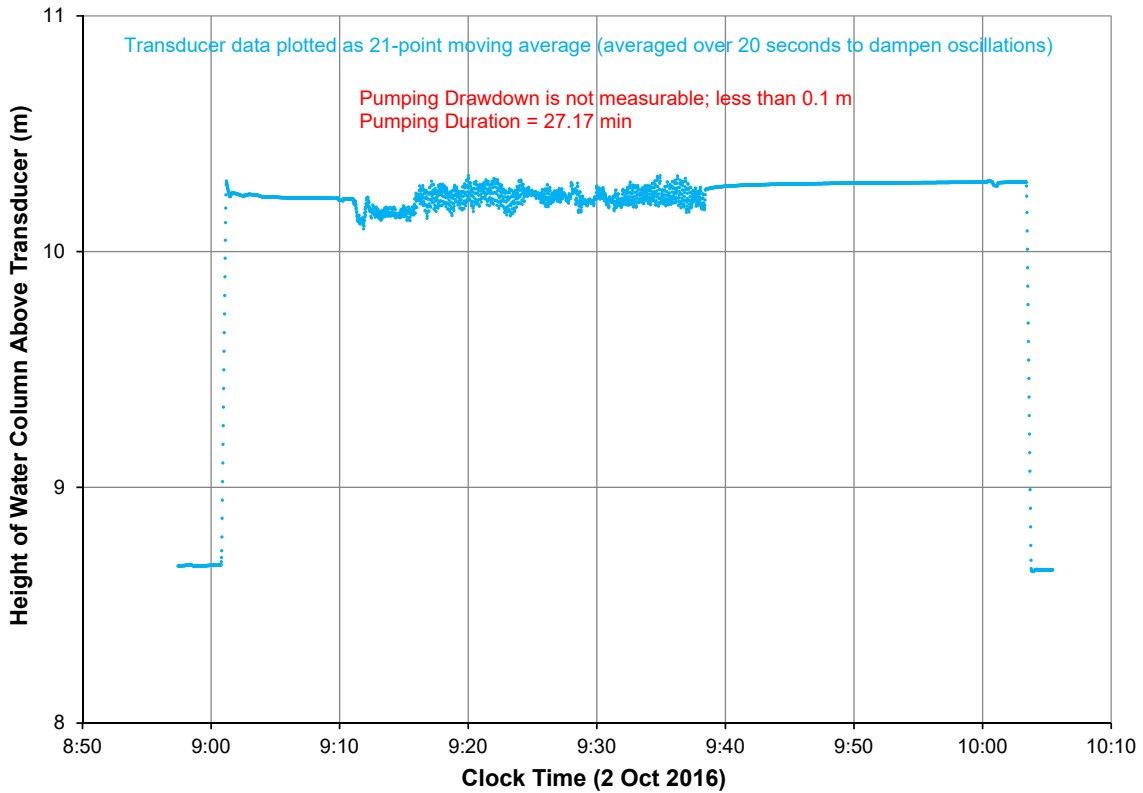


Figure A-10

### MW16-12D Pumping Test Hydrograph Raw Data

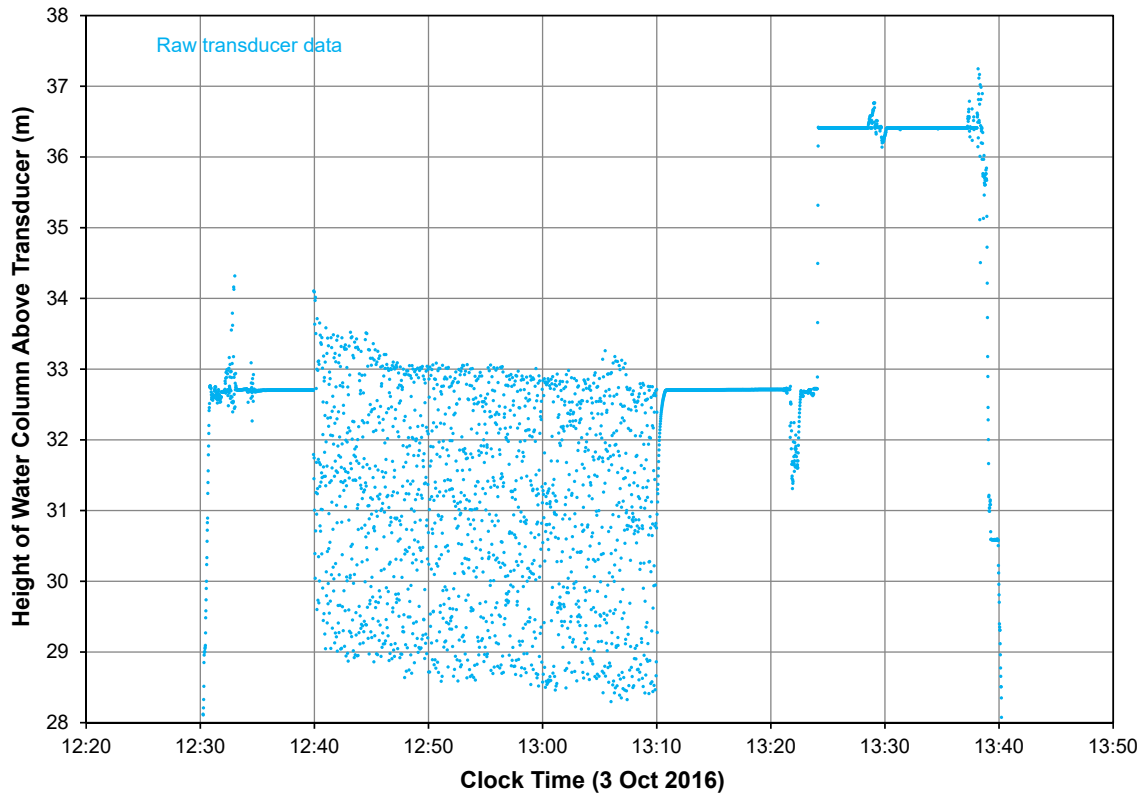


Figure A-11

### MW16-12D Pumping Test Hydrograph Moving Average

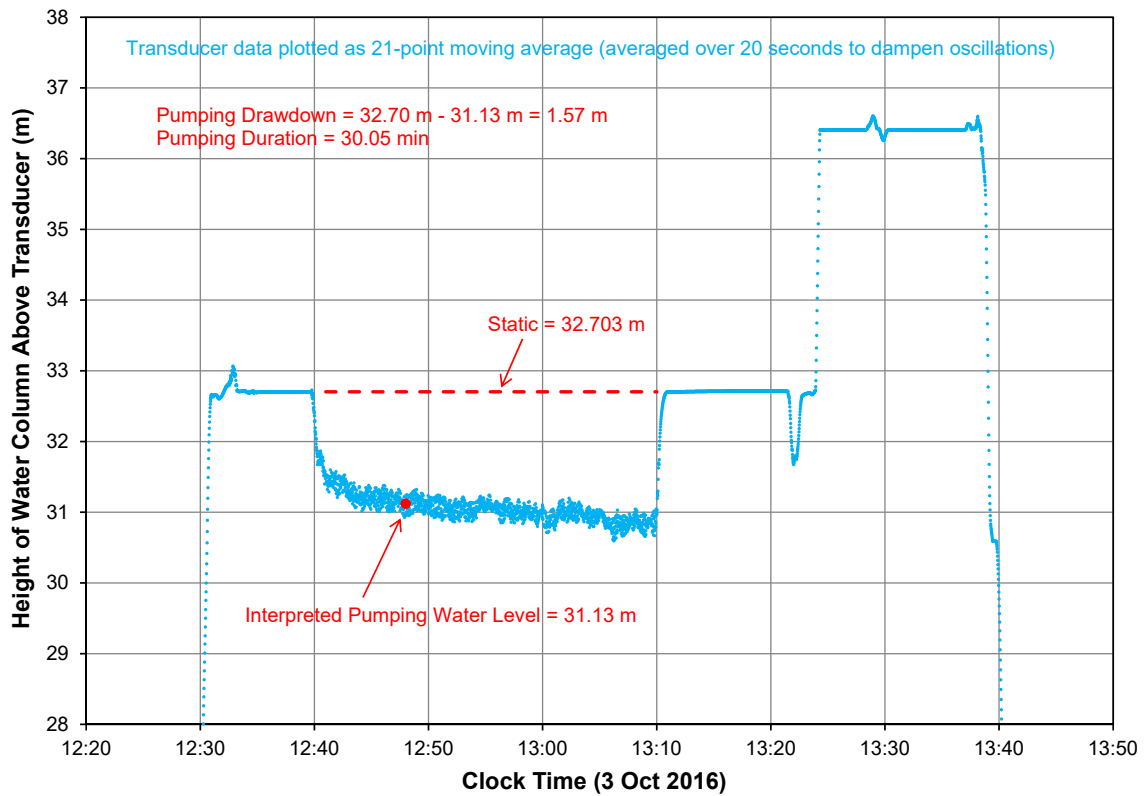


Figure A-12

### MW16-15D Pumping Test Hydrograph Raw Data

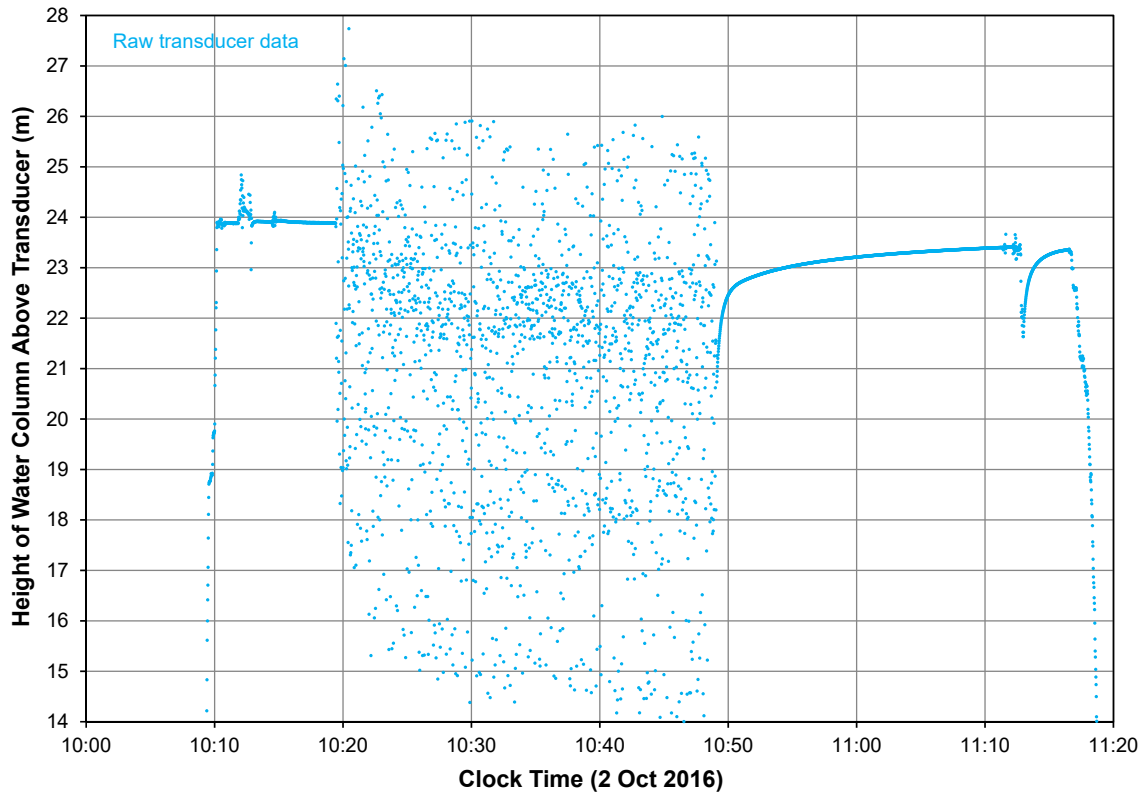


Figure A-13

### MW16-15D Pumping Test Hydrograph Moving Average

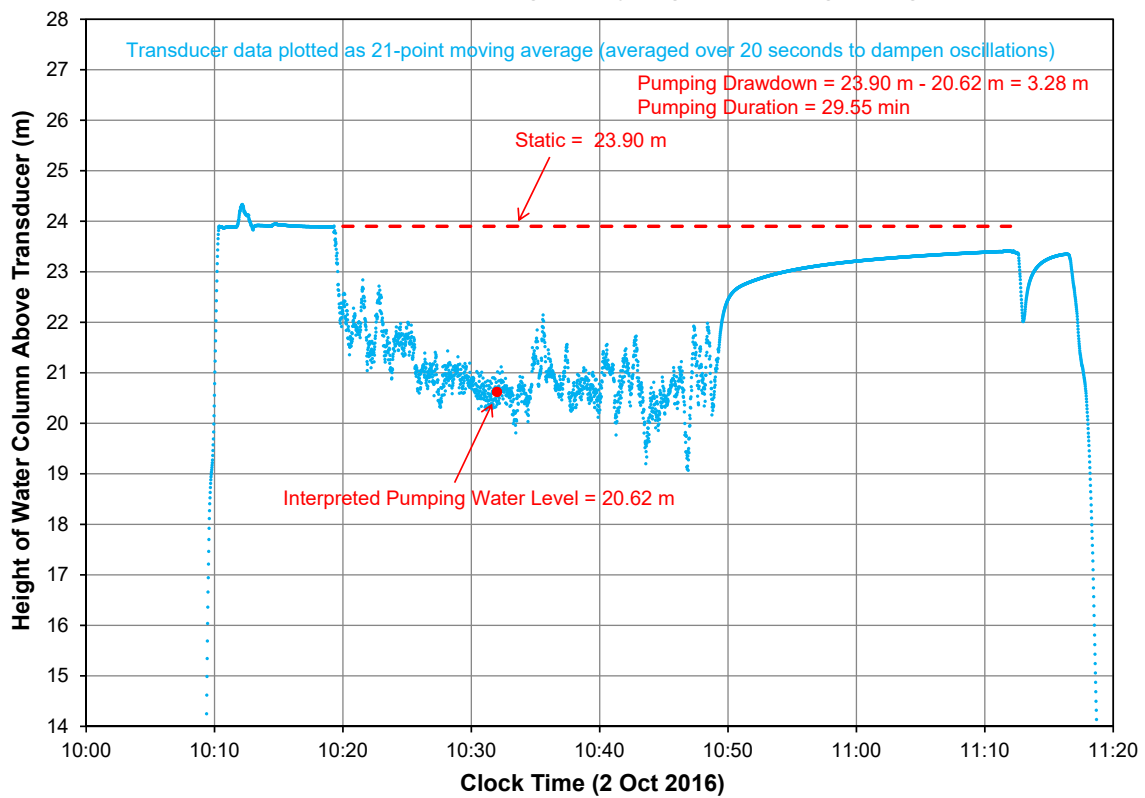


Figure A-14



### MW16-15D Theis Recovery Plot

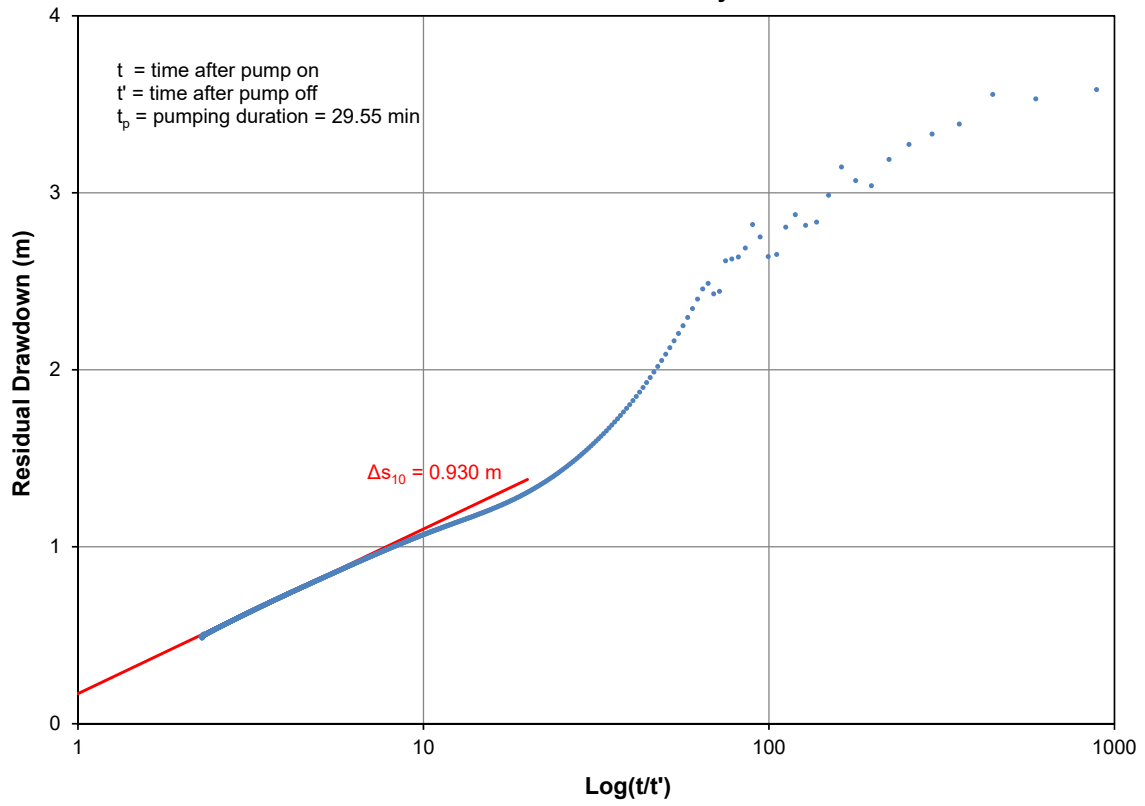


Figure A-15

APPENDIX B  
GROUNDWATER ELEVATIONS

# GROUNDWATER LEVEL PIT

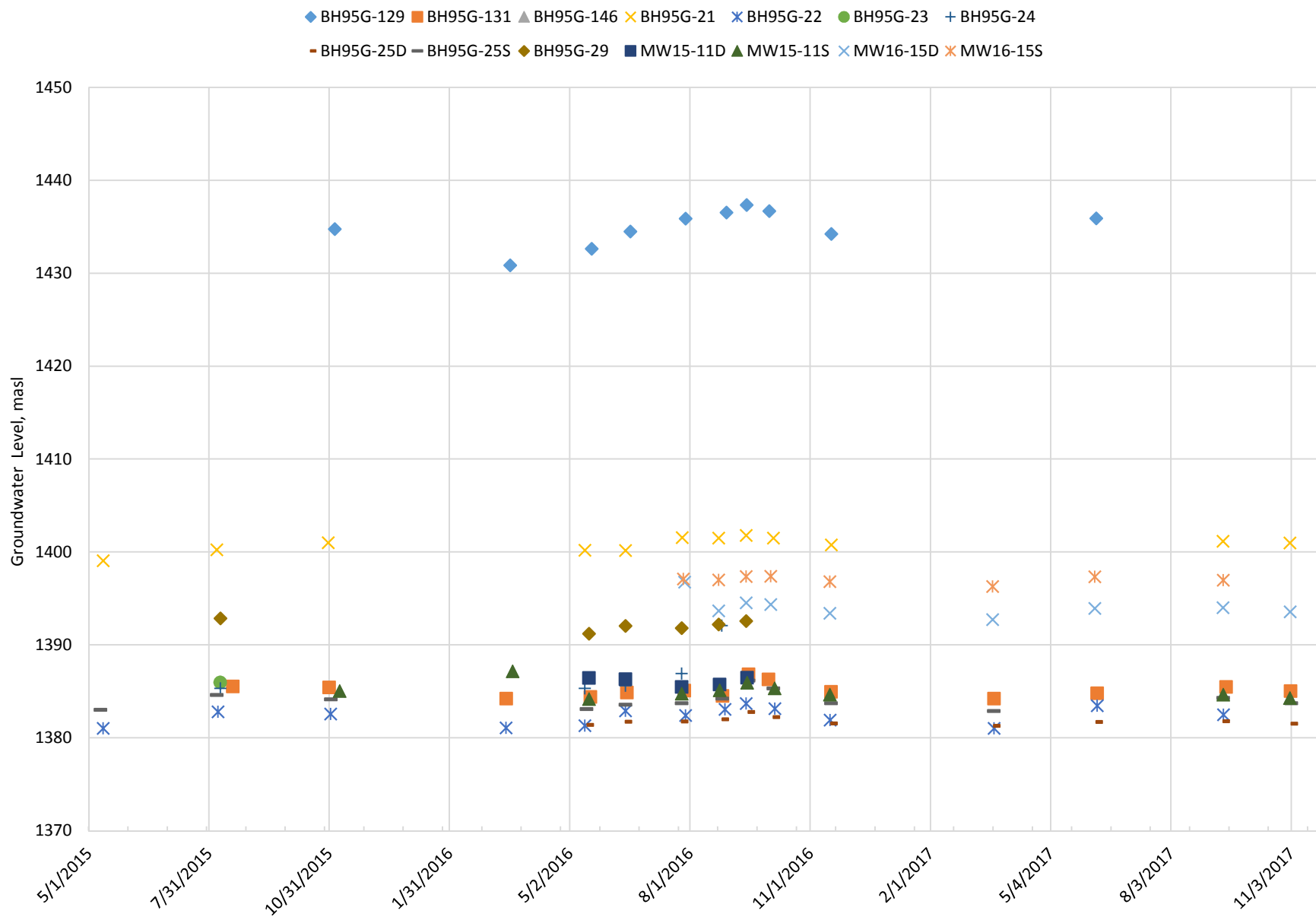


Figure A - 1

# GROUNDWATER LEVEL AREA A

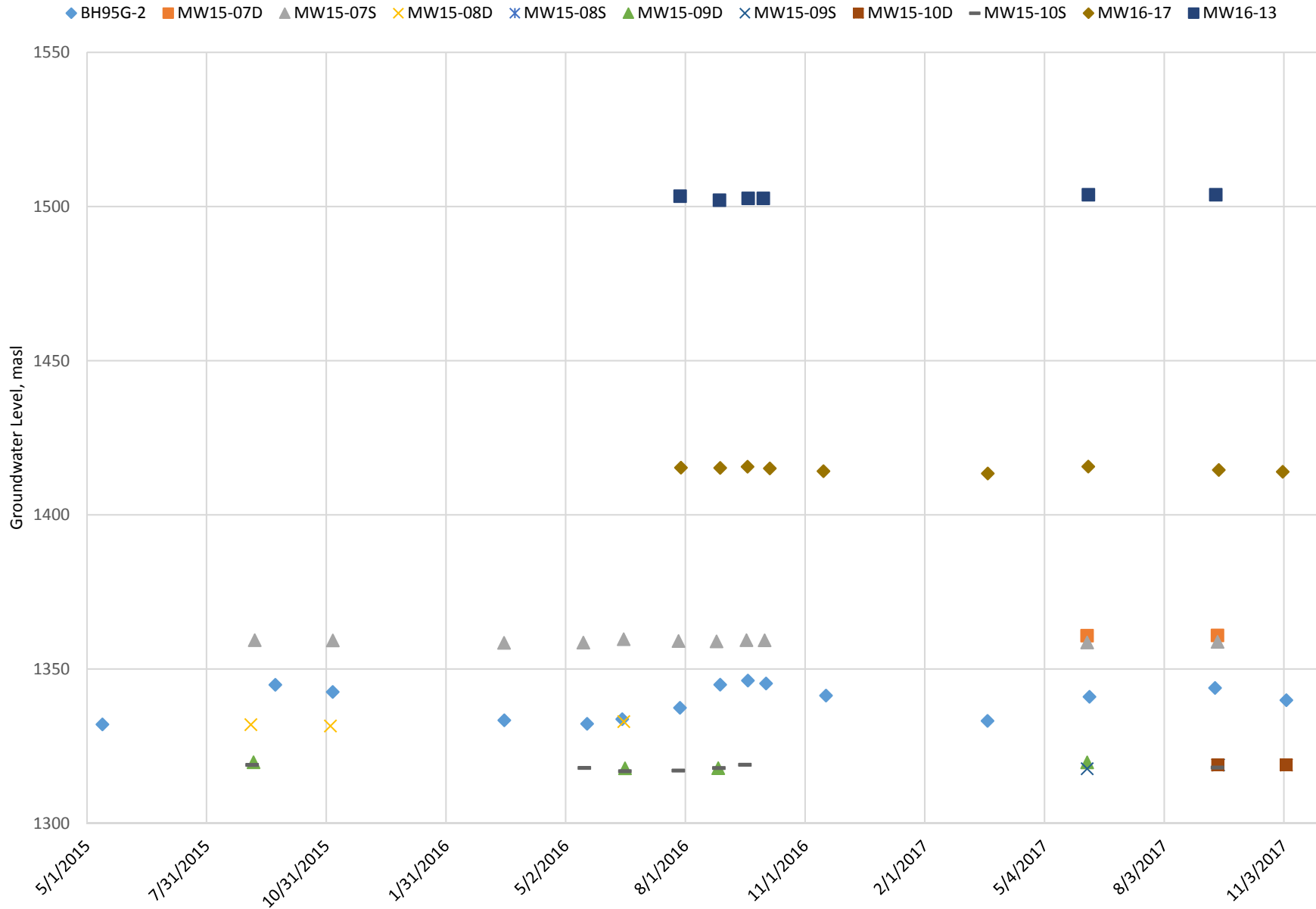


Figure A - 2

# GROUNDWATER LEVEL AREA B

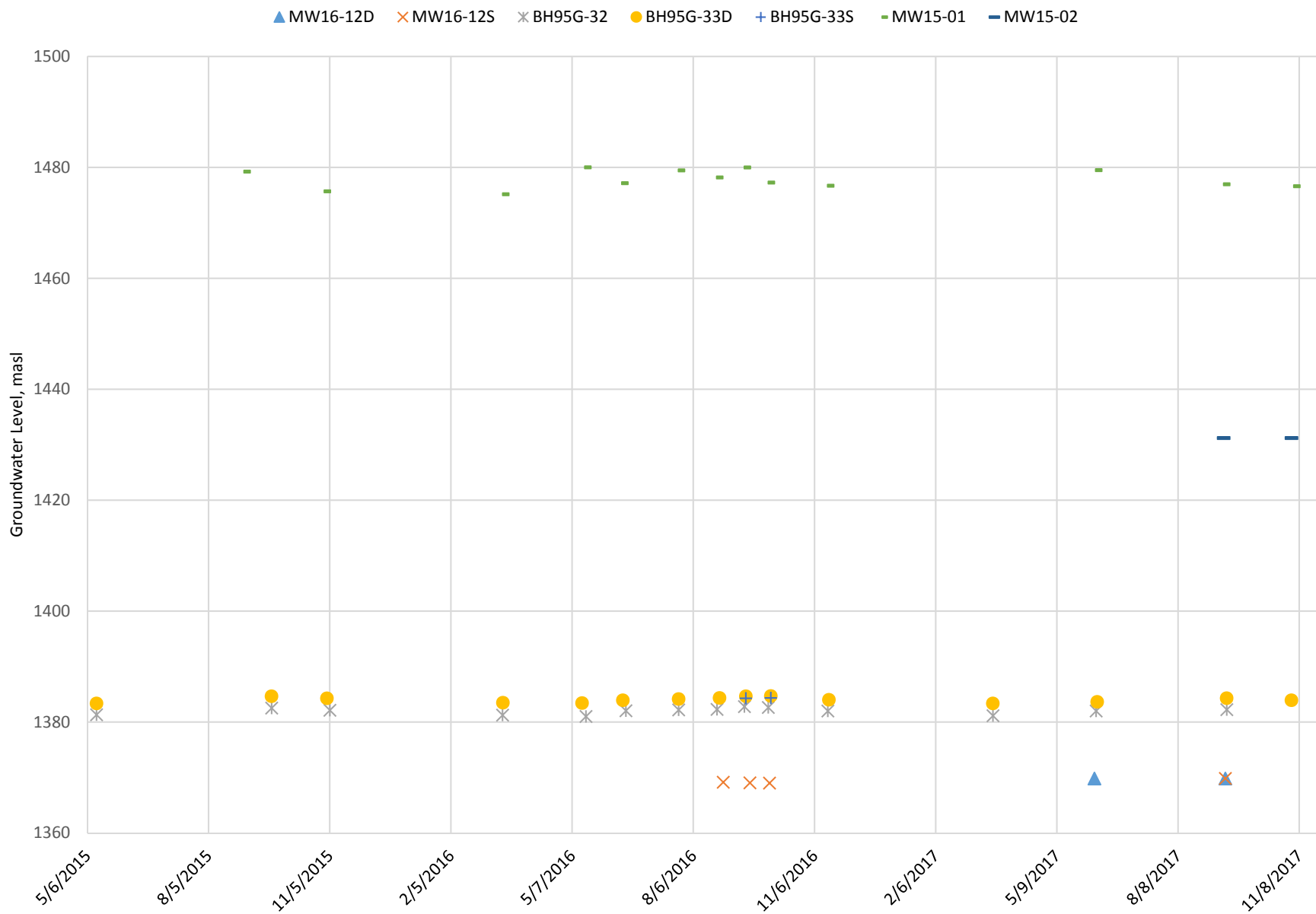


Figure A - 3

# GROUNDWATER LEVEL AREA C

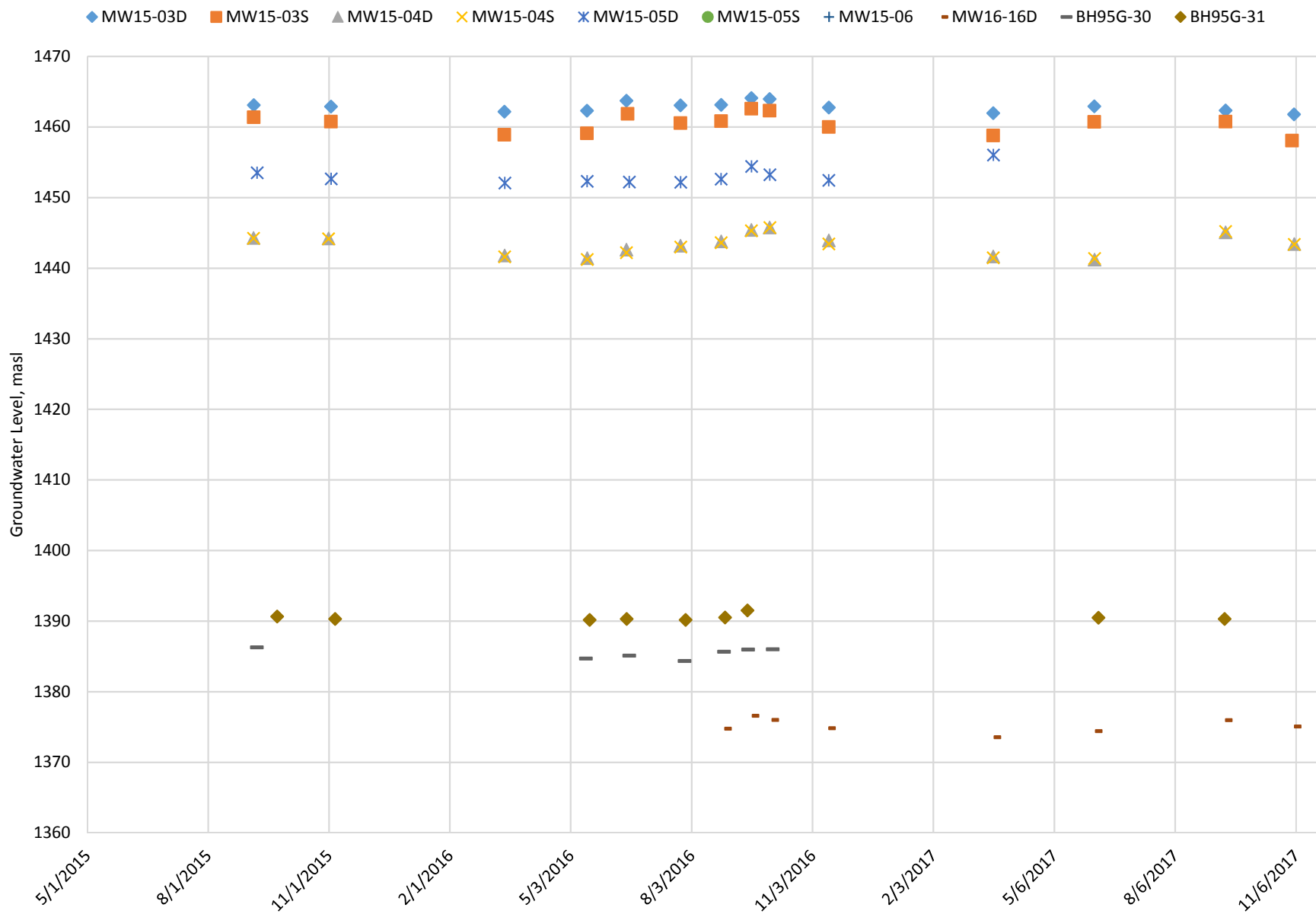


Figure A - 4



APPENDIX C  
GROUNDWATER QUALITY PLOTS

C-1

## PIT GROUNDWATER QUALITY PLOTS

# AMMONIA-N CONCENTRATION PIT

- ◆ BH95G-129
- BH95G-131
- ▲ BH95G-146
- ✕ BH95G-21
- ✕ BH95G-22
- BH95G-23
- + BH95G-24
- BH95G-25D
- ◆ BH95G-29
- MW15-11D
- ▲ MW15-11S
- ✕ MW16-15D
- ✕ MW16-15S
- - - YCSR-Schedule 3 (18.5 mg/L)\*

\*YCSR-Schedule 3 standard based on average pH in Pit area wells

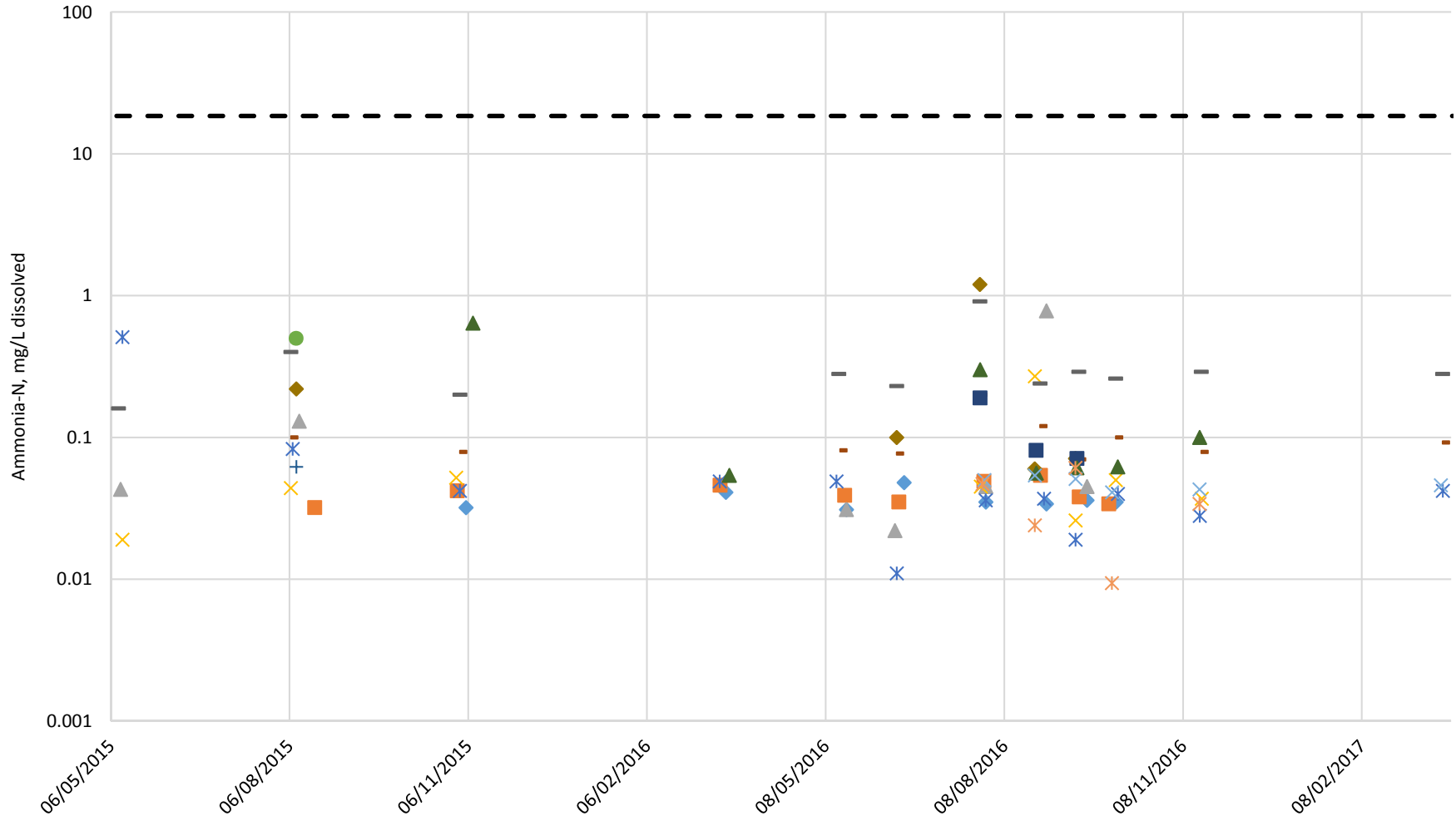


Figure C - 1

# SULPHATE CONCENTRATION PIT

- ◆ BH95G-129
- BH95G-131
- ▲ BH95G-146
- × BH95G-21
- × BH95G-22
- BH95G-23
- + BH95G-24
- BH95G-25D
- BH95G-25S
- ◆ BH95G-29
- MW15-11D
- ▲ MW15-11S
- × MW16-15D
- × MW16-15S
- - YCSR-Schedule 3 (1000 mg/L)

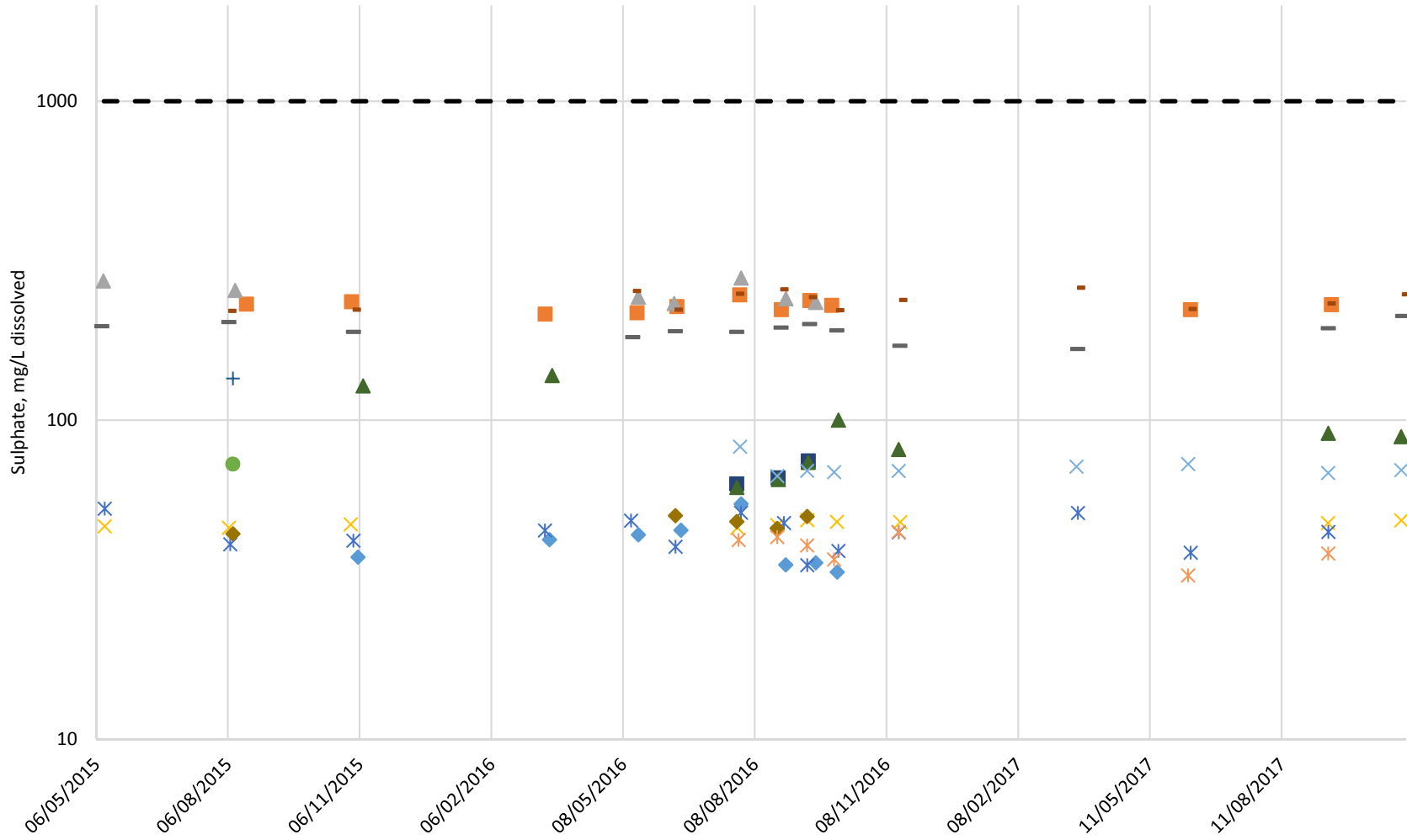


Figure C - 3

# FLOURIDE CONCENTRATION IN PIT

- ◆ BH95G-129      ■ BH95G-131      ▲ BH95G-146      ✕ BH95G-21      ✕ BH95G-22
- BH95G-23      + BH95G-24      - BH95G-25D      - BH95G-25S      ◆ BH95G-29
- MW15-11D      ▲ MW15-11S      ✕ MW16-15D      ✕ MW16-15S      - YCSR (3 mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 290 mg/L in Pit area wells

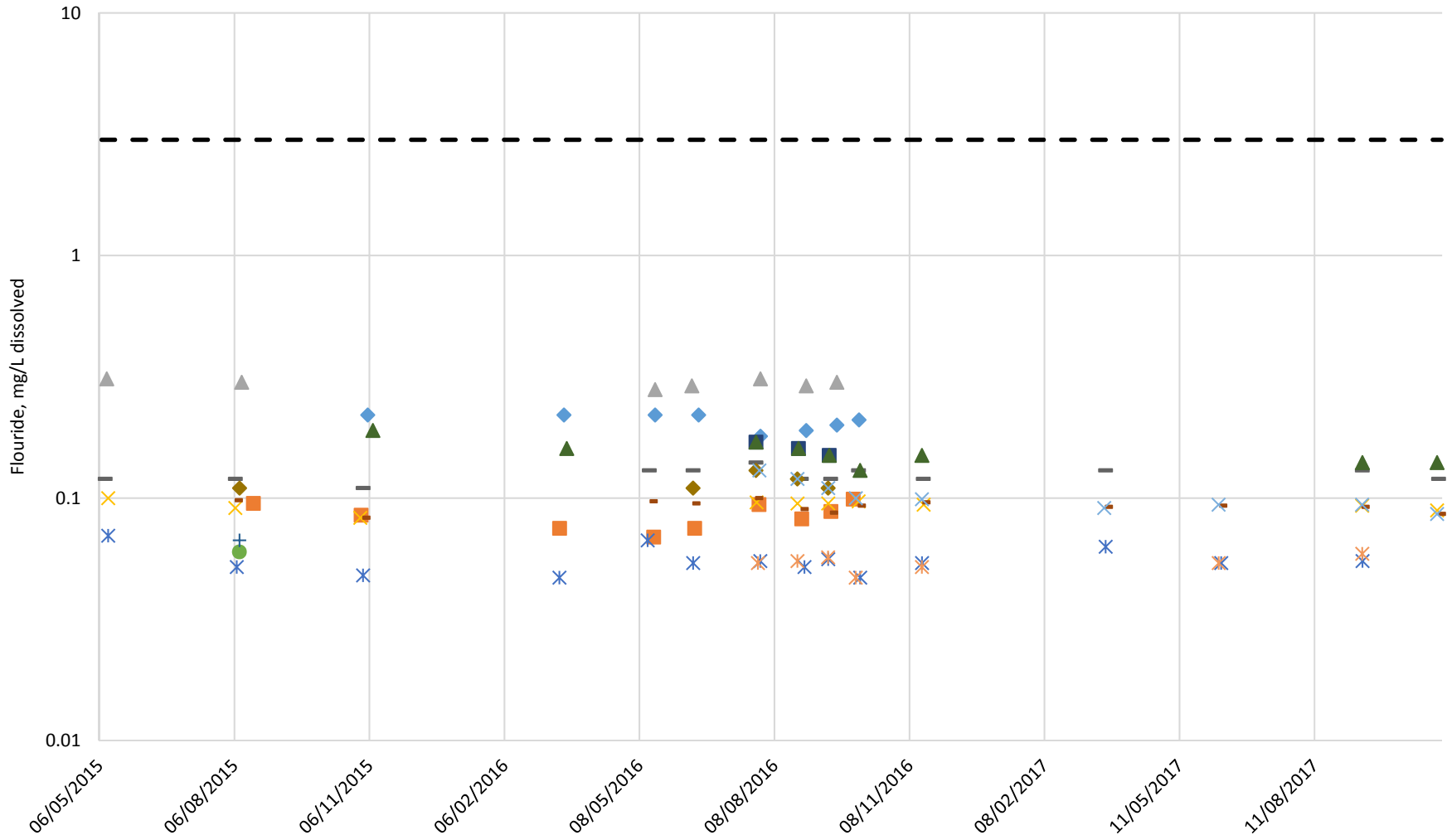


Figure C - 4

# ARSENIC CONCENTRATION PIT

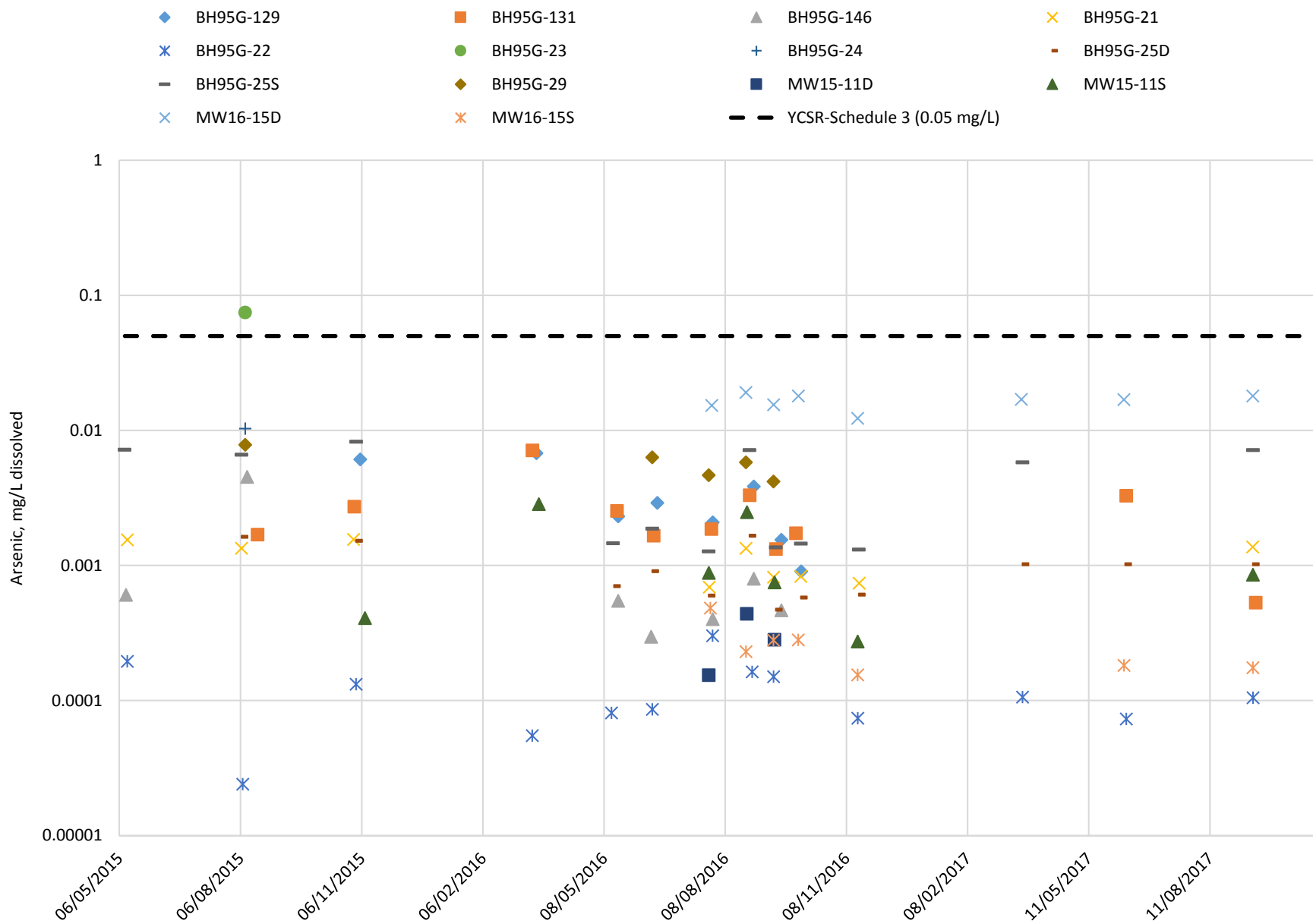


Figure C - 5

# ALUMINUM CONCENTRATION PIT

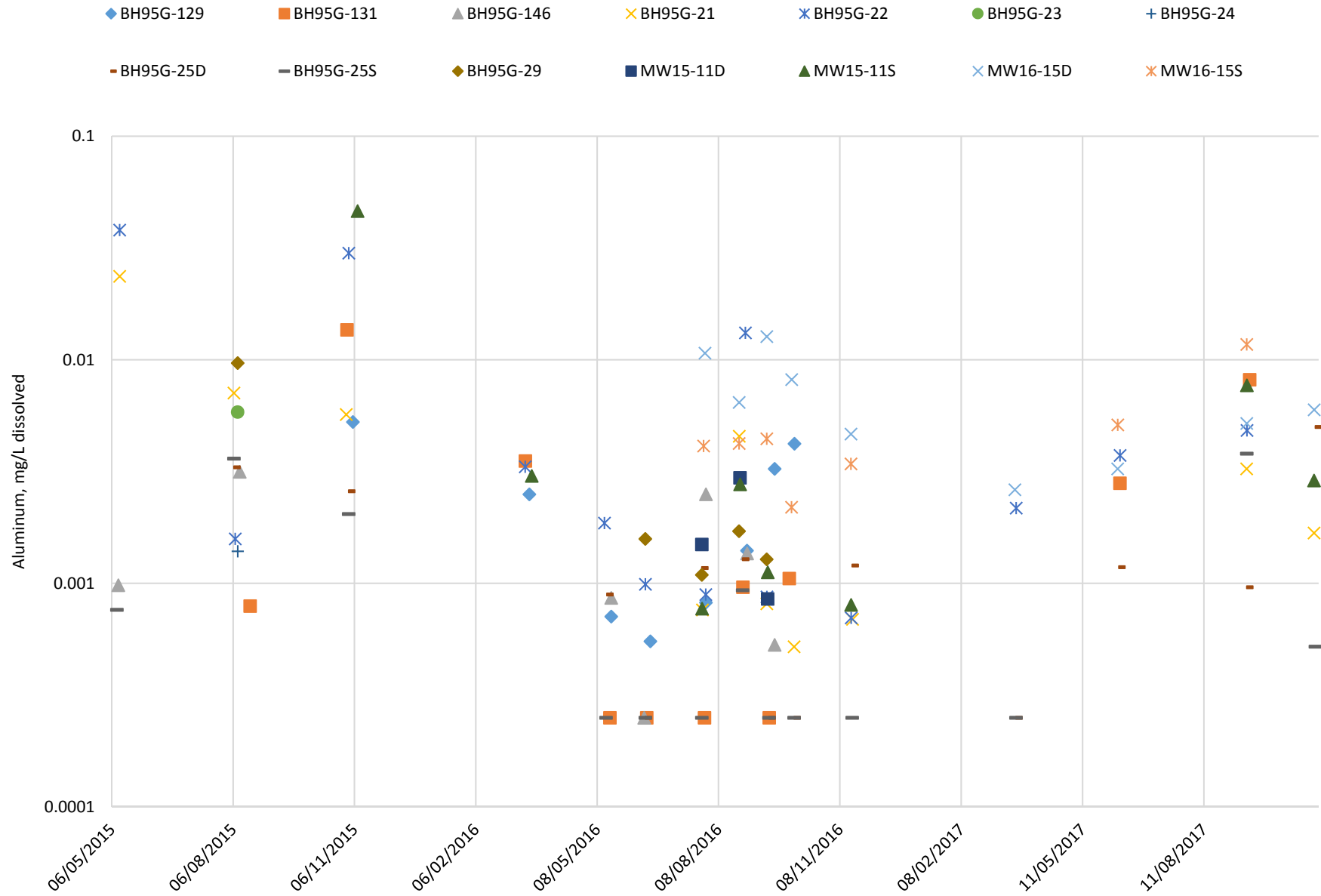


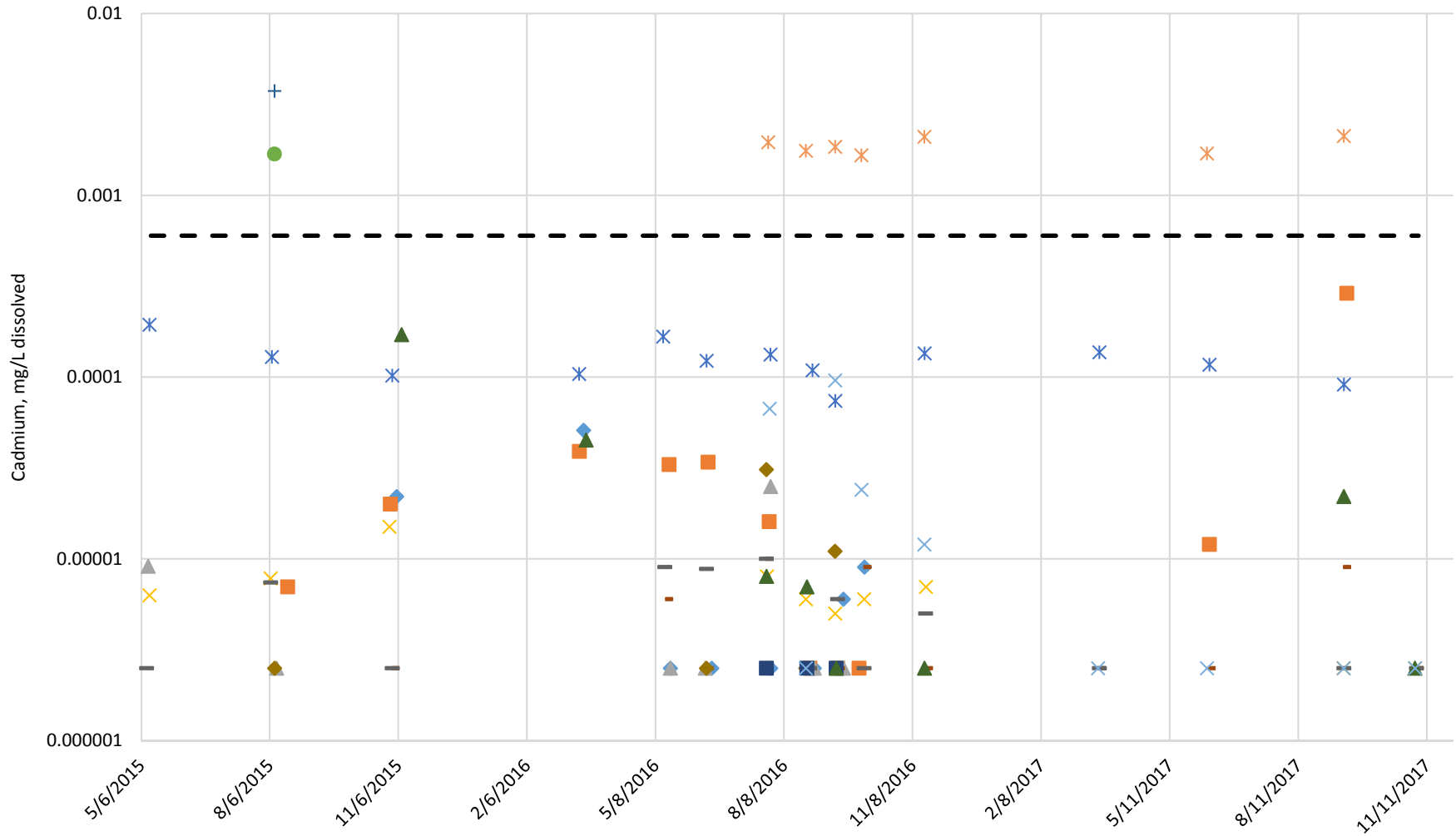
Figure C - 6



# CADMIUM CONCENTRATION PIT

- ◆ BH95G-129      ■ BH95G-131      ▲ BH95G-146      ✕ BH95G-21      ✕ BH95G-22
- BH95G-23      + BH95G-24      - BH95G-25D      - BH95G-25S      ◆ BH95G-29
- MW15-11D      ▲ MW15-11S      ✕ MW16-15D      ✕ MW16-15S      - - YCSR (0.0006mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 290 mg/L in Pit area wells



# COPPER CONCENTRATION PIT

- ◆ BH95G-129      ■ BH95G-131      △ BH95G-146      ✕ BH95G-21      ■ BH95G-22
- BH95G-23      ■ BH95G-24      - BH95G-25D      - BH95G-25S      ◆ BH95G-29
- MW15-11D      △ MW15-11S      ✕ MW16-15D      ✕ MW16-15S      - - YCSR (0.09mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 290 mg/L in Pit area wells

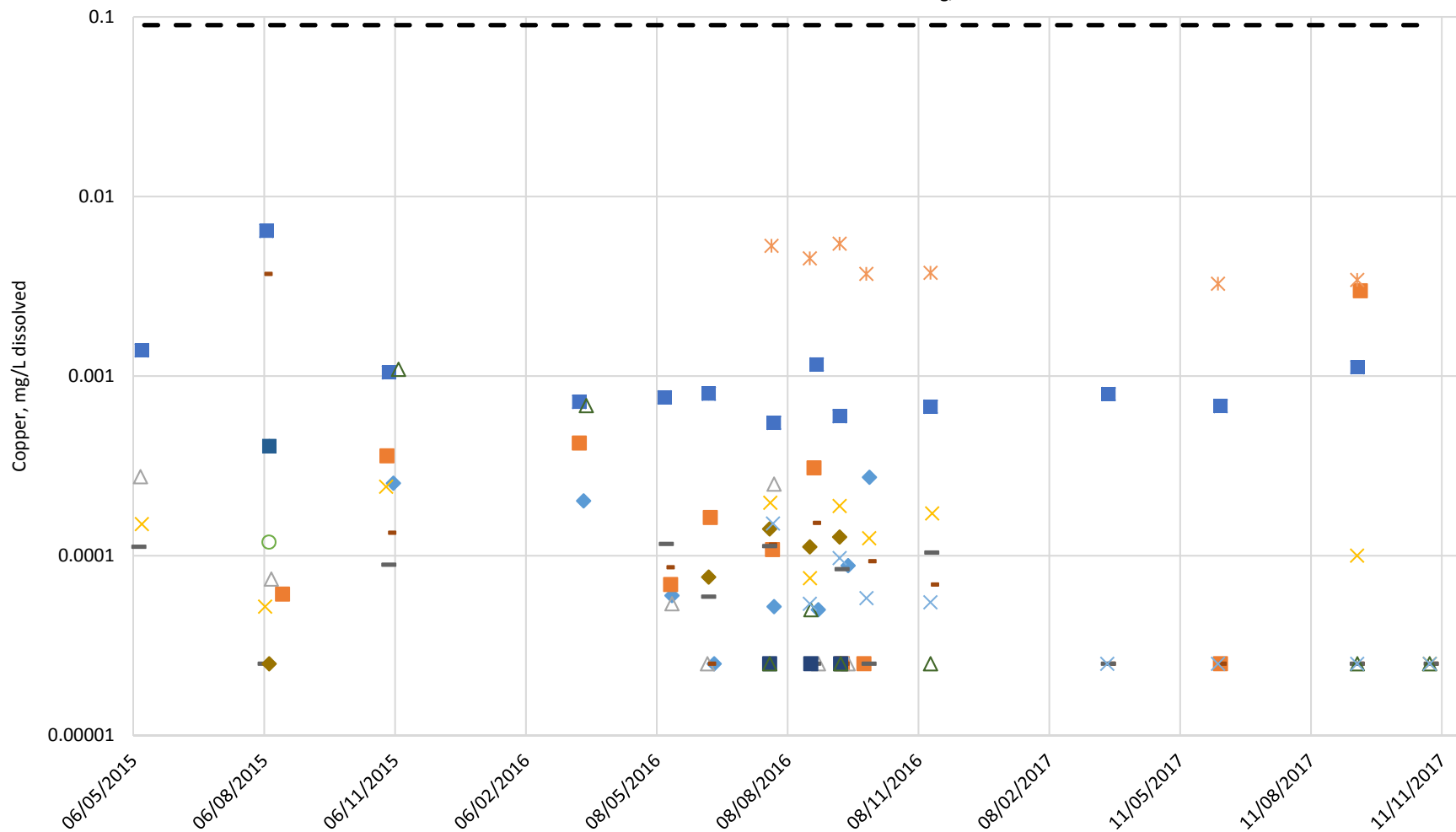


Figure C - 8

# IRON CONCENTRATION PIT

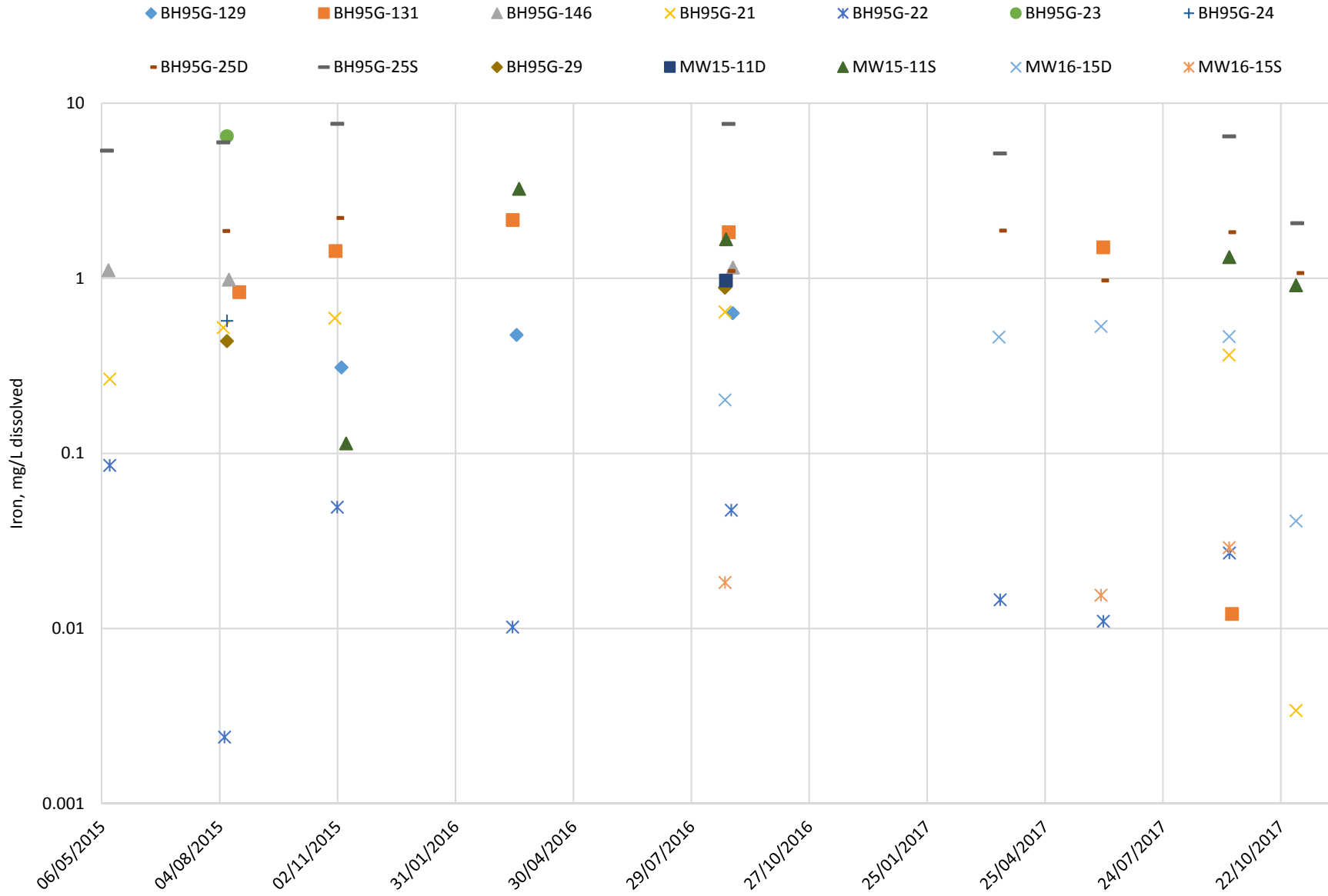


Figure C - 9

# LEAD CONCENTRATION PIT

- ◆ BH95G-129      ■ BH95G-131      ▲ BH95G-146      ✕ BH95G-21      ✕ BH95G-22
- BH95G-23      + BH95G-24      - BH95G-25D      - BH95G-25S      ◆ BH95G-29
- MW15-11D      ▲ MW15-11S      ✕ MW16-15D      ✕ MW16-15S      - - YCSR (0.11mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 290 mg/L in Pit area wells

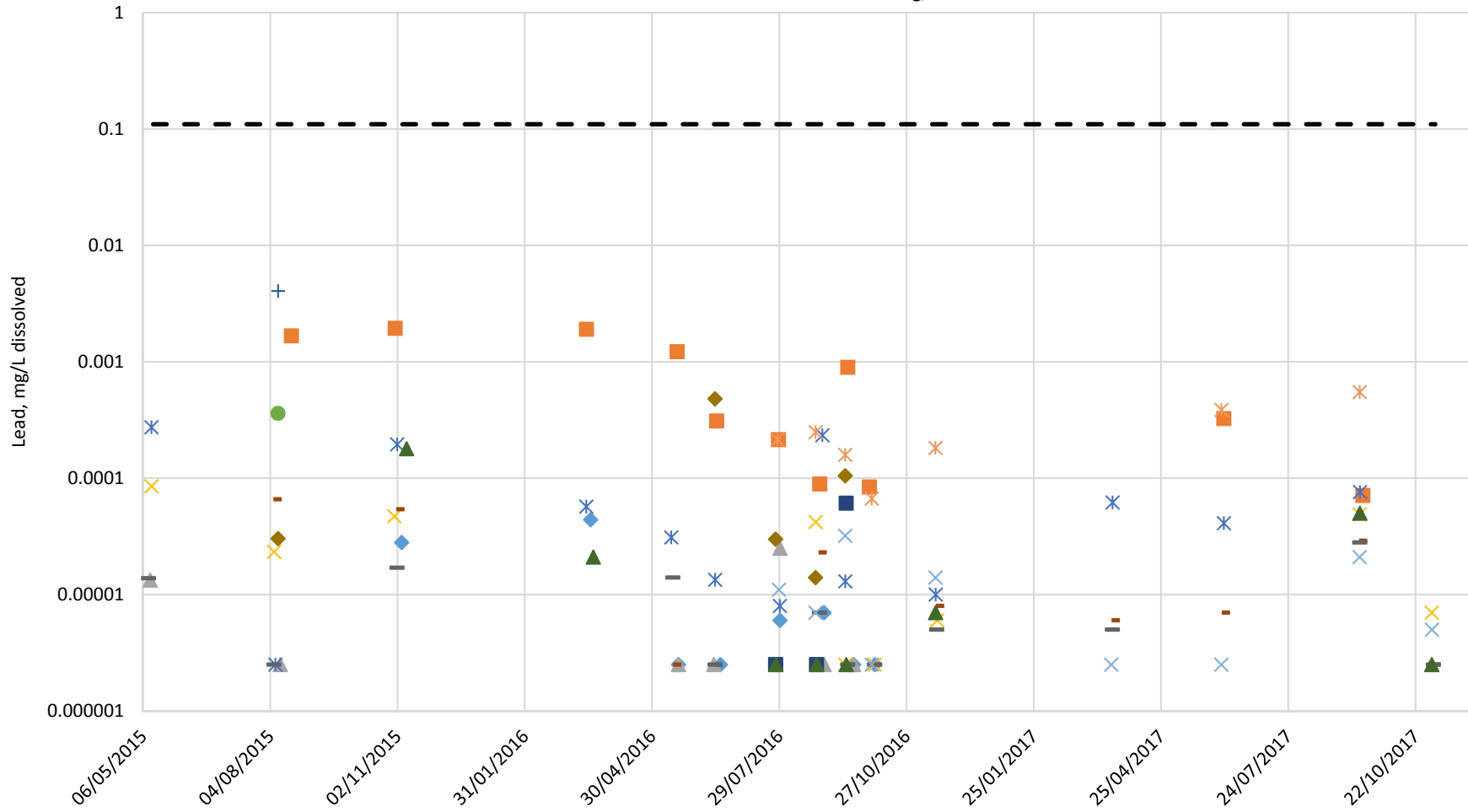


Figure C - 10

# SELENIUM CONCENTRATION PIT

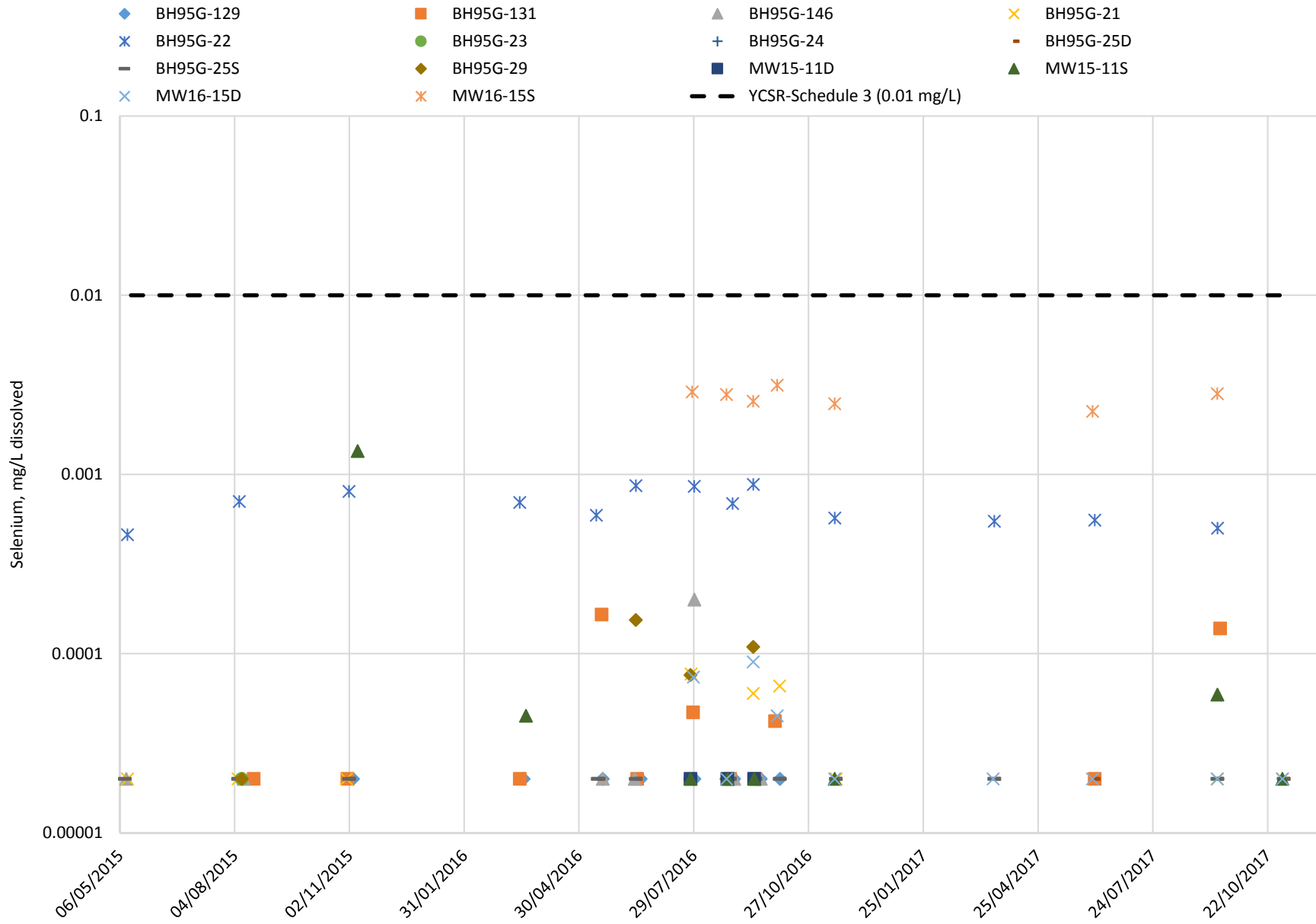


Figure C - 11

# ZINC CONCENTRATION PIT

- ◆ BH95G-129
- BH95G-131
- ▲ BH95G-146
- ✕ BH95G-21
- ✕ BH95G-22
- BH95G-23
- + BH95G-24
- BH95G-25D
- BH95G-25S
- ◆ BH95G-29
- MW15-11D
- ▲ MW15-11S
- ✕ MW16-15D
- ✕ MW16-15S
- - YCSR (1.65mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 290 mg/L in Pit area wells

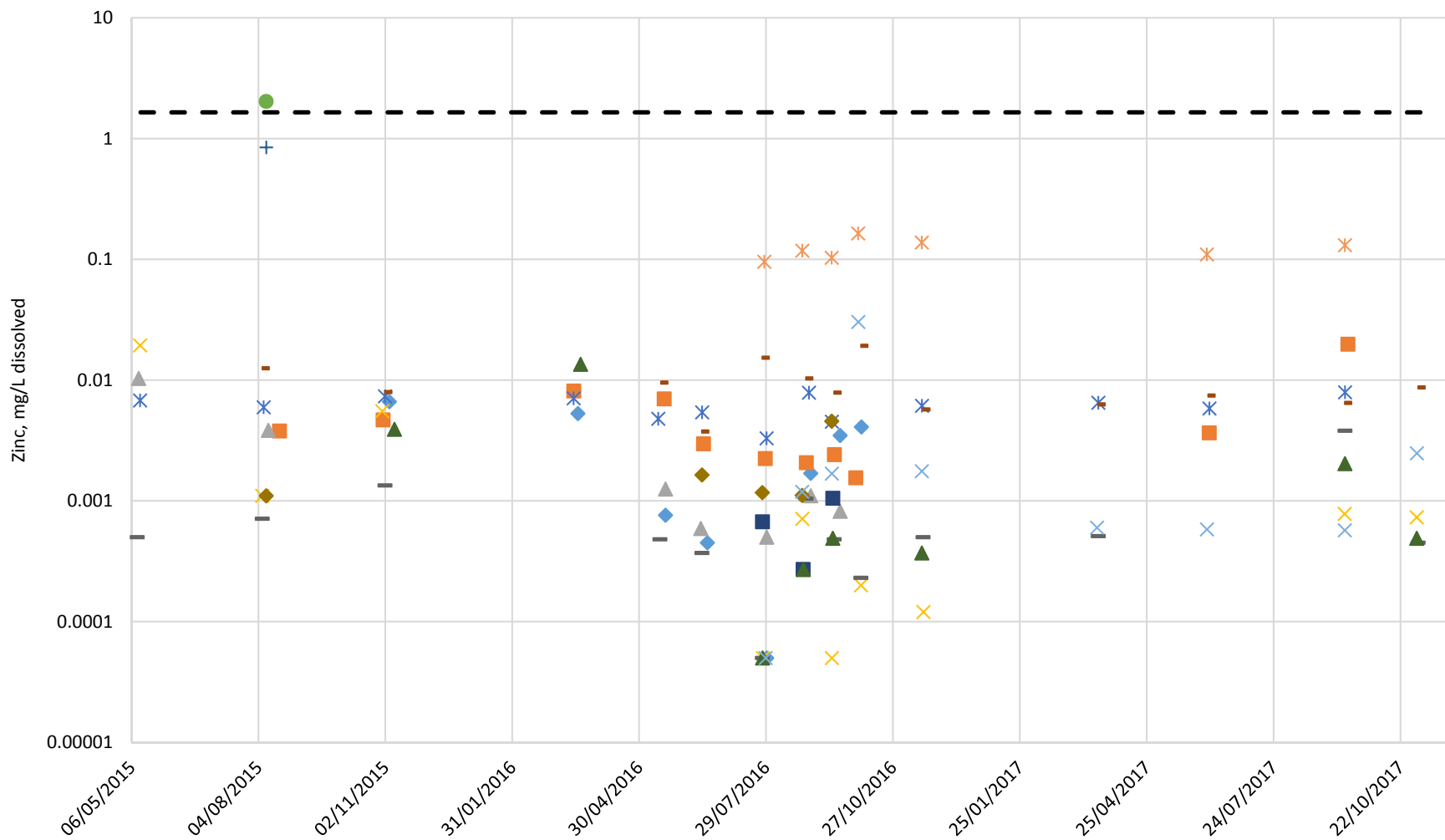
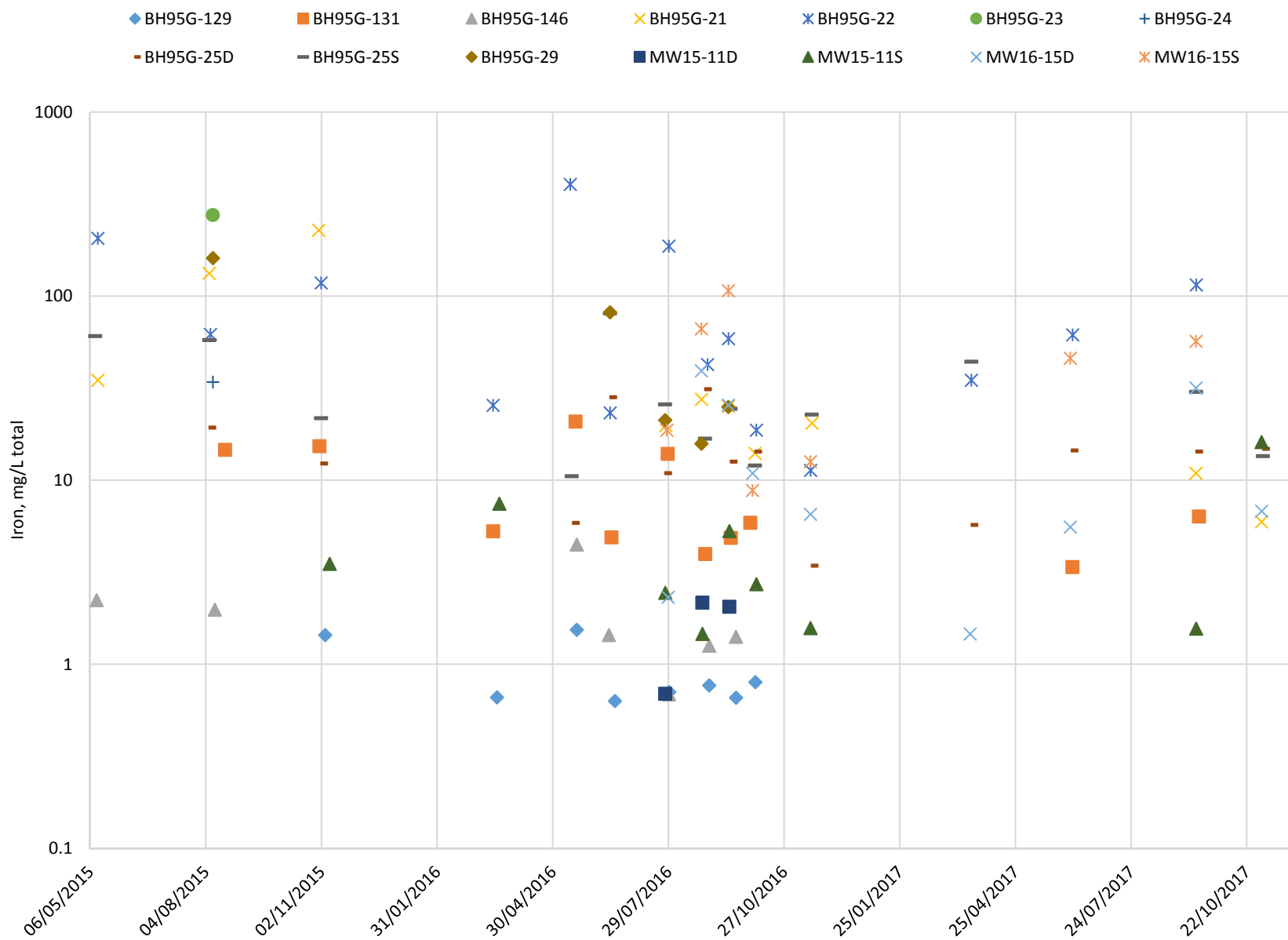


Figure C - 12

# TOTAL IRON CONCENTRATION PIT



C-2

## AREA A GROUNDWATER QUALITY PLOTS



# AMMONIA-N CONCENTRATION AREA A

- ◆ BH95G-2
- ✖ MW15-08S
- MW15-10S
- YCSR-Schedule 3 (18.5 mg/L)\*
- MW15-07D
- ▲ MW15-09D
- ◆ MW16-17
- ▲ MW15-07S
- ✖ MW15-09S
- MW16-13
- ✖ MW15-08D
- MW15-10D
- ▲ MW16-14D

\*YCSR-Schedule 3 standard based on average pH in Area A wells

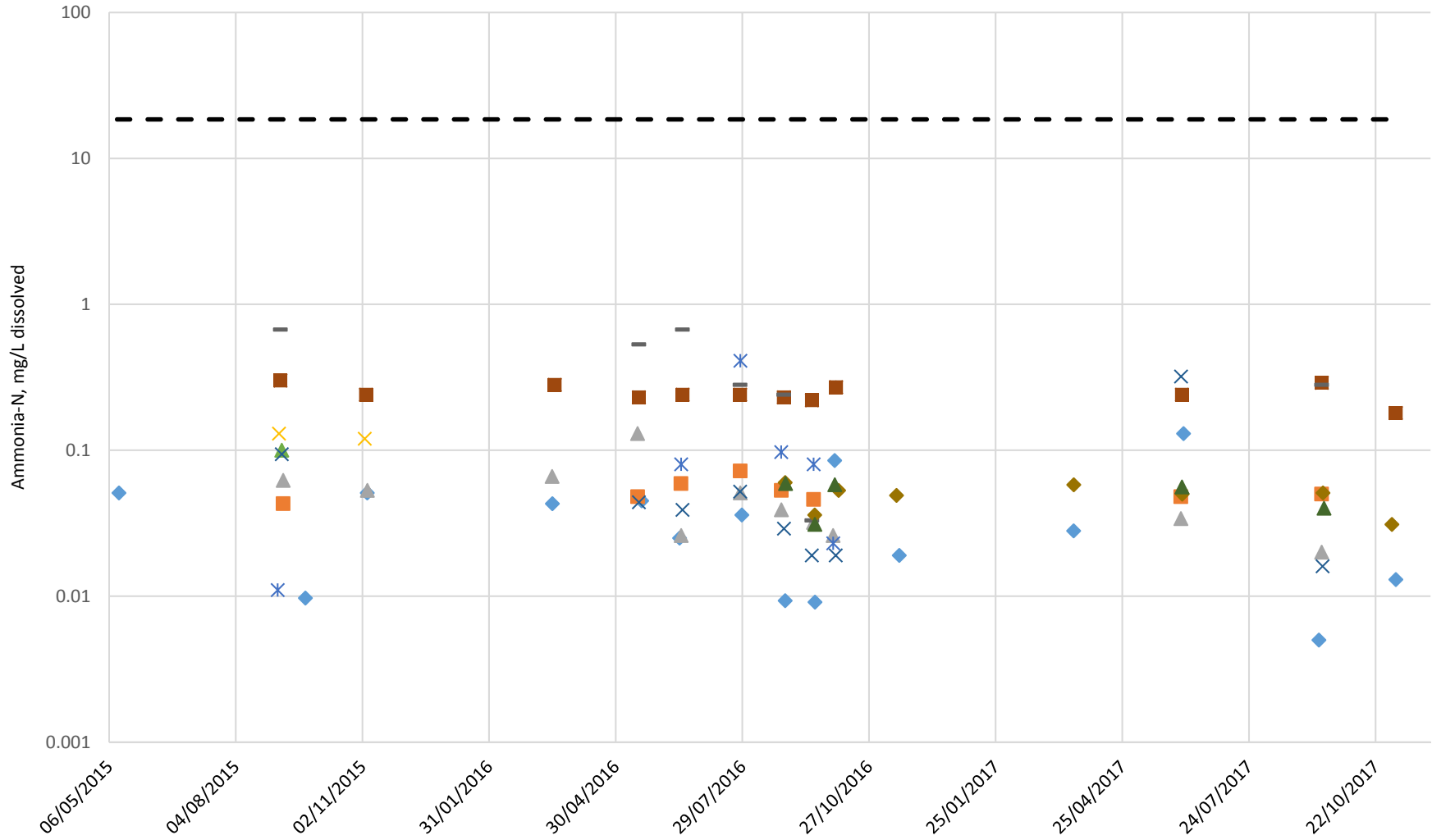


Figure C - 14

# SULPHATE CONCENTRATION AREA A

- ◆ BH95G-2
- ✕ MW15-08S
- MW15-10S
- YCSR-Schedule 3 (1000 mg/L)
- MW15-07D
- ▲ MW15-09D
- ◆ MW16-17
- ▲ MW15-07S
- ✕ MW15-09S
- MW16-13
- ✕ MW15-08D
- MW15-10D
- ▲ MW16-14D

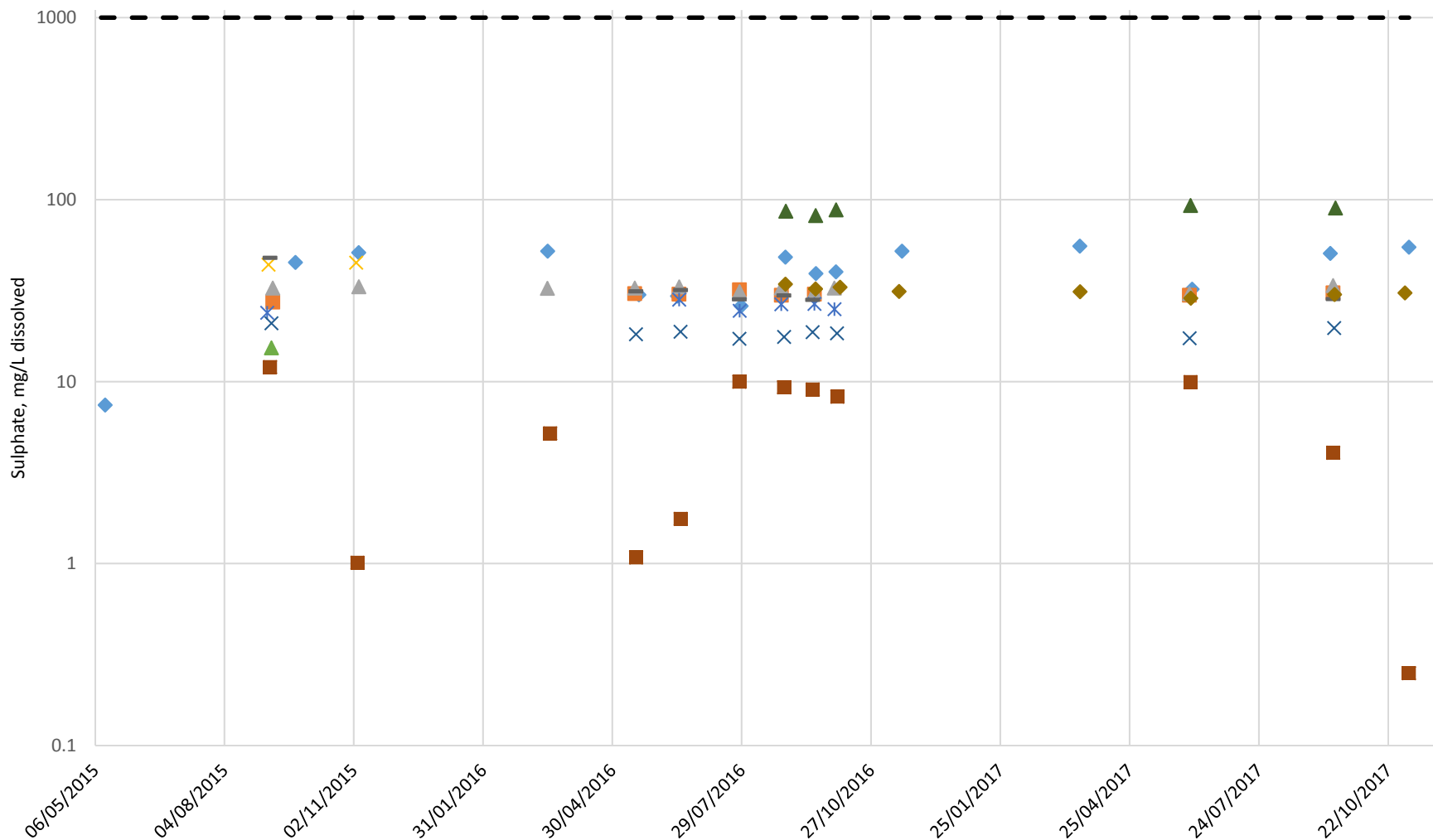


Figure C - 15

# FLOURIDE CONCENTRATION IN AREA A

- ◆ BH95G-2
- MW15-07D
- ▲ MW15-07S
- ✕ MW15-08D
- ✕ MW15-08S
- ▲ MW15-09D
- ✕ MW15-09S
- MW15-10D
- MW15-10S
- ◆ MW16-17
- MW16-13
- ▲ MW16-14D
- - - YCSR (3 mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 225 mg/L in Area A wells

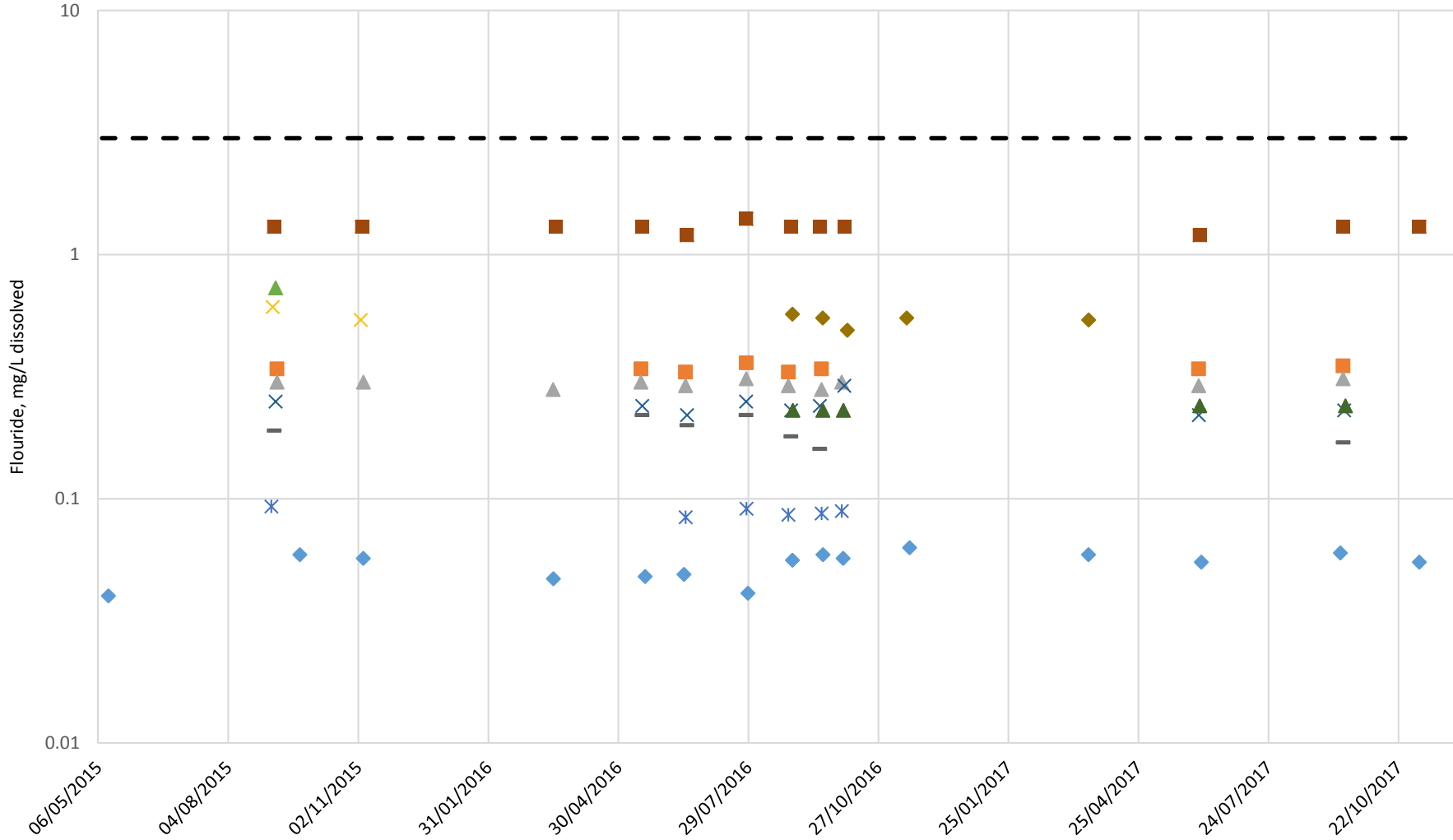


Figure C - 16

# ARSENIC CONCENTRATION AREA A

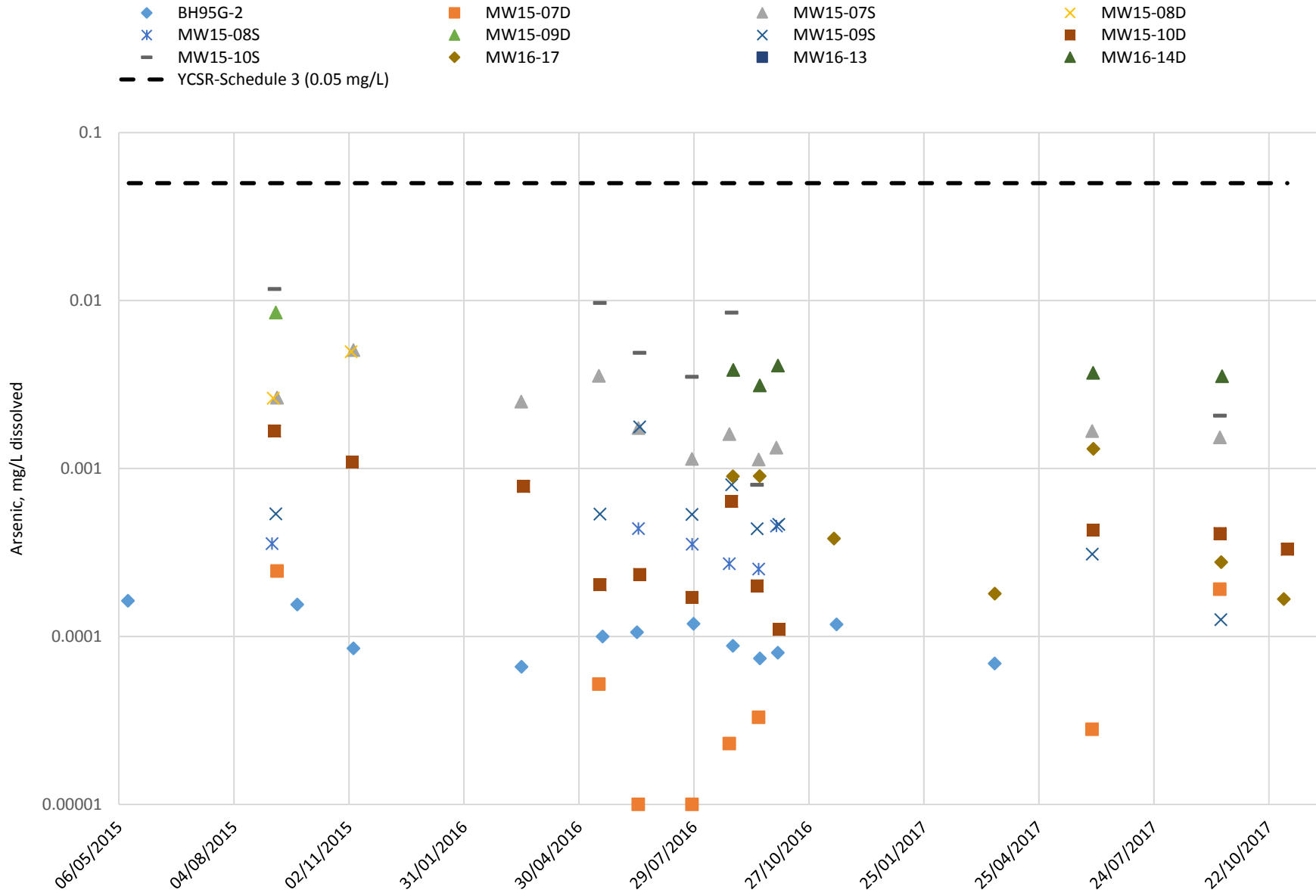


Figure C - 17

# ALUMINUM CONCENTRATION AREA A

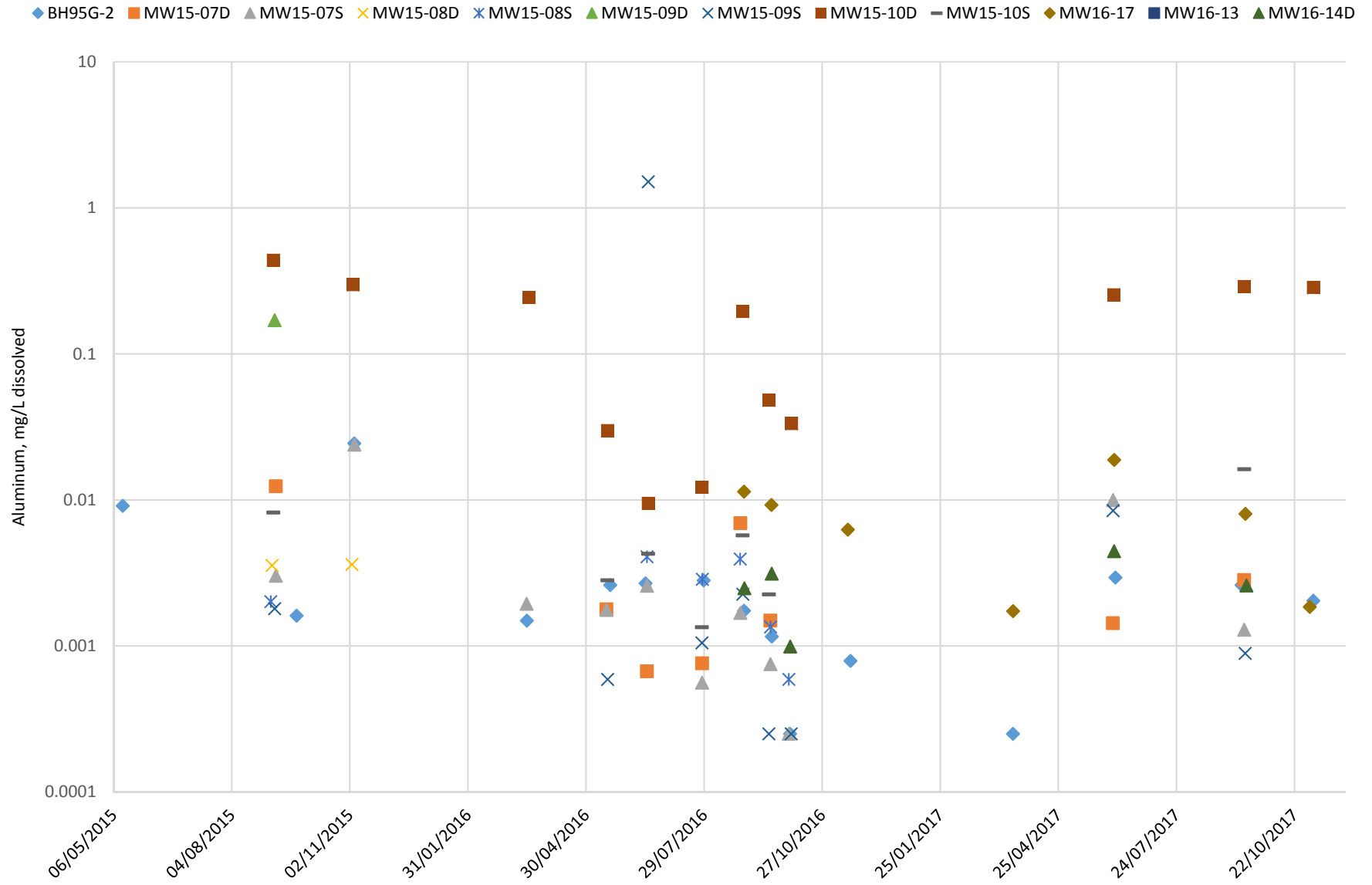


Figure C - 18

# IRON CONCENTRATION AREA A

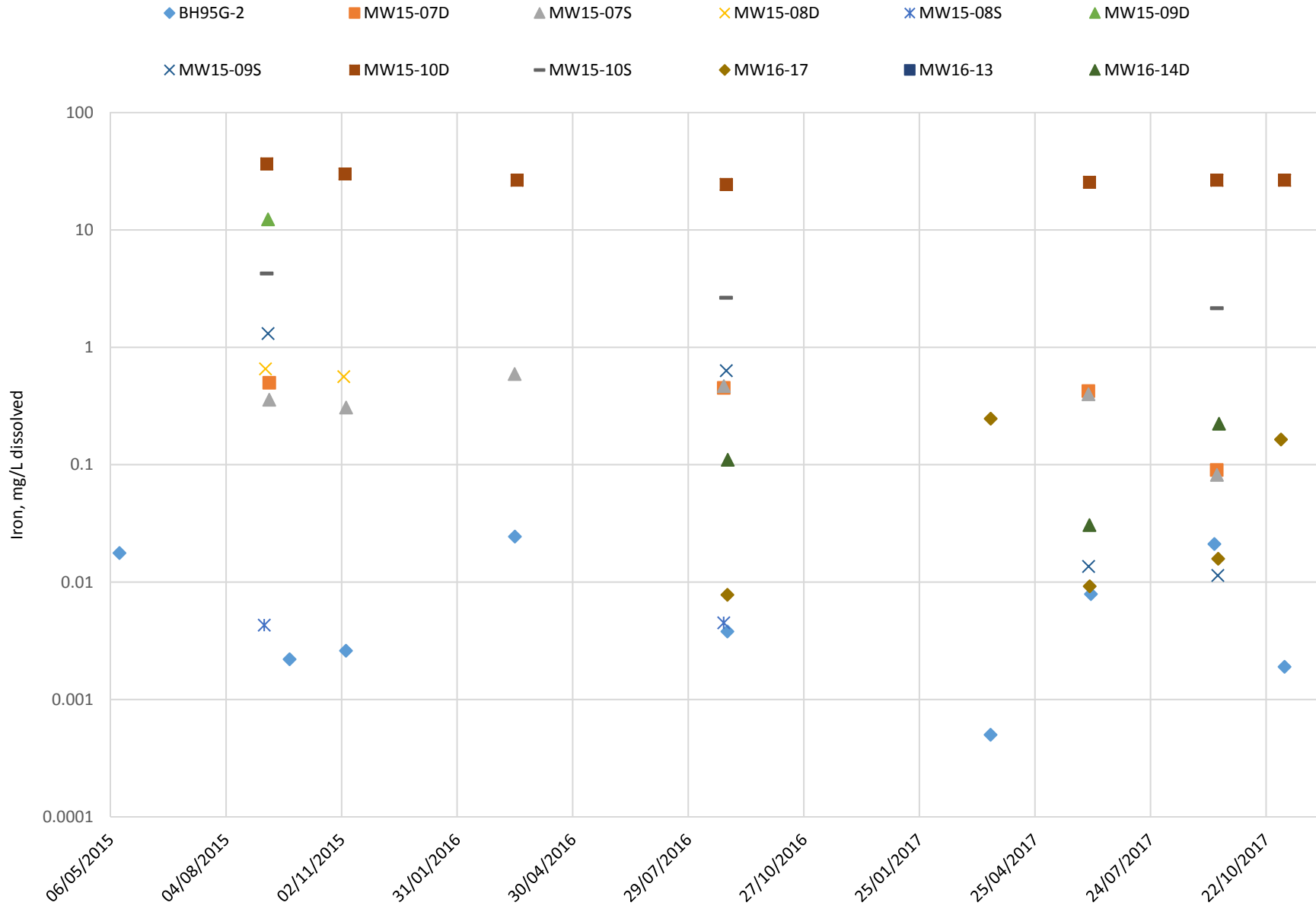


Figure C - 19

# CADMIUM CONCENTRATION AREA A

- |            |            |                      |            |            |
|------------|------------|----------------------|------------|------------|
| ◆ BH95G-2  | ■ MW15-07D | ▲ MW15-07S           | × MW15-08D | × MW15-08S |
| ▲ MW15-09D | × MW15-09S | ■ MW15-10D           | — MW15-10S | ◆ MW16-17  |
| ■ MW16-13  | ▲ MW16-14D | — YCSR (0.0006mg/L)* |            |            |

\*YCSR-Schedule 3 standard based on median hardness of 225 mg/L in Area A wells

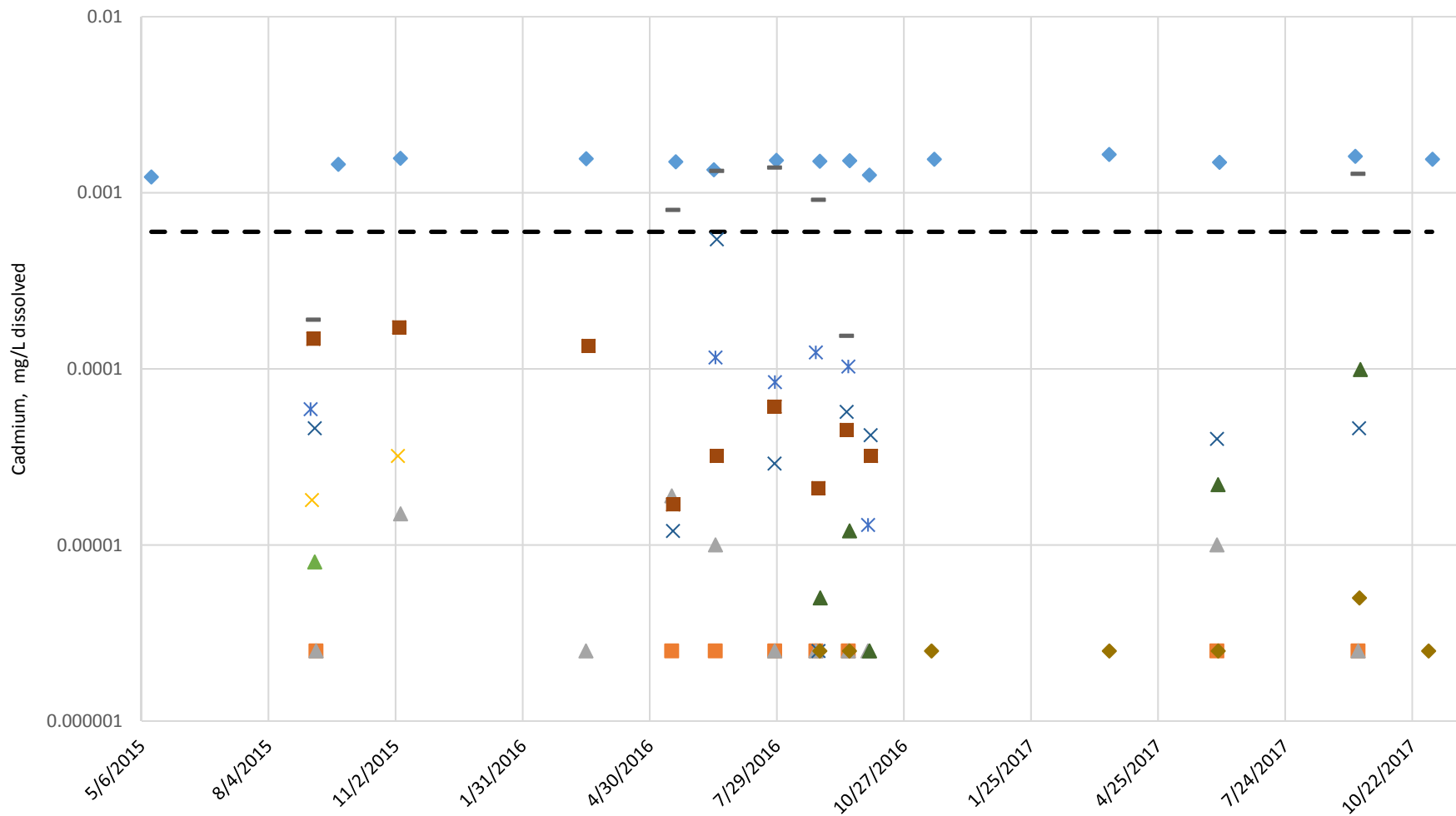


Figure C - 20

# COPPER CONCENTRATION AREA A

- |            |            |                      |            |            |
|------------|------------|----------------------|------------|------------|
| ◆ BH95G-2  | ■ MW15-07D | ▲ MW15-07S           | ✕ MW15-08D | ✕ MW15-08S |
| ▲ MW15-09D | ✕ MW15-09S | ■ MW15-10D           | — MW15-10S | ◆ MW16-17  |
| ■ MW16-13  | ▲ MW16-14D | - - YCSR (0.09mg/L)* |            |            |

\*YCSR-Schedule 3 standard based on median hardness of 225 mg/L in Area A wells

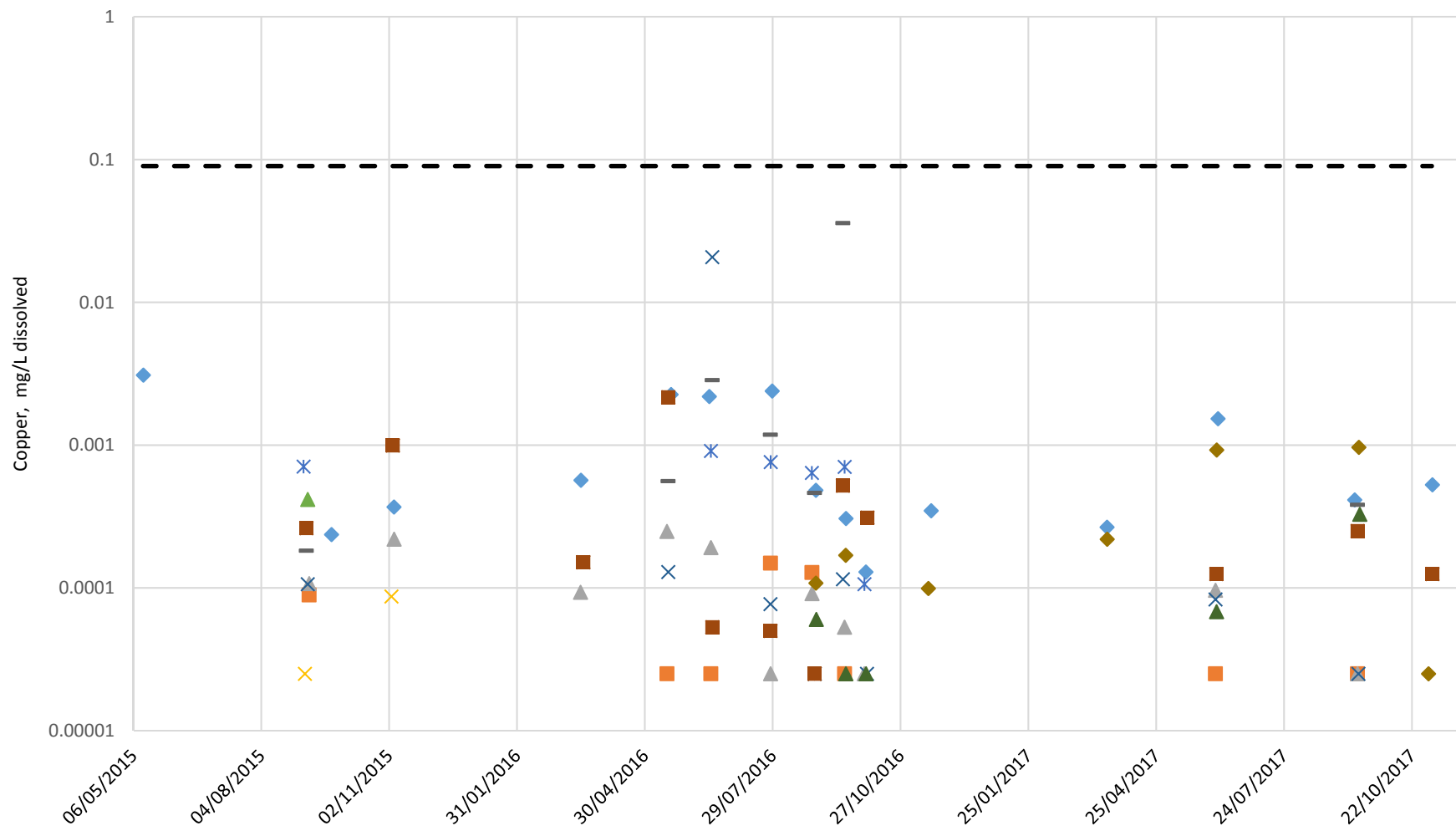


Figure C - 21



# LEAD CONCENTRATION AREA A

- ◆ BH95G-2
- ▲ MW15-07S
- ✕ MW15-08D
- ✕ MW15-08S
- ▲ MW15-09D
- ✕ MW15-09S
- MW15-10D
- MW15-10S
- ◆ MW16-13
- ▲ MW16-14D
- YCSR (0.11mg/L)\*
- ◆ MW16-17

\*YCSR-Schedule 3 standard based on median hardness of 225 mg/L in Area A wells

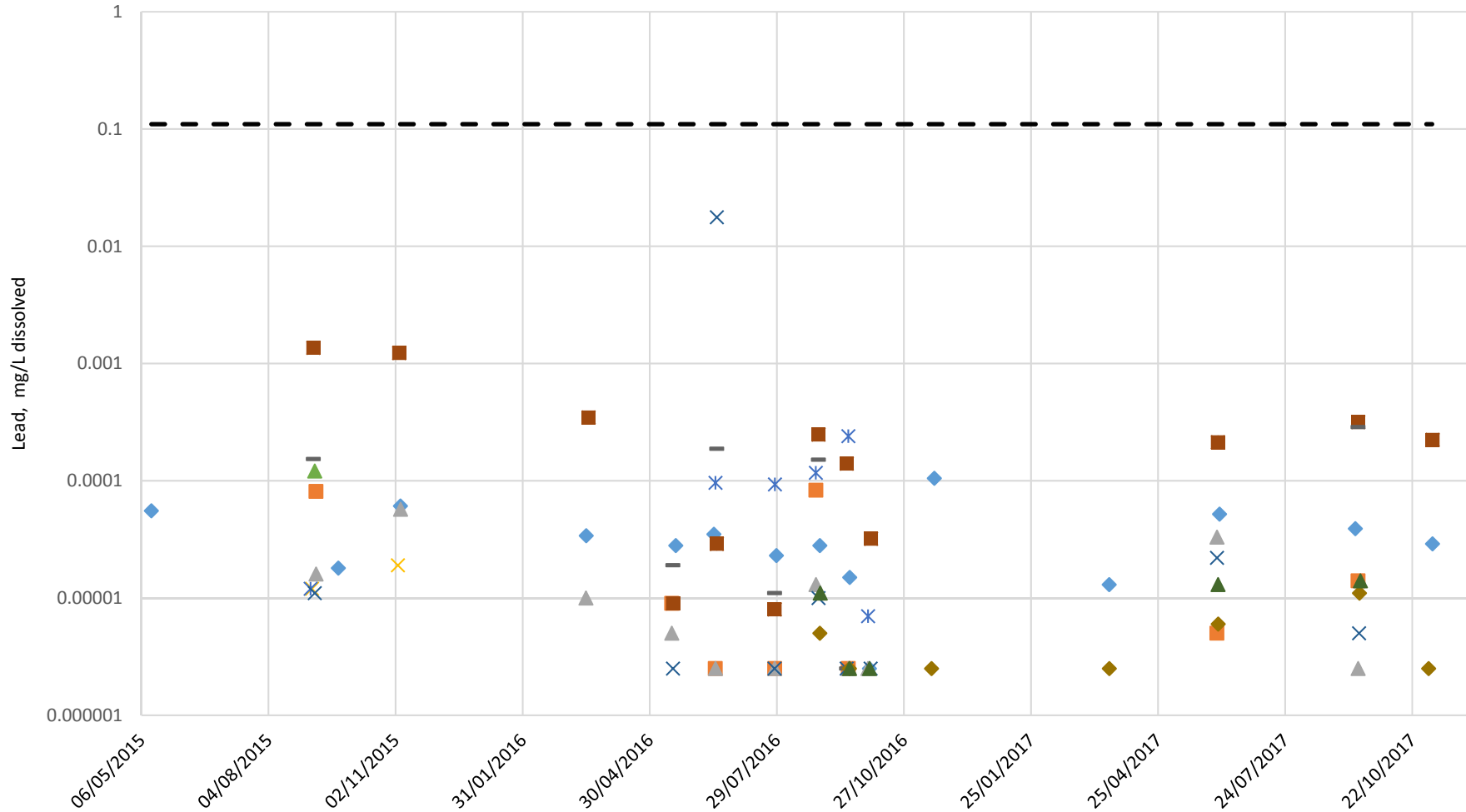


Figure C - 22

# SELENIUM CONCENTRATION AREA A

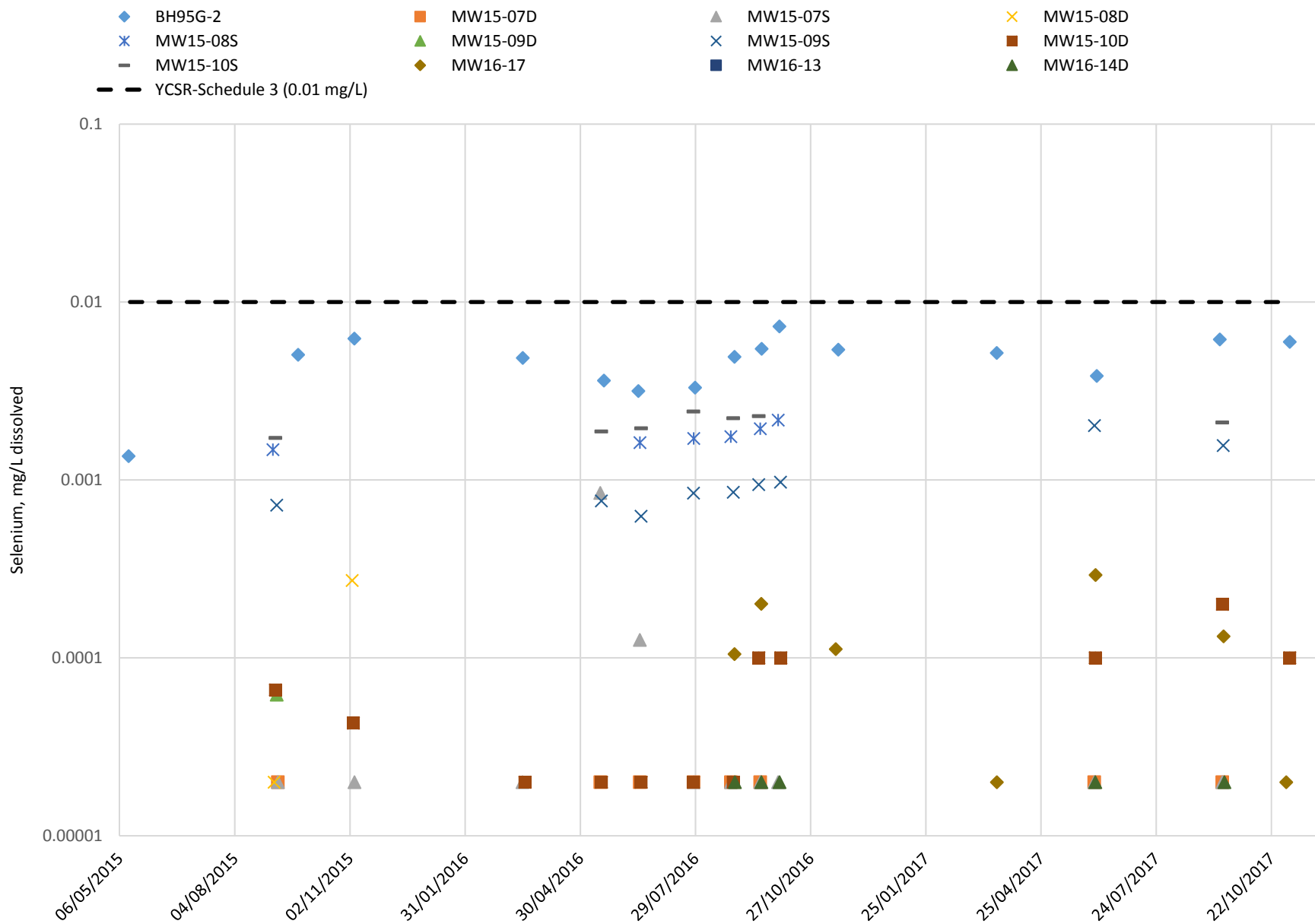


Figure C - 23

# ZINC CONCENTRATION AREA A

- ◆ BH95G-2
- MW15-07D
- ▲ MW15-07S
- ✕ MW15-08D
- ✕ MW15-08S
- ▲ MW15-09D
- ✕ MW15-09S
- MW15-10D
- MW15-10S
- ◆ MW16-17
- MW16-13
- ▲ MW16-14D
- — YCSR (1.65mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 225 mg/L in Area A wells

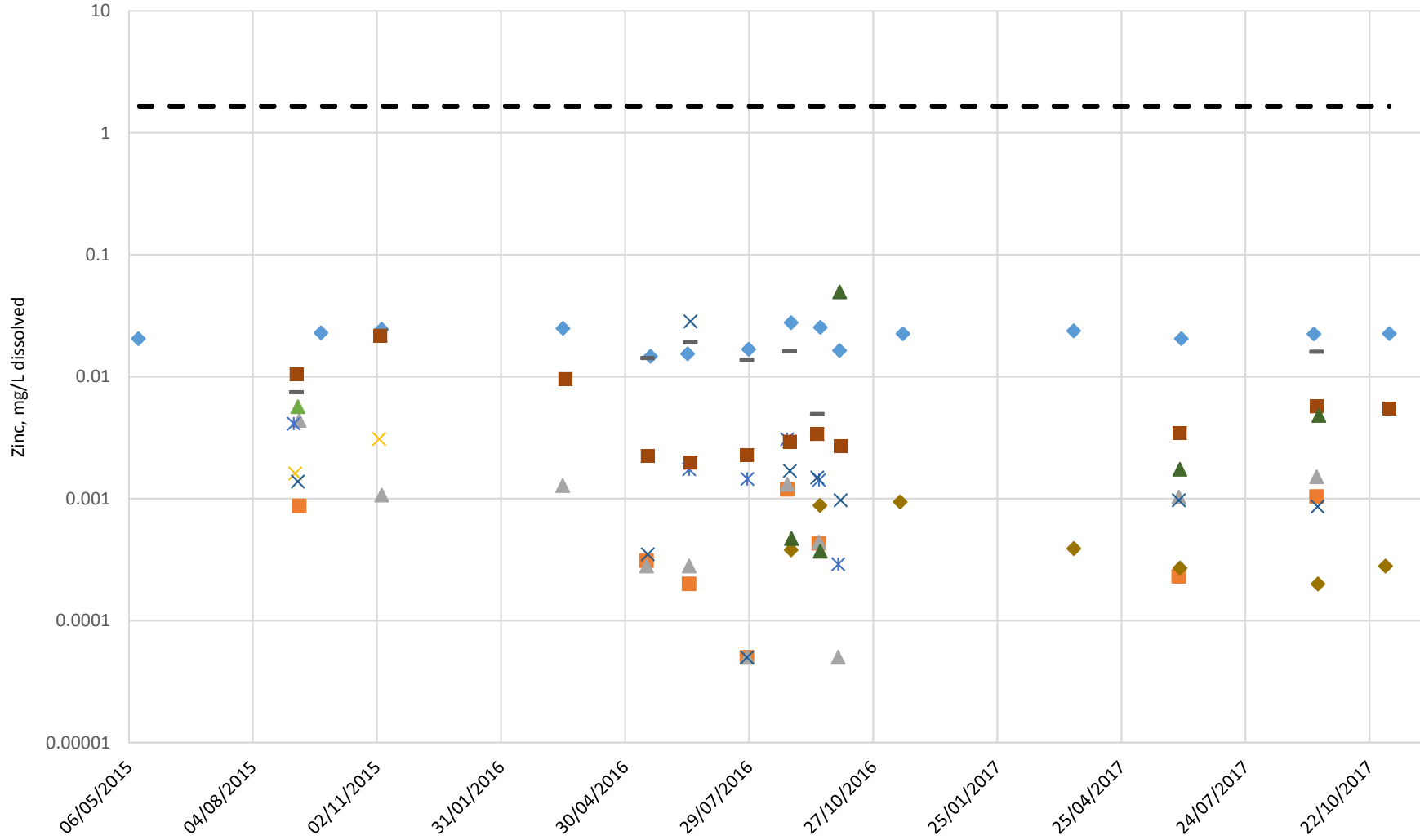


Figure C - 24

# TOTAL IRON CONCENTRATION AREA A

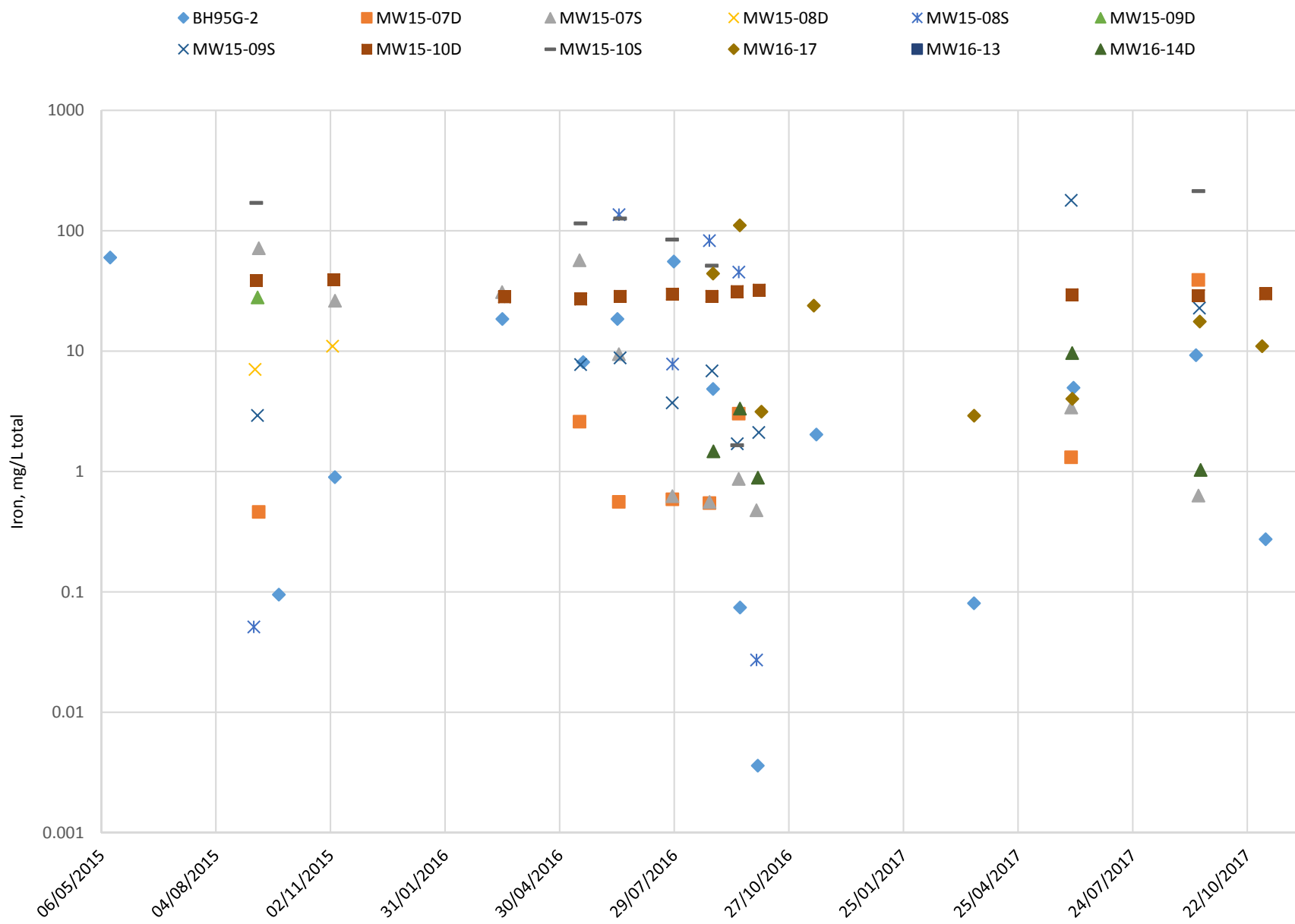


Figure C - 25

C-3

AREA B GROUNDWATER QUALITY PLOTS



# SULPHATE CONCENTRATION AREA B

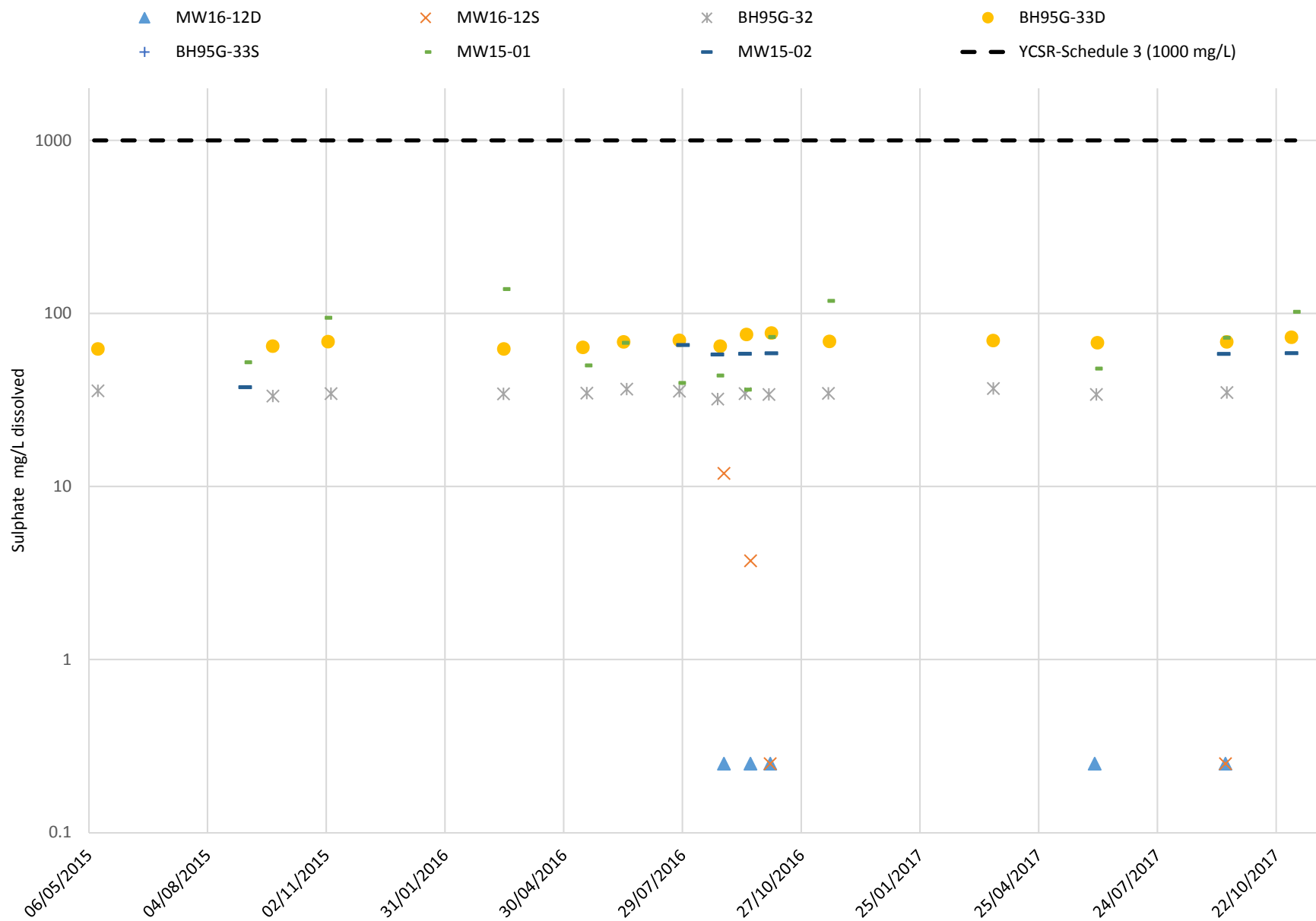


Figure C - 28

# FLOURIDE CONCENTRATION IN AREA B

▲ MW16-12D   
 × MW16-12S   
 ✖ BH95G-32   
 ● BH95G-33D   
 + BH95G-33S   
 - MW15-01   
 - MW15-02   
 - - - YCSR (3 mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 233 mg/L in Area B wells

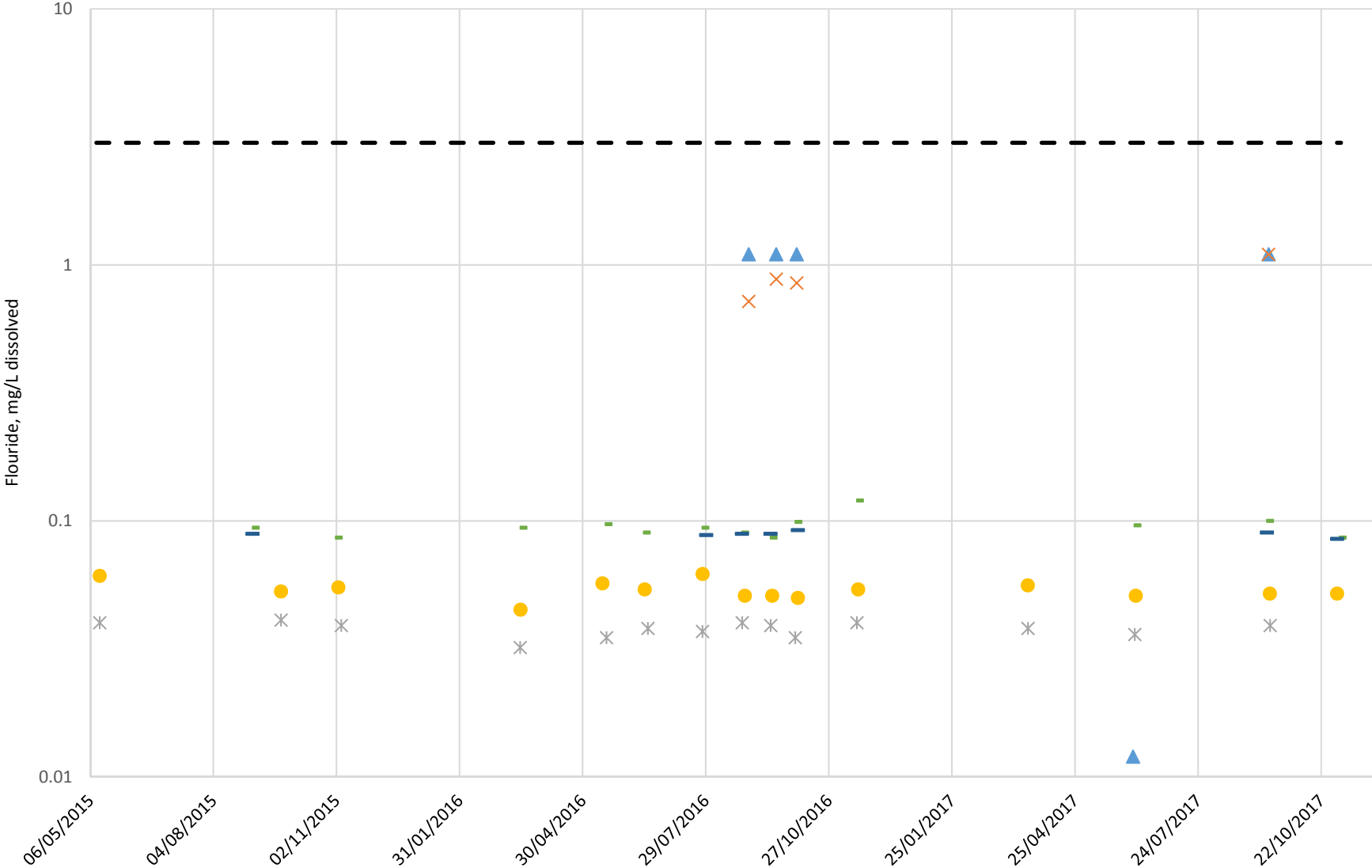


Figure C - 29





# ALUMINUM CONCENTRATION AREA B

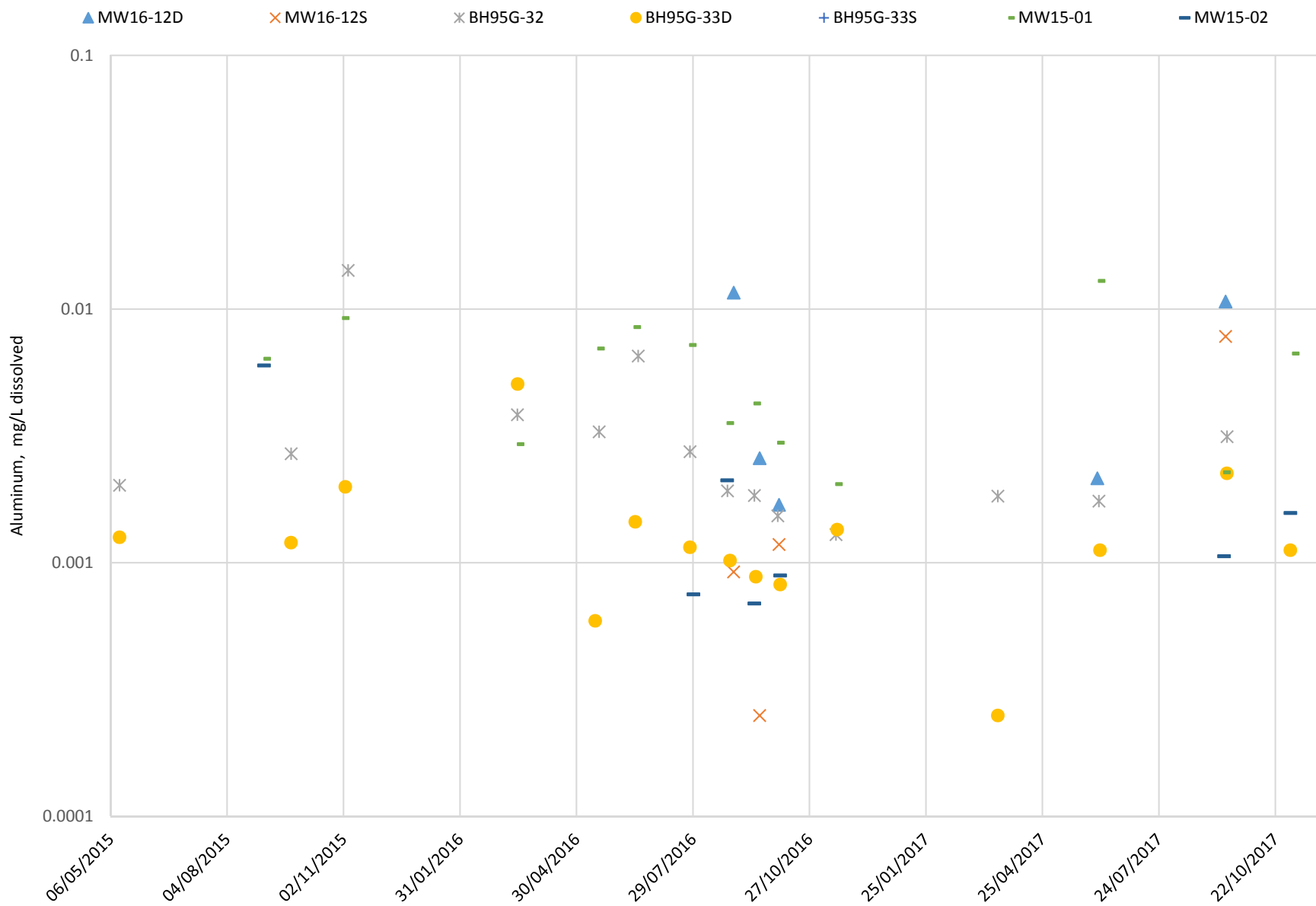


Figure C - 31

# CADMIUM CONCENTRATION AREA B

▲ MW16-12D    × MW16-12S    \* BH95G-32    ● BH95G-33D    + BH95G-33S    - MW15-01    - MW15-02    - - YCSR (0.0006mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 233 mg/L in Area B wells

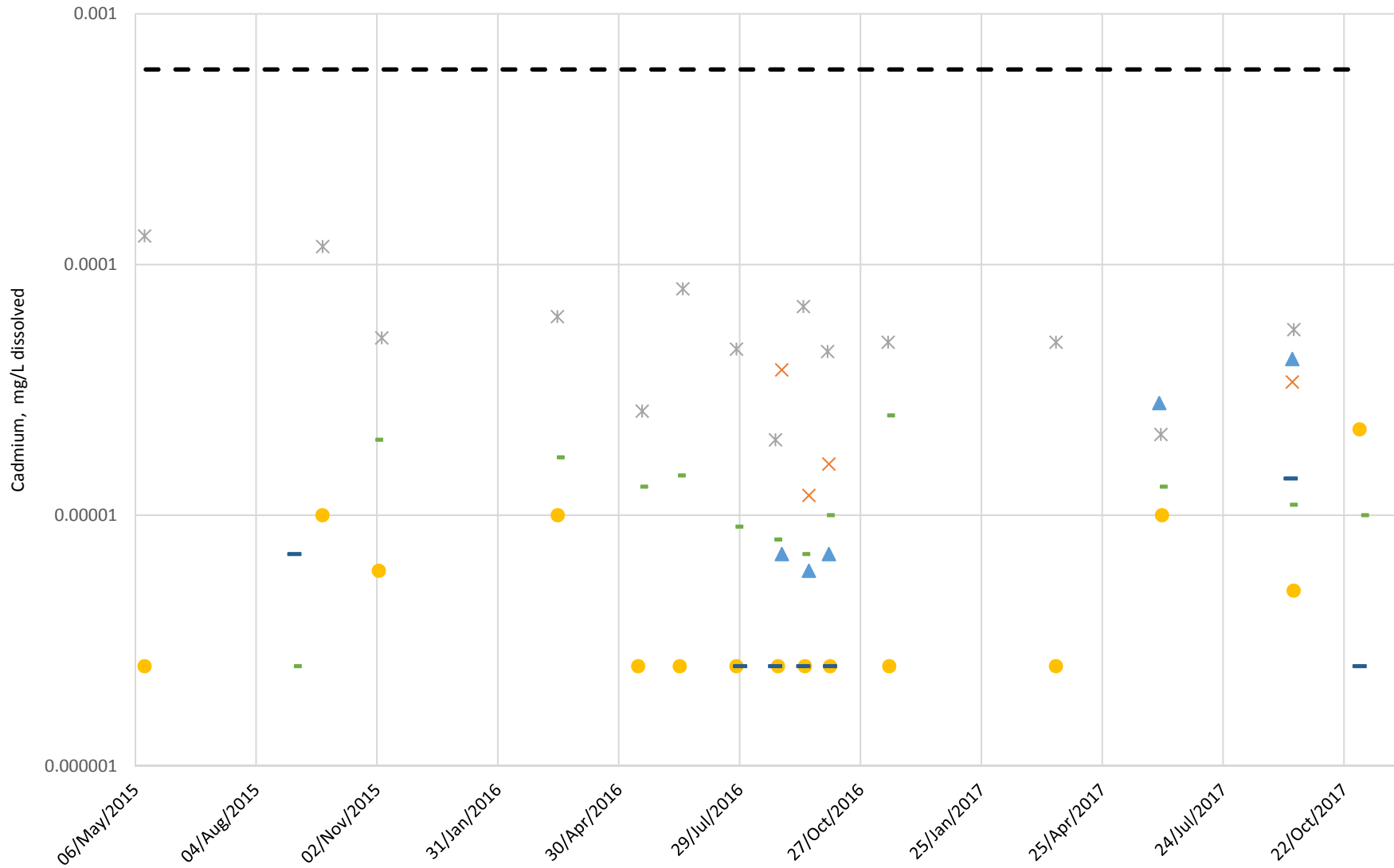


Figure C - 32

# COPPER CONCENTRATION AREA B

▲ MW16-12D    × MW16-12S    \* BH95G-32    ● BH95G-33D    + BH95G-33S    - MW15-01    - MW15-02    - YCSR (0.09mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 233 mg/L in Area B wells

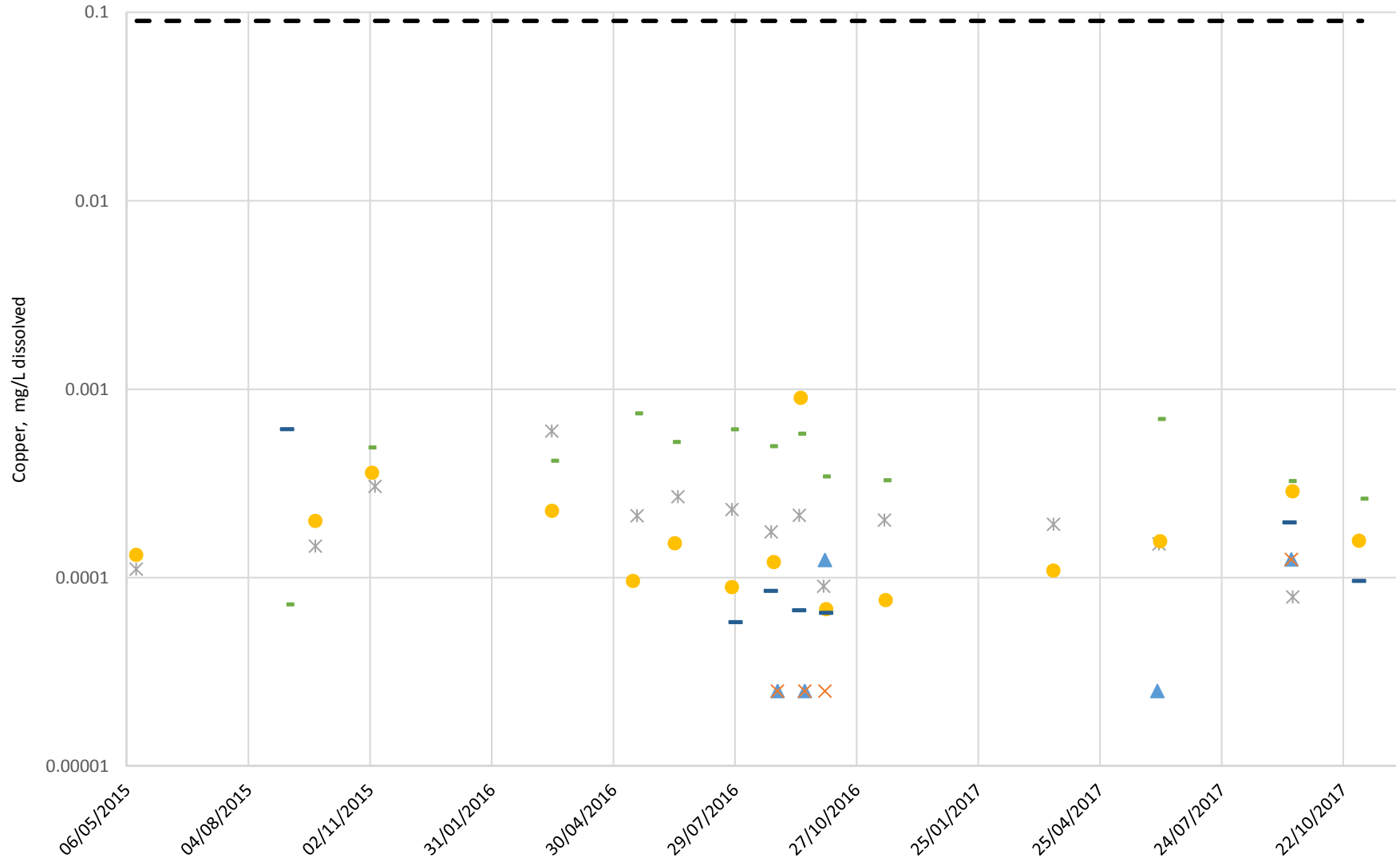


Figure C - 33

# IRON CONCENTRATION AREA B

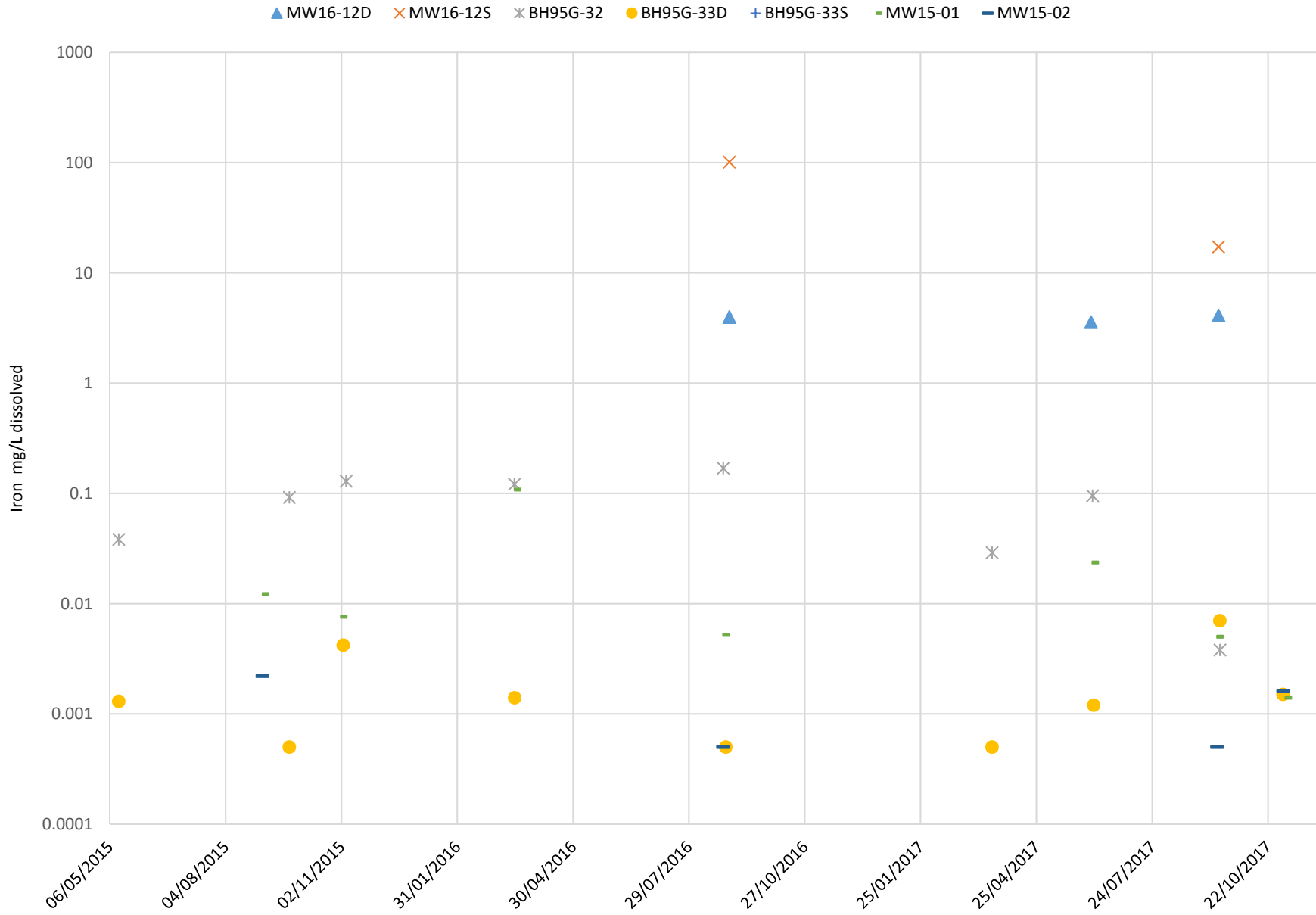


Figure C - 34

# LEAD CONCENTRATION AREA B

▲ MW16-12D   
 × MW16-12S   
 ✖ BH95G-32   
 ● BH95G-33D   
 + BH95G-33S   
 - MW15-01   
 - MW15-02   
 - - - YCSR (0.11mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 233 mg/L in Area B wells

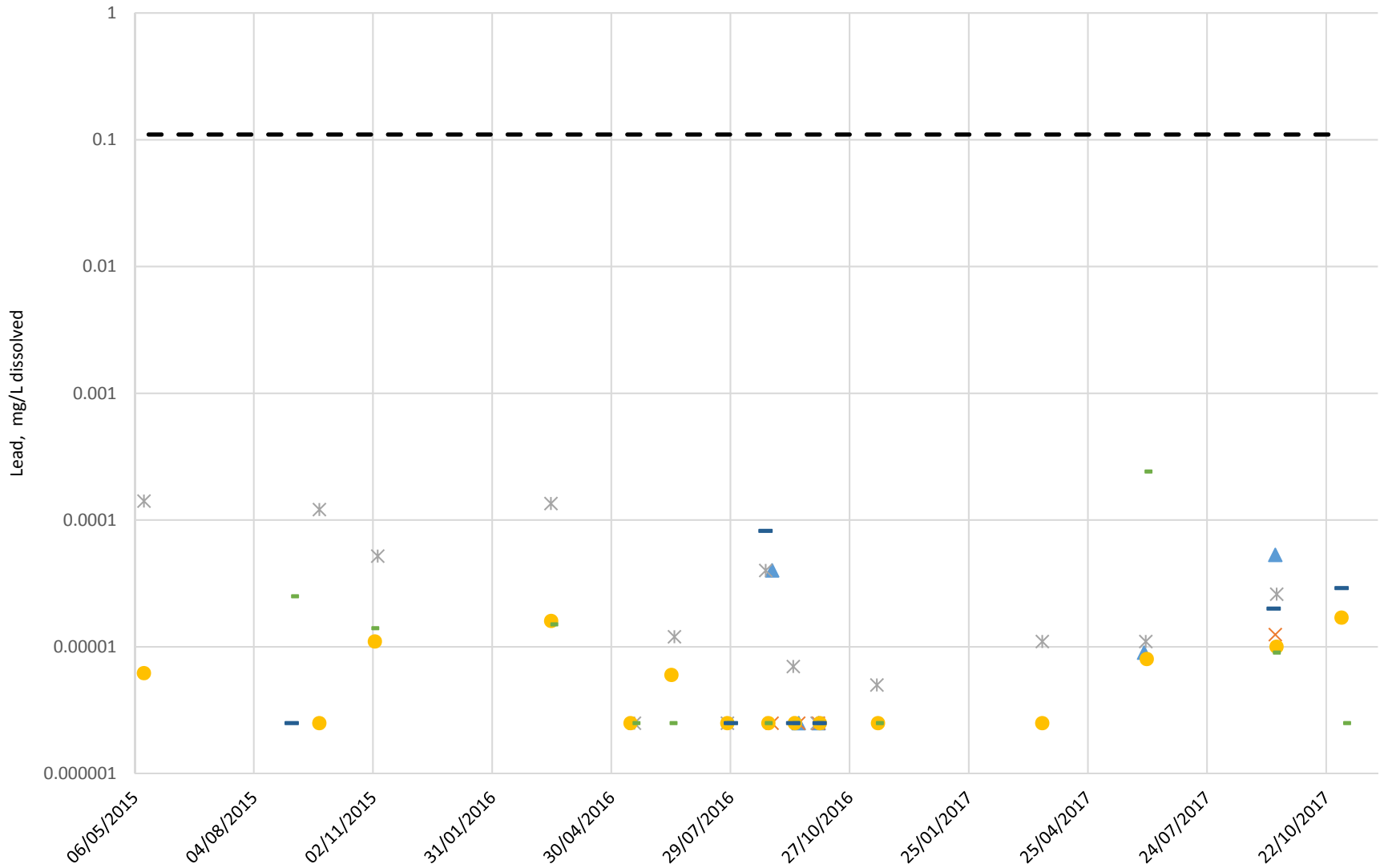


Figure C - 35

# SELENIUM CONCENTRATION AREA B

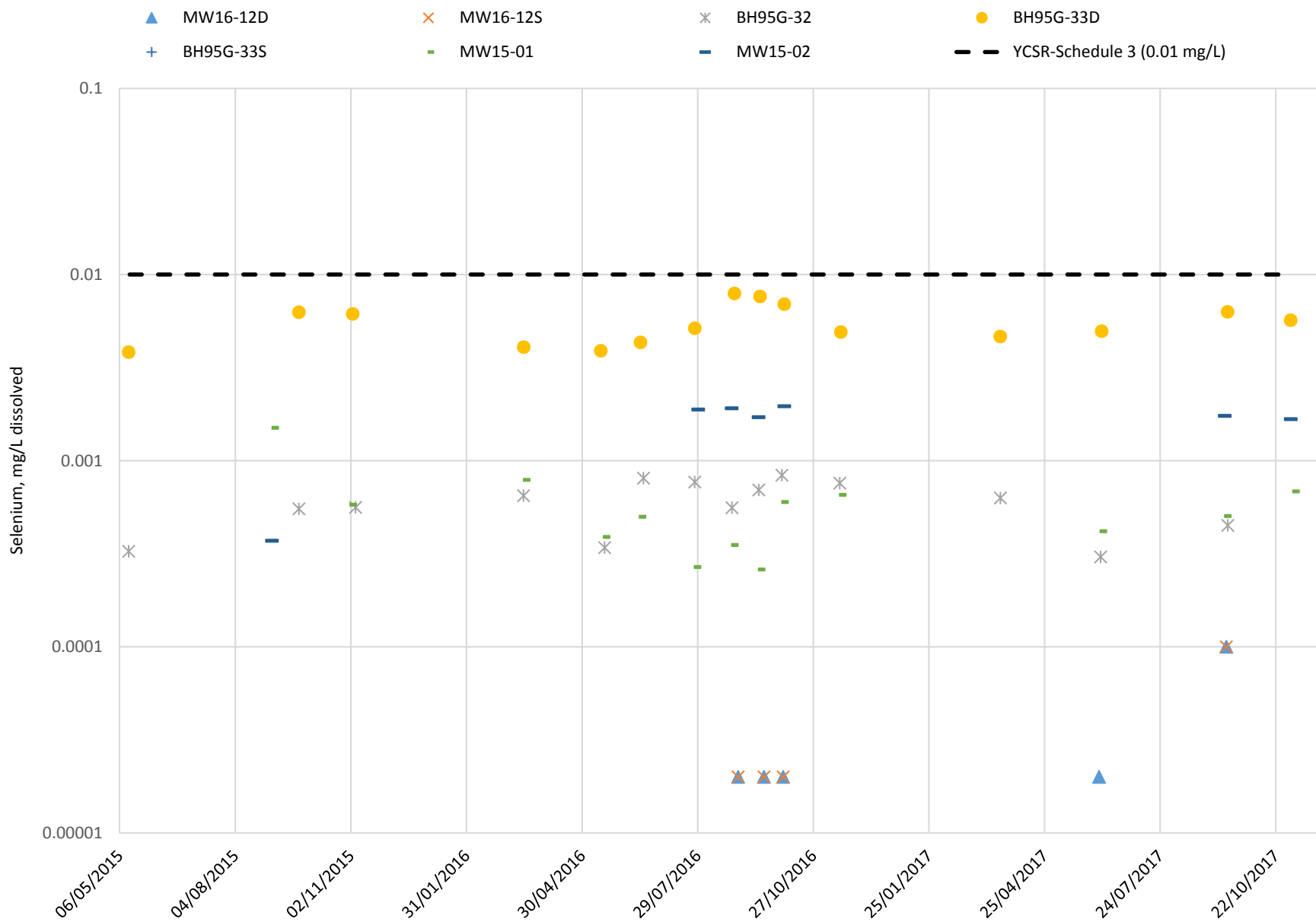


Figure C - 36

# ZINC CONCENTRATION AREA B

▲ MW16-12D    × MW16-12S    \* BH95G-32    ● BH95G-33D    + BH95G-33S    - MW15-01    - MW15-02    - - YCSR (1.65mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 233 mg/L in Area B wells

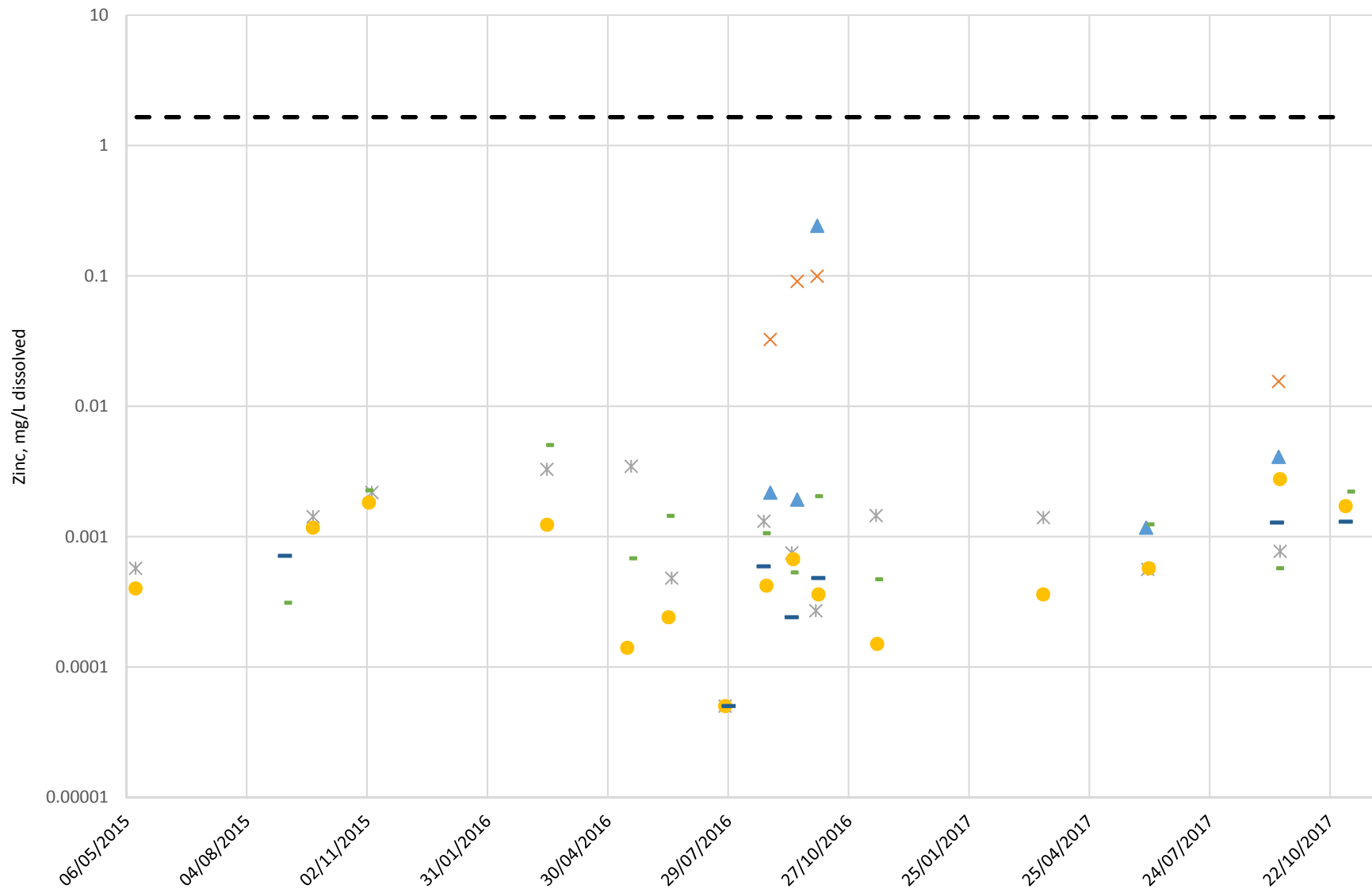


Figure C - 37



# TOTAL IRON CONCENTRATION AREA B

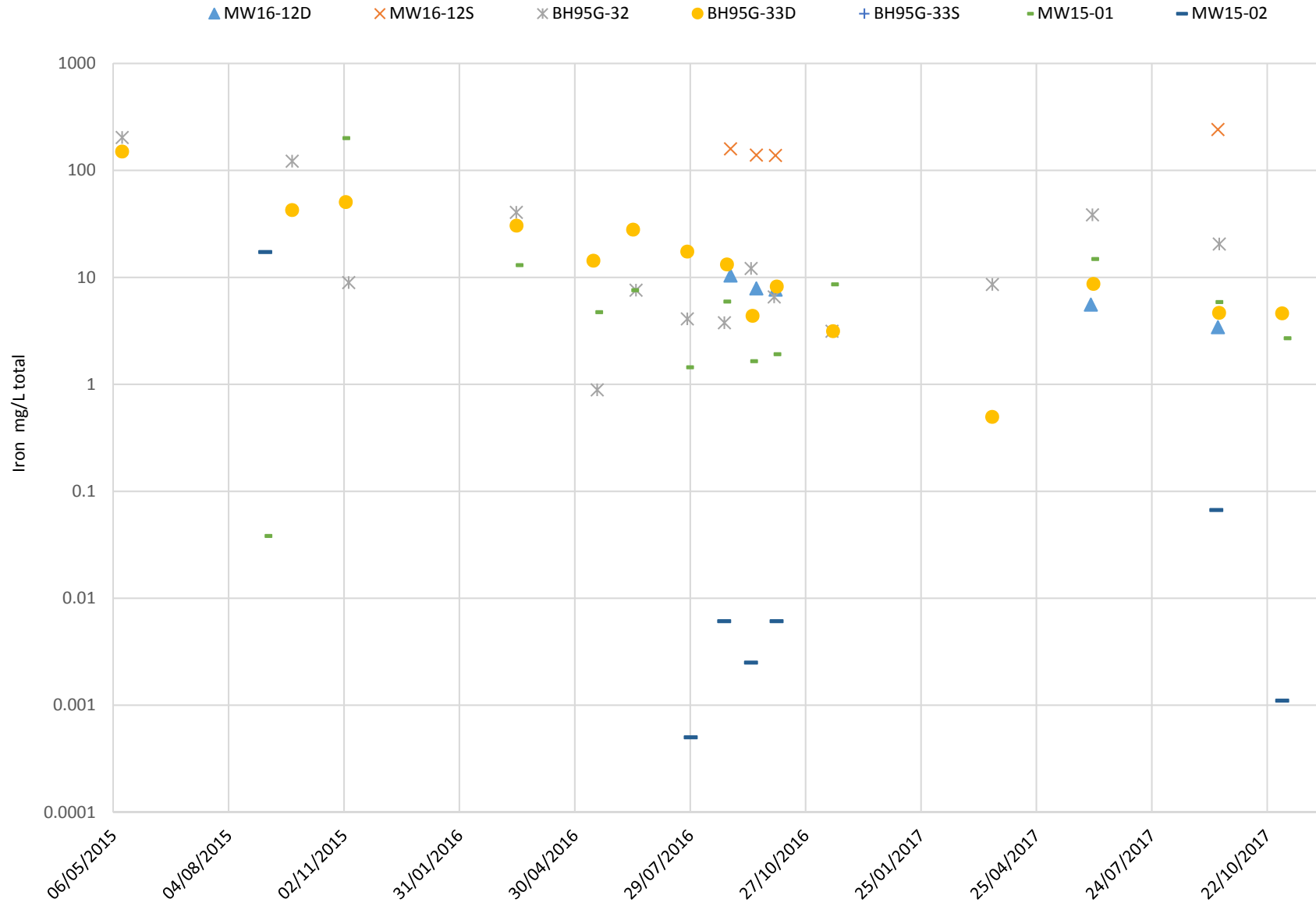


Figure C - 38

C-4

AREA C GROUNDWATER QUALITY PLOTS

# AMMONIA-N CONCENTRATION AREA C

- ◆ MW15-03D
- MW15-03S
- ▲ MW15-04D
- × MW15-04S
- × MW15-05D
- MW15-05S
- + MW15-06
- MW16-16D
- BH95G-30
- ◆ BH95G-31
- — YCSR-Schedule 3 (11.3 mg/L)\*

\*YCSR-Schedule 3 standard based on average pH in Area C wells

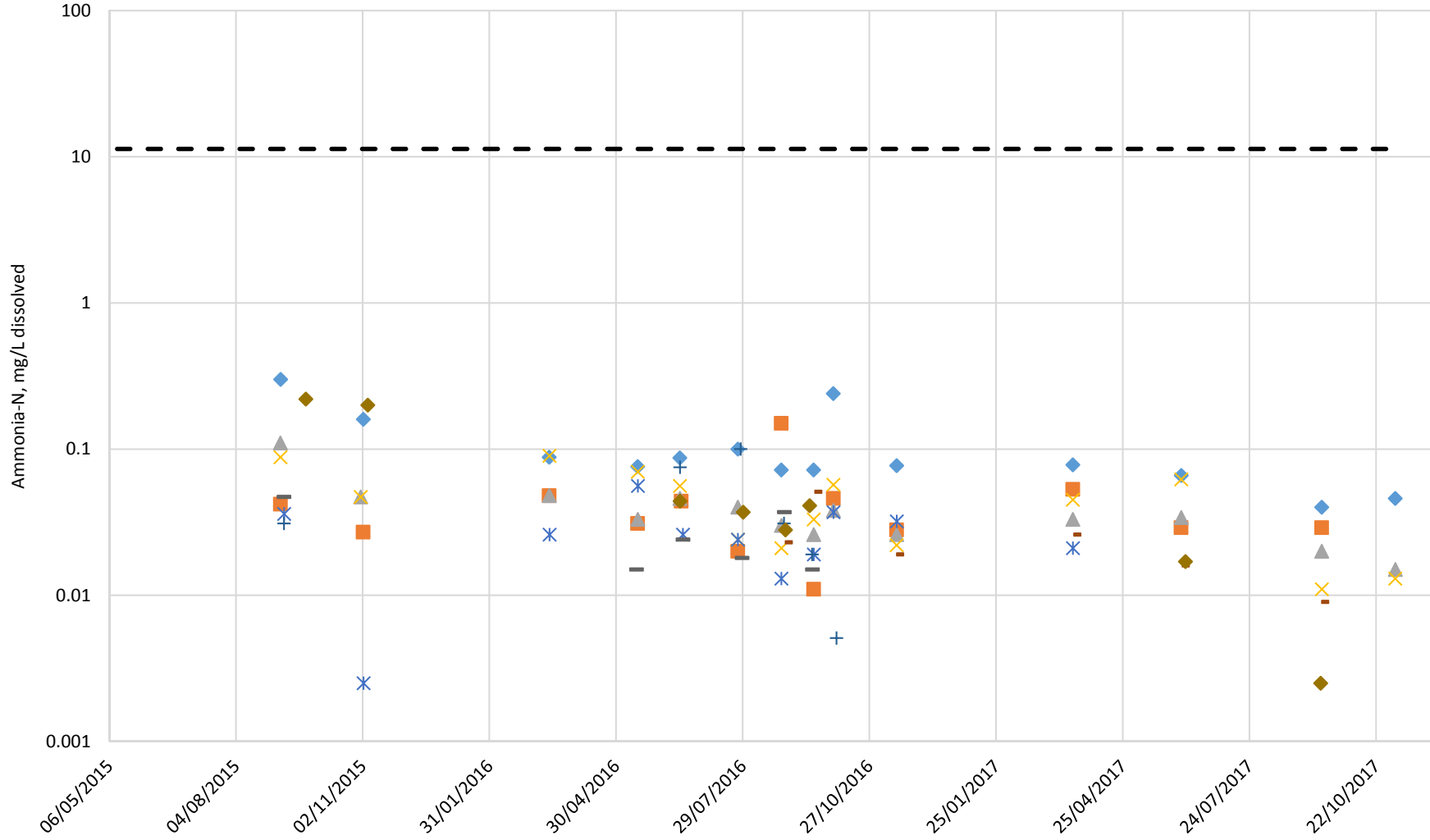


Figure C - 39

# SULPHATE CONCENTRATION AREA C

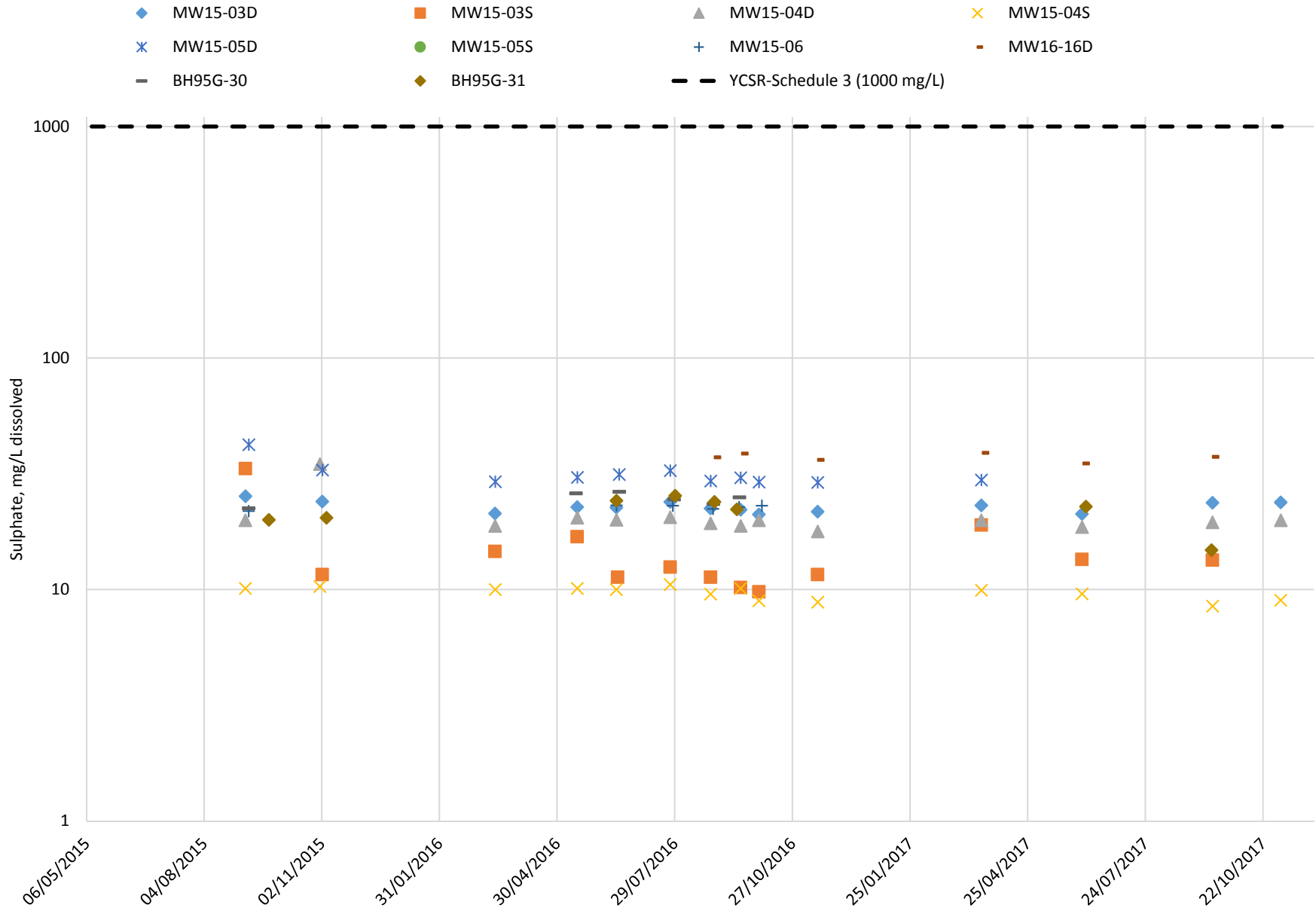


Figure C - 40

# FLOURIDE CONCENTRATION IN AREA C

- ◆ MW15-03D
- MW15-03S
- ▲ MW15-04D
- × MW15-04S
- ✱ MW15-05D
- MW15-05S
- + MW15-06
- MW16-16D
- BH95G-30
- ◆ BH95G-31
- - YCSR (3 mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 157 mg/L in Area C wells

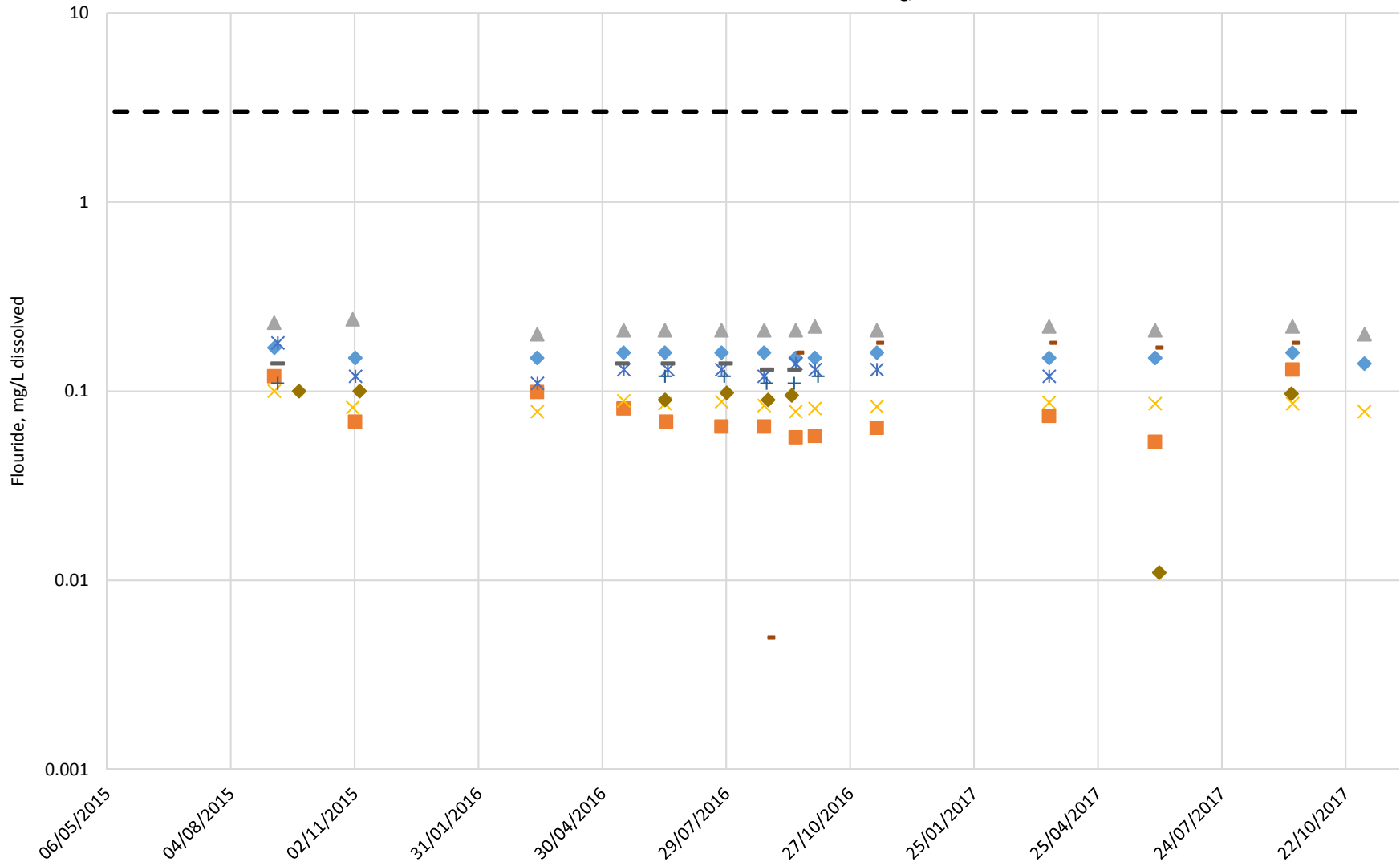


Figure C - 41

# ARSENIC CONCENTRATION AREA C

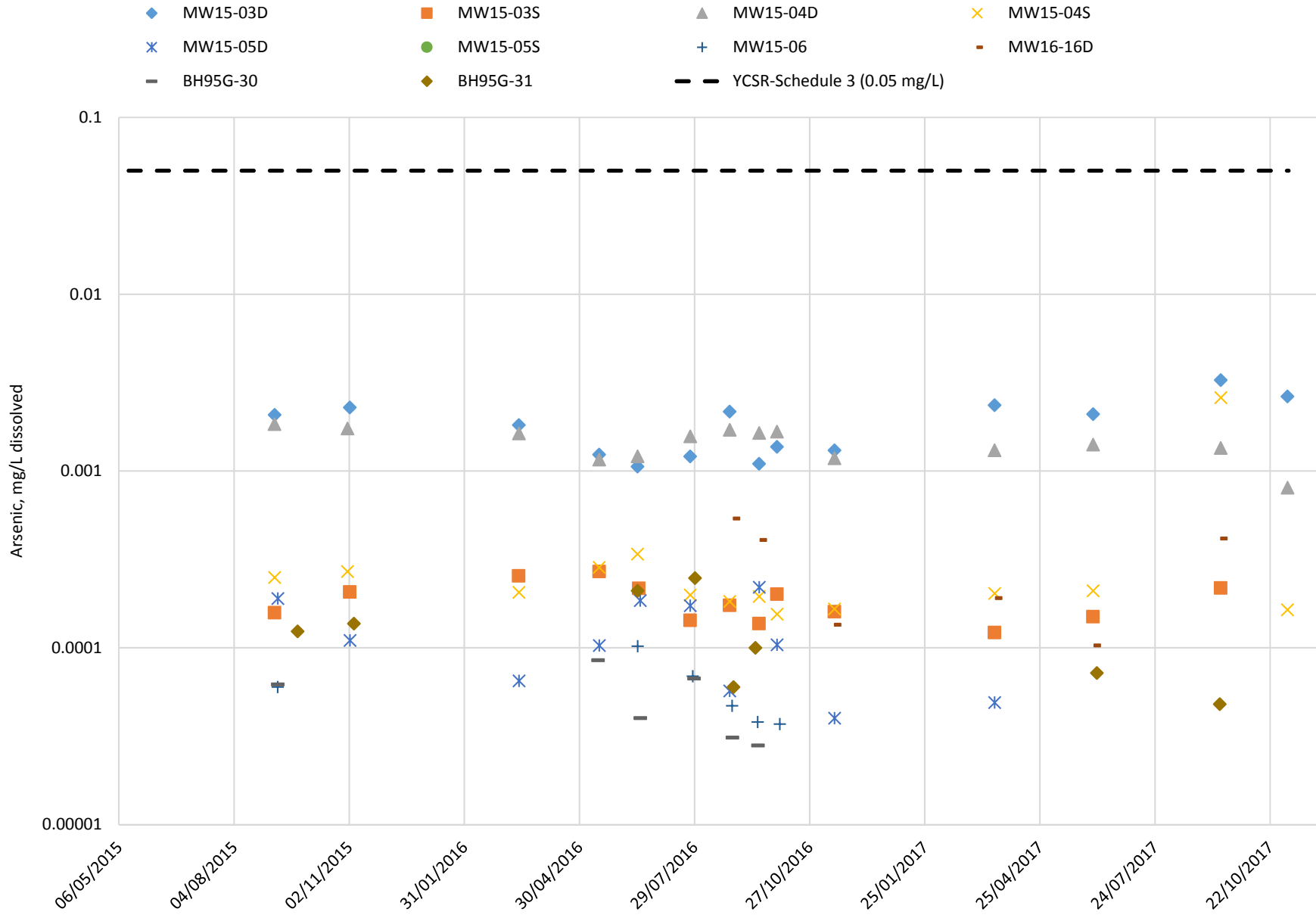


Figure C - 42

# ALUMINUM CONCENTRATION AREA C

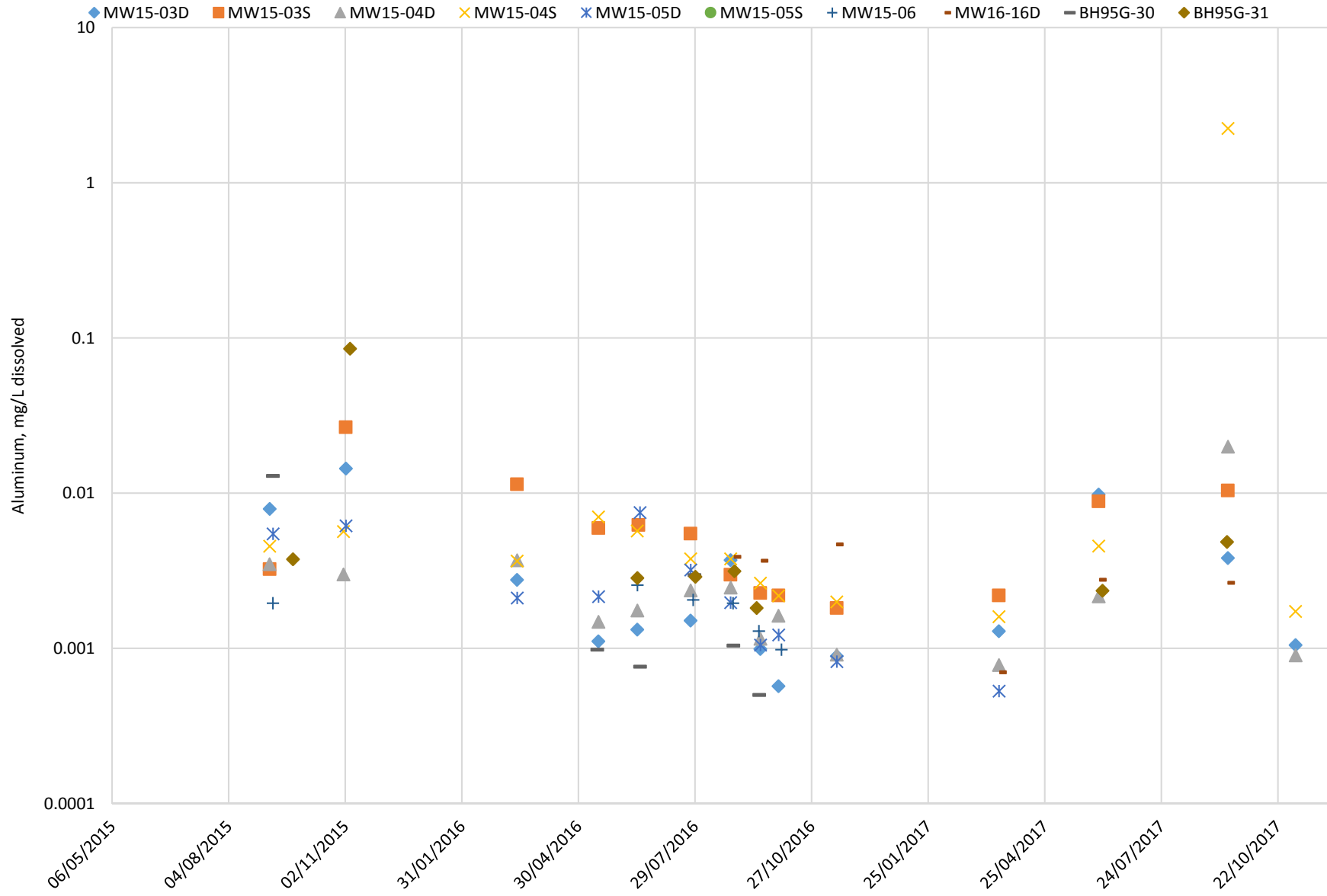


Figure C - 43

# CADMIUM CONCENTRATION AREA C

- ◆ MW15-03D
- MW15-03S
- ▲ MW15-04D
- ✕ MW15-04S
- ✕ MW15-05D
- MW15-05S
- + MW15-06
- MW16-16D
- BH95G-30
- ◆ BH95G-31
- - - YCSR (0.0006mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 157 mg/L in Area C wells

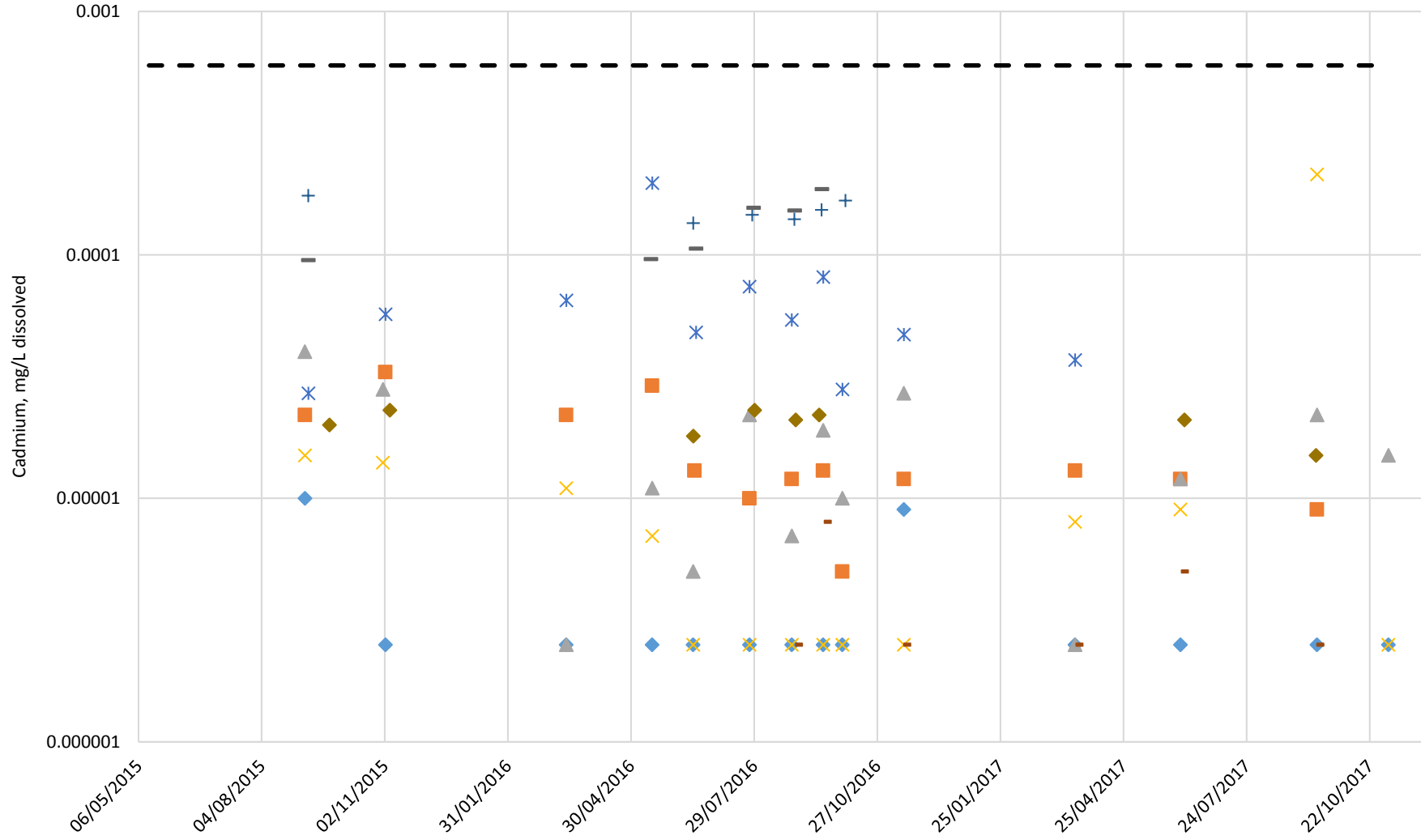


Figure C - 44



# COPPER CONCENTRATION AREA C

- ◆ MW15-03D      ■ MW15-03S      ▲ MW15-04D      ✕ MW15-04S      ✖ MW15-05D      ● MW15-05S
- + MW15-06      - MW16-16D      - BH95G-30      ◆ BH95G-31      - - - YCSR (0.07mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 157 mg/L in Area C wells

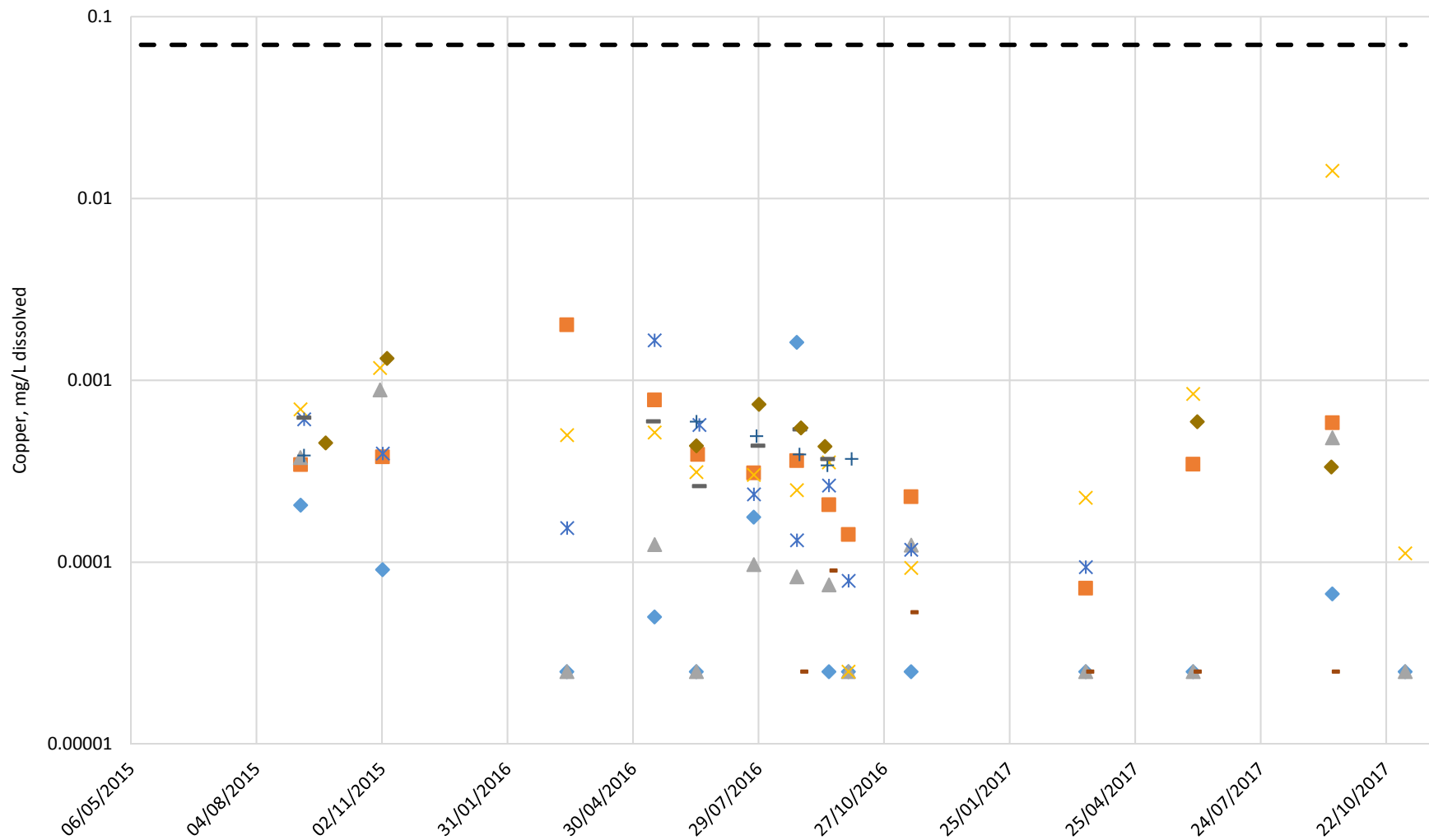


Figure C - 45

# IRON CONCENTRATION AREA C

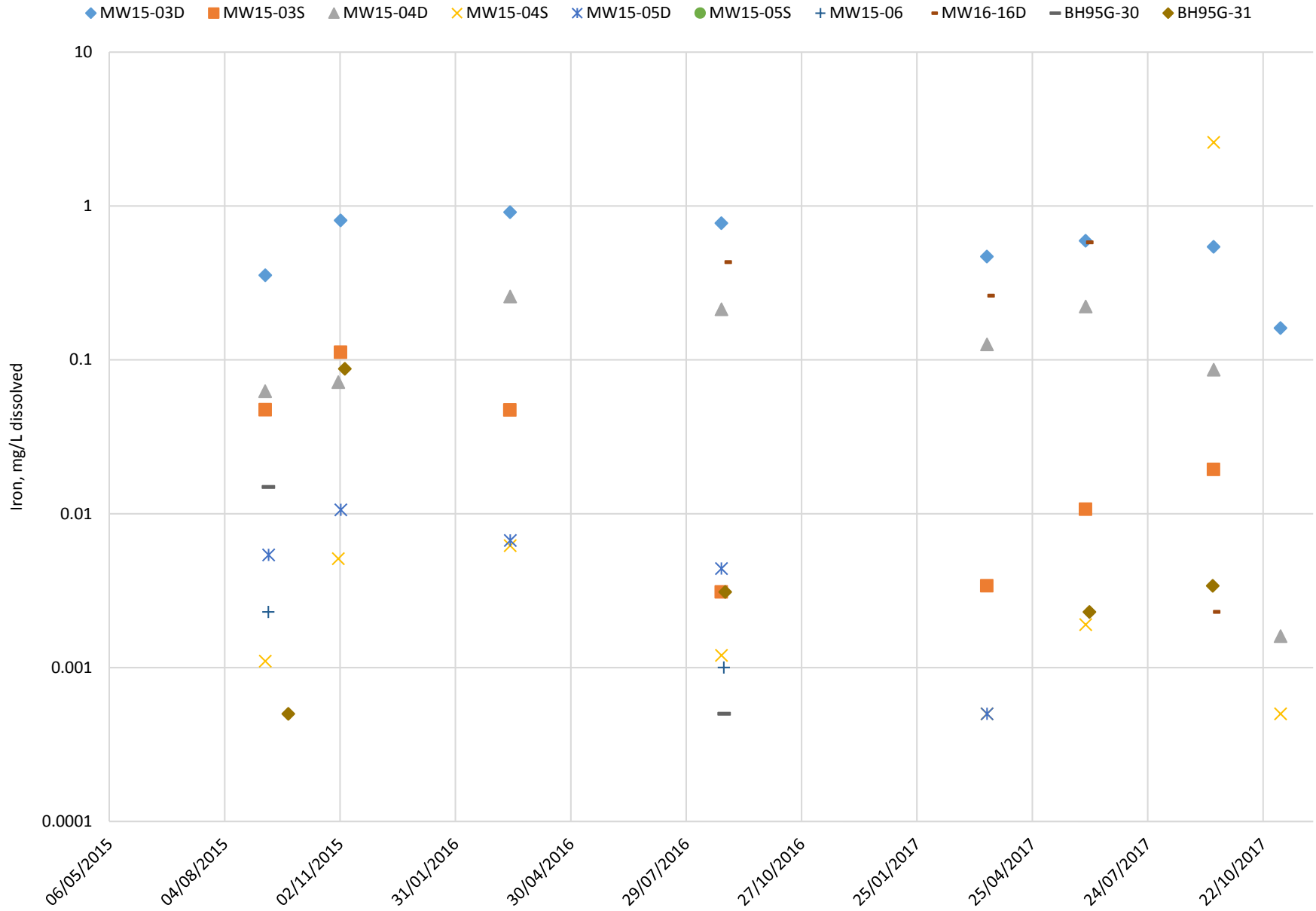


Figure C - 46

# LEAD CONCENTRATION AREA C

- ◆ MW15-03D
- MW15-03S
- ▲ MW15-04D
- ✕ MW15-04S
- ✕ MW15-05D
- MW15-05S
- + MW15-06
- MW16-16D
- BH95G-30
- ◆ BH95G-31
- - - YCSR (0.06mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 157 mg/L in Area C wells

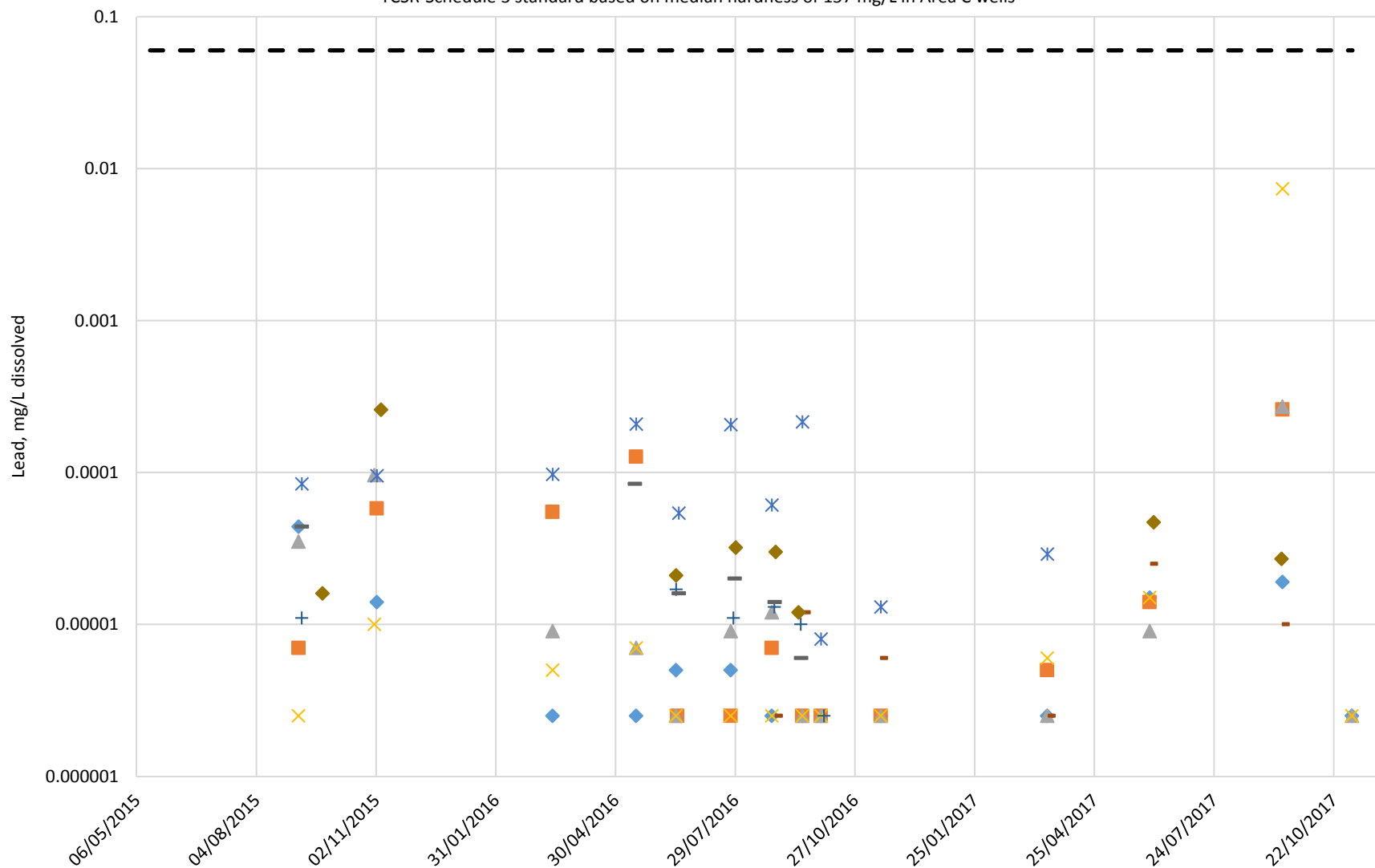


Figure C - 47

# SELENIUM CONCENTRATION AREA C

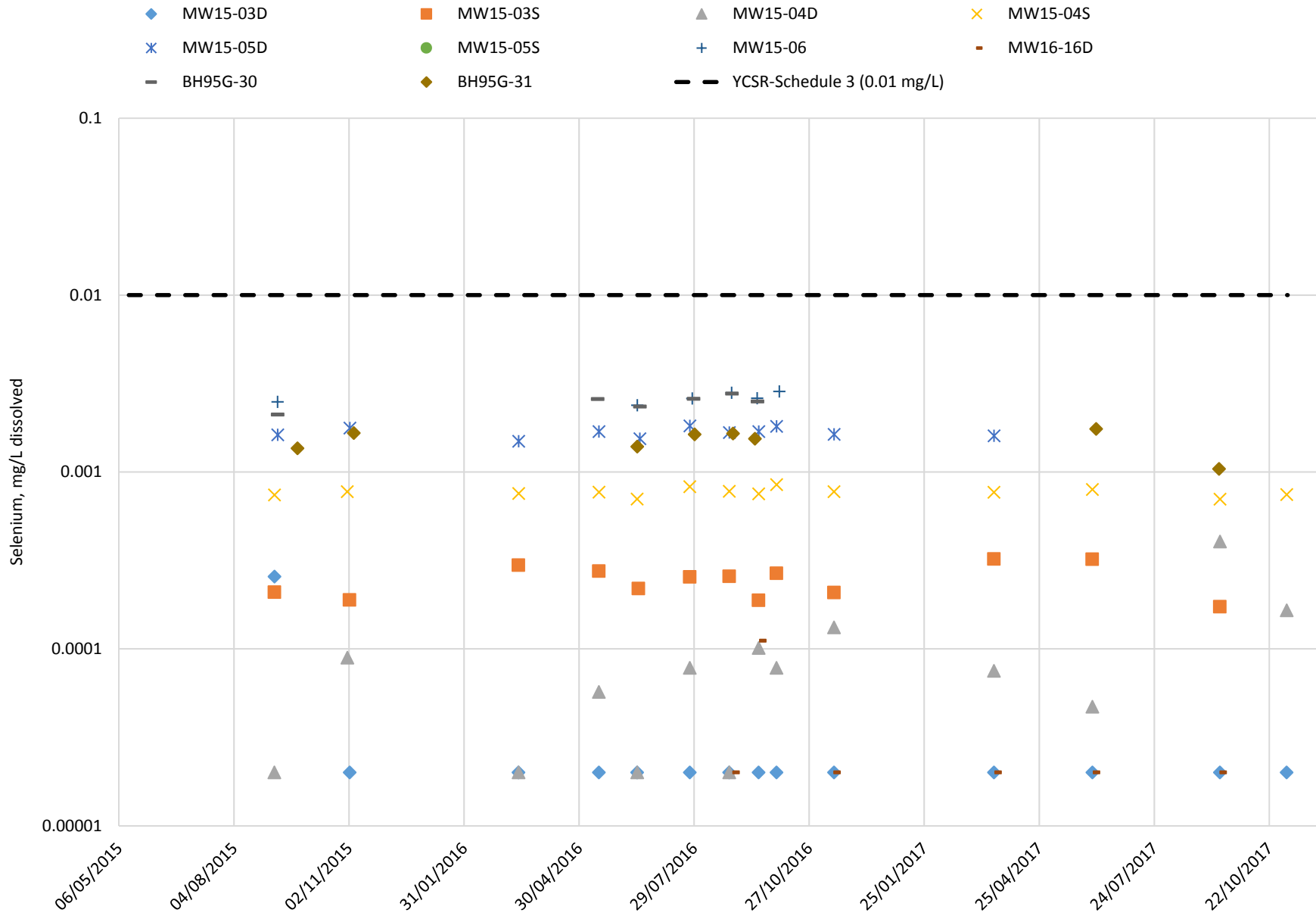


Figure C - 48

# ZINC CONCENTRATION AREA C

- ◆ MW15-03D
- MW15-03S
- ▲ MW15-04D
- × MW15-04S
- ✱ MW15-05D
- MW15-05S
- + MW15-06
- MW16-16D
- BH95G-30
- ◆ BH95G-31
- - YCSR (1.65mg/L)\*

\*YCSR-Schedule 3 standard based on median hardness of 157 mg/L in Area C wells

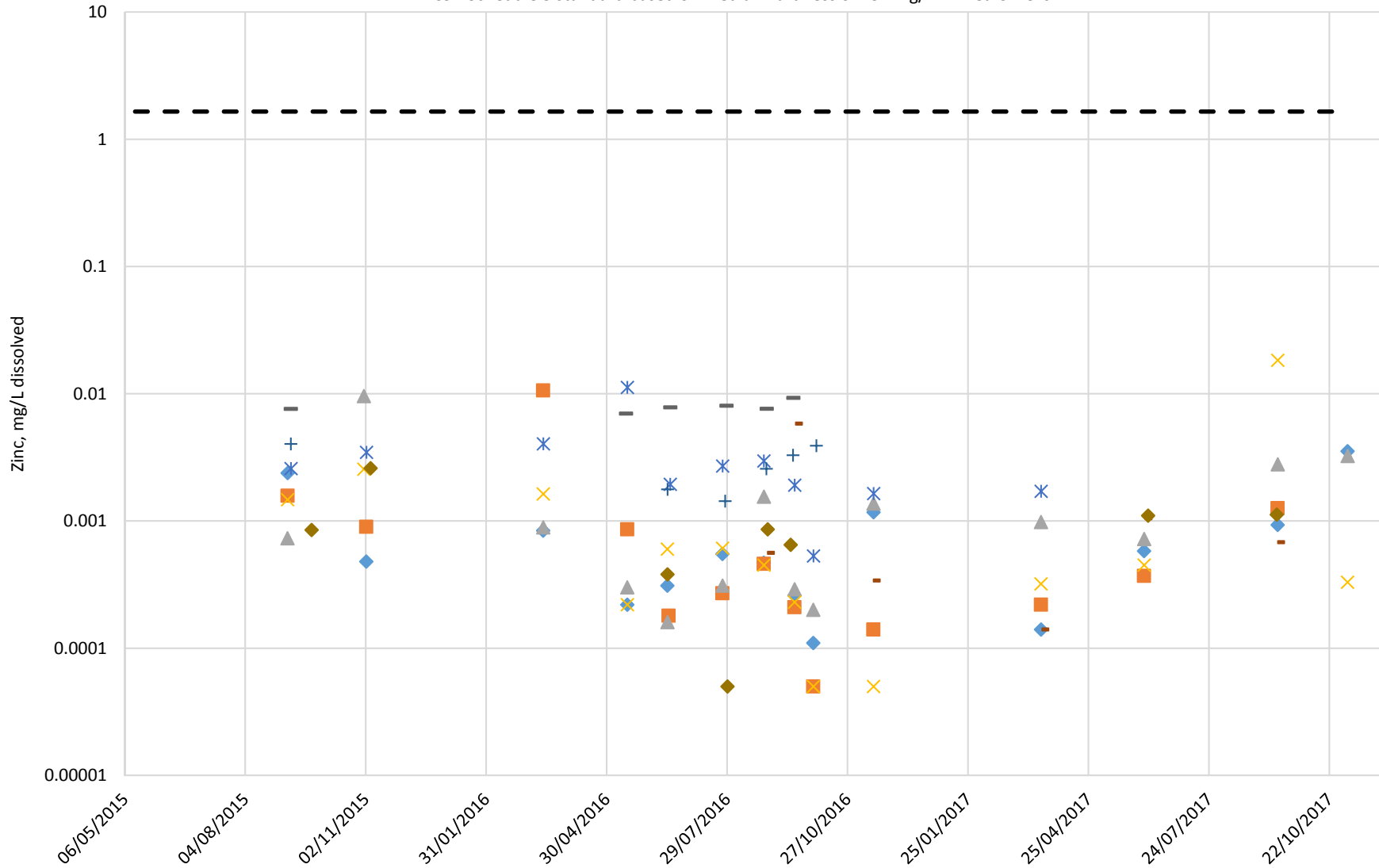


Figure C - 49

# TOTAL IRON CONCENTRATION AREA C

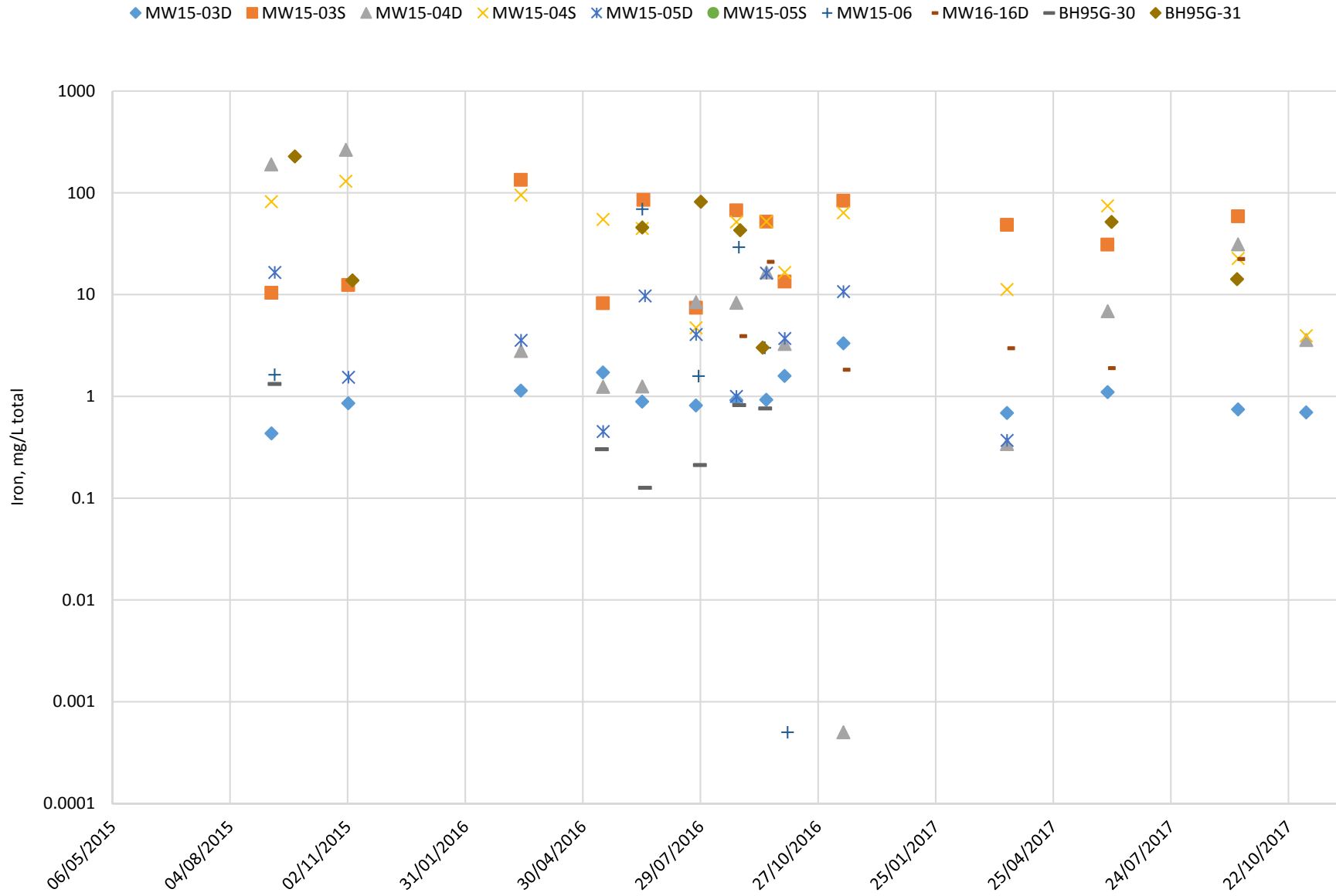


Figure C - 50

## APPENDIX D

# GROUNDWATER QUALITY SUMMARY STATISTICS

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Orp (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetric	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
<b>Station Name</b>	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3		*	0.005	*	*	*	*	*	0.001	0.03
<b>BH95G-129</b>																						
Average	7.53	372	2.16	2.7	21.4	3.8	0.93	0.21	40.9	0.037	0.0014	0.0017	0.0201	0.0138	0.00234	0.003313	0.0000123	0.000125	0.9	0.0000119	0.00002	0.00281
Count	8	8	7	8	6	7	8	8	8	8	8	8	8	7	8	8	8	8	8	8	8	8
Minimum	6.82	353	0.95	1.3	12	-76.5	0.25	0.18	33.4	0.031	0.001	0.001	0.0068	0.0035	0.00055	0.000904	0.0000025	0.000025	0.632	0.0000025	0.00002	0.00005
Maximum	7.9	387	3.4	4.1	31	213	2.5	0.22	54.6	0.048	0.0023	0.0055	0.0424	0.0372	0.00527	0.00678	0.000051	0.000273	1.54	0.000044	0.00002	0.00663
Geometric Mean	7.53	372	2.03	2.56	20.5	3	0.71	0.21	40.4	0.036	0.0013	0.0014	0.017	0.0105	0.00173	0.002736	0.0000063	0.000091	0.847	0.0000061	0.00002	0.0014
Count <DL	0	0	0	0	0	0	2	0	0	0	5	6	0	0	0	0	4	1	0	4	8	1
Standard Deviation	0.35	13	0.77	0.88	6.6	96.4	0.74	0.02	7	0.006	0.0006	0.0016	0.0122	0.0118	0.00177	0.002128	0.000017	0.000101	0.369	0.0000156	0	0.00243
1st Quartile	7.45	362	1.85	2.2	17.8	-43	0.51	0.2	35.6	0.034	0.001	0.001	0.0105	0.0073	0.00079	0.001955	0.0000025	0.000051	0.66	0.0000025	0.00002	0.00068
Median	7.63	372	2.1	2.77	21.5	-18.4	0.77	0.21	39.7	0.035	0.001	0.001	0.017	0.0095	0.00195	0.00261	0.0000042	0.000074	0.737	0.0000042	0.00002	0.00259
3rd Quartile	7.75	384	2.5	3.07	24.7	-3	1	0.22	44.1	0.037	0.0021	0.0013	0.0261	0.0159	0.00349	0.004415	0.0000122	0.000215	0.959	0.0000122	0.00002	0.0044
Count Over Guideline	0	0	0	0	0	0	0	8	0	0	0	0	0	0	2	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	25	0	0	0	0	0	0	0
<b>BH95G-131</b>																						
Average	7.23	1127	2.92	3.34	27.8	-20.4	0.91	0.085	229	0.041	0.001	0.0018	0.1554	0.0556	0.00232	0.00266	0.0000174	0.000171	9.94	0.000925	0.000042	0.00386
Count	9	9	8	9	6	7	9	9	9	9	9	9	9	8	9	9	9	9	9	9	9	9
Minimum	7.05	1090	1.5	0.67	20	-51.8	0.57	0.069	215	0.032	0.001	0.001	0.0106	0.0076	0.00025	0.00132	0.0000025	0.000025	3.97	0.000084	0.00002	0.00155
Maximum	7.66	1160	4.7	5.8	35.1	66	1.3	0.099	247	0.054	0.001	0.0033	0.383	0.178	0.0136	0.0071	0.000039	0.000423	20.8	0.00194	0.000165	0.00811
Geometric Mean	7.23	1126	2.74	2.91	27.2	1.8	0.87	0.084	229	0.04	0.001	0.0016	0.0895	0.0275	0.00081	0.00232	0.0000105	0.000109	8.31	0.000531	0.00003	0.00334
Count <DL	0	0	0	0	0	0	0	0	0	0	9	5	0	0	4	0	3	2	0	0	6	0
Standard Deviation	0.19	24	1.08	1.51	6.7	39.9	0.27	0.01	10	0.007	0	0.001	0.1268	0.0711	0.00435	0.00178	0.0000149	0.000153	6.22	0.000784	0.000048	0.00231
1st Quartile	7.09	1110	2	2.6	23	-41.2	0.69	0.075	222	0.035	0.001	0.001	0.0299	0.0112	0.00025	0.00169	0.0000025	0.000061	4.89	0.000214	0.00002	0.00224
Median	7.2	1120	3.05	3.4	27	-30.1	0.88	0.085	229	0.039	0.001	0.001	0.162	0.0215	0.00079	0.00186	0.000016	0.000108	5.87	0.000897	0.00002	0.00296
3rd Quartile	7.26	1150	3.55	4.4	34	-22.2	1	0.094	235	0.046	0.001	0.0027	0.189	0.065	0.00105	0.00272	0.000033	0.000308	14.6	0.00167	0.000042	0.00467
Count Over Guideline	0	0	0	0	0	0	0	0	9	0	0	0	0	0	1	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	0	100	0	0	0	0	0	11.1	0	0	0	0	0	0	0
<b>BH95G-146</b>																						
Average	7.43	758	3.6	2.4	21.9	-43.5	0.44	0.3	251	0.157	0.0013	0.0021	0.1101	0.0894	0.00138	0.00109	0.0000067	0.000104	1.925	0.0000073	0.000046	0.00263
Count	7	7	7	7	5	5	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7
Minimum	6.67	740	2.9	1.1	10	-57.5	0.25	0.28	232	0.022	0.001	0.001	0.0034	0.001	0.00025	0.000296	0.0000025	0.000025	0.685	0.0000025	0.00002	0.0005
Maximum	7.76	771	4.7	3.38	31.4	-19.4	0.8	0.31	279	0.78	0.0021	0.0053	0.429	0.433	0.00315	0.00452	0.000025	0.000275	4.47	0.000025	0.0002	0.0103
Geometric Mean	7.42	758	3.5	2.24	19.9	1	0.39	0.3	250	0.067	0.0012	0.0017	0.0369	0.0136	0.00103	0.000678	0.0000042	0.000064	1.659	0.0000044	0.000028	0.00144
Count <DL	0	0	0	0	0	0	4	0	0	0	5	4	0	1	2	0	6	4	0	6	7	1
Standard Deviation	0.37	11	0.6	0.85	9.7	14.3	0.25	0.01	19	0.277	0.0005	0.0016	0.1508	0.1626	0.00107	0.001521	0.0000085	0.00011	1.228	0.0000088	0.000068	0.00357
1st Quartile	7.39	752	3.2	1.83	13	-49	0.25	0.29	237	0.037	0.001	0.001	0.0094	0.0037	0.00069	0.000433	0.0000025	0.000025	1.335	0.0000025	0.00002	0.00071
Median	7.54	758	3.3	2.53	27	-46.7	0.25	0.3	243	0.045	0.001	0.001	0.0734	0.0067	0.00098	0.000547	0.0000025	0.000054	1.44	0.0000025	0.00002	0.0011
3rd Quartile	7.63	767	3.8	3.05	28	-44.8	0.66	0.3	264	0.087	0.0015	0.0027	0.123	0.089	0.00193	0.000701	0.0000058	0.000162	2.105	0.0000079	0.00002	0.00254
Count Over Guideline	0	0	0	0	0	0	0	7	7	1	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	100	100	14.3	0	0	0	0	0	0	0	0	0	0	0	0



	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Opr (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetry	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3		*	0.005	*	*			*	0.001	0.03
BH95G-21																						
Average	7.52	405	2.2	1.5	17	8.9	0.82	0.094	47.1	0.068	0.0014	0.0031	1.2873	0.1124	0.00546	0.001109	0.0000076	0.00015	62.8	0.0000264	0.000038	0.0034
Count	8	8	7	8	5	5	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8	8
Minimum	7.3	400	0.7	0	12	-67.8	0.25	0.083	46	0.019	0.001	0.001	0.0072	0.001	0.00052	0.000691	0.000005	0.000052	14	0.0000025	0.00002	0.00005
Maximum	7.65	411	4.3	3.1	27	246.8	1.9	0.1	48.6	0.27	0.0038	0.0048	7.33	0.393	0.0236	0.00156	0.000015	0.000242	228	0.0000854	0.000077	0.0194
Geometric Mean	7.51	405	1.9	1.52	16	3	0.63	0.094	47.1	0.047	0.0012	0.0027	0.378	0.0225	0.00236	0.001053	0.0000072	0.000135	37.8	0.0000118	0.000032	0.00052
Count <DL	0	0	0	0	0	0	3	0	0	0	7	2	0	1	0	0	0	0	0	3	5	2
Standard Deviation	0.12	4	1.2	0.88	6	133.4	0.6	0.005	1	0.082	0.001	0.0015	2.4572	0.1554	0.00778	0.000374	0.0000031	0.000064	77.2	0.00003	0.000025	0.00672
1st Quartile	7.43	403	1.5	1.27	13	-49.2	0.25	0.093	46.4	0.034	0.001	0.002	0.3115	0.0024	0.00074	0.000799	0.000006	0.000112	20.2	0.0000025	0.00002	0.0001
Median	7.56	404	1.7	1.5	15	-46.7	0.78	0.095	47	0.044	0.001	0.0034	0.359	0.0357	0.00268	0.001086	0.0000066	0.000161	26.4	0.0000147	0.00002	0.00046
3rd Quartile	7.59	407	2.8	1.77	17	-38.5	1.09	0.096	47.9	0.051	0.001	0.0041	0.7632	0.1643	0.00604	0.001393	0.0000078	0.000191	59.4	0.0000432	0.000062	0.00221
Count Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
BH95G-22																						
Average	7.24	351	3.5	8.09	75.2	197.9	0.59	0.055	44.8	0.079	0.0058	0.326	1.4024	0.4139	0.00851	0.000124	0.000128	0.001358	99.4	0.0000818	0.000697	0.00597
Count	12	12	12	11	7	9	12	12	12	12	12	12	12	10	11	11	11	11	12	11	11	11
Minimum	5.98	315	1.17	6.27	53.5	68.4	0.25	0.047	35.1	0.011	0.001	0.105	0.0158	0.0025	0.0007	0.000024	0.000074	0.000549	11.3	0.0000025	0.000461	0.0033
Maximum	7.56	391	10	11	96	390	1.3	0.07	52.8	0.51	0.026	0.768	6.61	3.27	0.038	0.000302	0.000194	0.00644	405	0.000274	0.000879	0.00787
Geometric Mean	7.22	350	2.96	7.95	73.9	166.6	0.47	0.055	44.5	0.044	0.0029	0.275	0.3347	0.0482	0.00299	0.000103	0.000124	0.000984	57.3	0.0000328	0.000683	0.00581
Count <DL	0	0	0	0	0	0	6	0	0	0	5	0	0	0	0	0	0	0	0	1	0	0
Standard Deviation	0.44	24	2.37	1.62	14.9	123.6	0.41	0.008	5.6	0.137	0.0078	0.198	2.1827	1.0109	0.01322	0.000077	0.000033	0.001705	116.3	0.0001014	0.000143	0.00136
1st Quartile	7.16	331	2.25	7.2	65.2	103.7	0.25	0.051	40.6	0.034	0.001	0.165	0.1901	0.0154	0.00094	0.000077	0.000107	0.000697	24.9	0.0000115	0.000581	0.0051
Median	7.39	353	3.1	7.7	77	142.6	0.41	0.054	44.8	0.041	0.0022	0.318	0.3675	0.0288	0.00186	0.000106	0.000129	0.000794	50.6	0.000031	0.000698	0.00613
3rd Quartile	7.5	369	3.6	8.62	84.7	329.4	0.91	0.058	49.1	0.049	0.0071	0.403	1.3	0.2147	0.00826	0.000157	0.000136	0.001105	135.2	0.0001285	0.000831	0.00692
Count Over Guideline	1	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	1	0	0	0	0
% Over Guideline	8.3	0	0	0	0	0	0	0	0	8.3	0	0	0	0	0	0	0	9.1	0	0	0	0
BH95G-23																						
Average	7.02	267	0.5	1.14			0.25	0.06	72.8	0.5	0.001	0.001	0.0918	0.0214	0.00583	0.0747	0.00169	0.000119	276	0.000361	0.00002	2.03
Count	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	7.02	267	0.5	1.14			0.25	0.06	72.8	0.5	0.001	0.001	0.0918	0.0214	0.00583	0.0747	0.00169	0.000119	276	0.000361	0.00002	2.03
Maximum	7.02	267	0.5	1.14			0.25	0.06	72.8	0.5	0.001	0.001	0.0918	0.0214	0.00583	0.0747	0.00169	0.000119	276	0.000361	0.00002	2.03
Geometric Mean	7.02	267	0.5	1.14			0.25	0.06	72.8	0.5	0.001	0.001	0.0918	0.0214	0.00583	0.0747	0.00169	0.000119	276	0.000361	0.00002	2.03
Count <DL	0	0	0	0			1	0	0	0	1	1	0	0	0	0	0	0	0	0	1	0
Standard Deviation	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1st Quartile	7.02	267	0.5	1.14			0.25	0.06	72.8	0.5	0.001	0.001	0.0918	0.0214	0.00583	0.0747	0.00169	0.000119	276	0.000361	0.00002	2.03
Median	7.02	267	0.5	1.14			0.25	0.06	72.8	0.5	0.001	0.001	0.0918	0.0214	0.00583	0.0747	0.00169	0.000119	276	0.000361	0.00002	2.03
3rd Quartile	7.02	267	0.5	1.14			0.25	0.06	72.8	0.5	0.001	0.001	0.0918	0.0214	0.00583	0.0747	0.00169	0.000119	276	0.000361	0.00002	2.03
Count Over Guideline	0	0	0	0			0	0	0	1	0	0	0	0	0	1	1	0	0	0	0	1
% Over Guideline	0	0	0	0			0	0	0	100	0	0	0	0	0	100	100	0	0	0	0	100

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Opr (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetry	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3		*	0.005	*	*			*	0.001	0.03
BH95G-24																						
Average	7.24	768	0.6	0.82			0.63	0.067	135	0.062	0.0062	0.0054	0.0065	0.004	0.00139	0.0103	0.00375	0.000408	34.1	0.00406	0.00002	0.845
Count	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	7.24	768	0.6	0.82			0.63	0.067	135	0.062	0.0062	0.0054	0.0065	0.004	0.00139	0.0103	0.00375	0.000408	34.1	0.00406	0.00002	0.845
Maximum	7.24	768	0.6	0.82			0.63	0.067	135	0.062	0.0062	0.0054	0.0065	0.004	0.00139	0.0103	0.00375	0.000408	34.1	0.00406	0.00002	0.845
Geometric Mean	7.24	768	0.6	0.82			0.63	0.067	135	0.062	0.0062	0.0054	0.0065	0.004	0.00139	0.0103	0.00375	0.000408	34.1	0.00406	0.00002	0.845
Count <DL	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Standard Deviation	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
1st Quartile	7.24	768	0.6	0.82			0.63	0.067	135	0.062	0.0062	0.0054	0.0065	0.004	0.00139	0.0103	0.00375	0.000408	34.1	0.00406	0.00002	0.845
Median	7.24	768	0.6	0.82			0.63	0.067	135	0.062	0.0062	0.0054	0.0065	0.004	0.00139	0.0103	0.00375	0.000408	34.1	0.00406	0.00002	0.845
3rd Quartile	7.24	768	0.6	0.82			0.63	0.067	135	0.062	0.0062	0.0054	0.0065	0.004	0.00139	0.0103	0.00375	0.000408	34.1	0.00406	0.00002	0.845
Count Over Guideline	0	0	0	0			0	0	1	0	0	0	0	0	0	1	0	0	0	0	0	1
% Over Guideline	0	0	0	0			0	0	100	0	0	0	0	0	0	100	100	0	0	0	0	100
BH95G-25D																						
Average	7.13	1050	2	1.86	19.8	6.71	1.16	0.093	239	0.1	0.0015	0.0075	0.1329	0.0628	0.00114	0.000969	0.0000042	0.000442	14.38	0.0000169	0.00002	0.00984
Count	10	10	10	9	7	8	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10	10
Minimum	7	1020	1	0	9	-42.3	0.8	0.083	220	0.07	0.001	0.001	0.0059	0.0034	0.00025	0.00047	0.0000025	0.000025	3.43	0.0000025	0.00002	0.00375
Maximum	7.26	1080	3.8	6.57	57	175	2	0.1	260	0.2	0.0058	0.053	0.413	0.365	0.0033	0.00166	0.00001	0.0037	31.2	0.0000658	0.00002	0.0192
Geometric Mean	7.13	1050	1.8	1.53	15.7	3	1.12	0.093	238	0.095	0.0012	0.0023	0.0564	0.022	0.00075	0.000875	0.0000036	0.000097	11.68	0.0000072	0.00002	0.00887
Count <DL	0	0	0	0	0	0	0	0	0	0	9	6	0	0	4	0	7	3	0	5	10	0
Standard Deviation	0.09	19	0.8	1.94	17.3	72.7	0.34	0.005	16	0.038	0.0015	0.0162	0.1523	0.1106	0.00105	0.000467	0.000003	0.001146	9.34	0.0000237	0	0.0047
1st Quartile	7.06	1042	1.5	0.9	9.4	-36.75	1	0.09	222	0.079	0.001	0.001	0.0147	0.0077	0.00025	0.0006	0.0000025	0.000036	7.12	0.0000025	0.00002	0.00668
Median	7.14	1050	1.9	1.18	11	-15.55	1.1	0.094	240	0.086	0.001	0.001	0.0819	0.0197	0.00103	0.000804	0.0000025	0.00009	12.45	0.0000042	0.00002	0.00873
3rd Quartile	7.21	1060	2.4	2.4	21.5	2.77	1.2	0.097	253	0.1	0.001	0.0034	0.2138	0.0671	0.00126	0.001395	0.0000051	0.000129	18.05	0.0000193	0.00002	0.01195
Count Over Guideline	0	0	0	0	0	0	0	0	10	1	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	0	100	10	0	0	0	0	0	0	0	0	0	0	0	0
BH95G-25S																						
Average	7.24	934	1.7	2.95	17.7	-46.6	0.96	0.12	189	0.32	0.002	0.0018	0.6558	0.1065	0.00083	0.00397	0.0000053	0.000071	34.2	0.0000068	0.00002	0.00056
Count	11	11	11	10	8	8	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11	11
Minimum	7.13	867	0.1	0	2	-91.6	0.51	0.11	167	0.16	0.001	0.001	0.0047	0.0024	0.00025	0.00127	0.0000025	0.000025	10.5	0.0000025	0.00002	0.00005
Maximum	7.5	981	3.3	11.3	55.2	111.5	1.3	0.14	203	0.91	0.0095	0.0041	3.28	0.843	0.00361	0.00824	0.00001	0.000116	80.5	0.000017	0.00002	0.00134
Geometric Mean	7.24	933	1.4	2	11.6	1.8	0.92	0.12	188	0.29	0.0014	0.0016	0.1312	0.0214	0.00048	0.00295	0.0000045	0.000058	27.9	0.0000051	0.00002	0.00044
Count <DL	0	0	0	0	0	0	0	0	0	0	9	6	0	0	7	0	5	4	0	5	11	1
Standard Deviation	0.11	34	0.9	3.44	17.2	66	0.25	0.01	11	0.2	0.0026	0.0011	0.9771	0.2469	0.00108	0.00295	0.000003	0.00004	23	0.0000055	0	0.00036
1st Quartile	7.18	912	1.2	0.9	5.8	-80.2	0.84	0.12	186	0.23	0.001	0.001	0.0278	0.0053	0.00025	0.0014	0.0000025	0.000025	19.2	0.0000025	0.00002	0.00043
Median	7.22	942	1.6	1.86	14.4	-65.6	0.93	0.12	190	0.28	0.001	0.001	0.136	0.0113	0.00025	0.00187	0.000005	0.000084	24.4	0.000005	0.00002	0.0005
3rd Quartile	7.29	958	2.3	2.82	20.2	-53.9	1.15	0.13	196	0.29	0.001	0.0024	0.9195	0.0619	0.00085	0.00688	0.0000081	0.000108	50.8	0.0000104	0.00002	0.00061
Count Over Guideline	0	0	0	0	0	0	0	5	11	5	0	0	0	0	0	5	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	45.5	100	45.5	0	0	0	0	0	45.5	0	0	0	0	0	0

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Opr (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetric	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
<b>Station Name</b>	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3		*	0.005	*	*			*	0.001	0.03
BH95G-29																						
Average	7.45	436	2.2	1.24	12	-48	1.18	0.12	47.6	0.33	0.0053	0.0015	1.4303	0.891	0.00306	0.00576	0.0000099	0.0000096	60.9	0.0001321	0.000076	0.00192
Count	5	5	5	5	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum	7.35	428	-0.1	0.8	8	-56.2	0.88	0.11	44	0.06	0.001	0.001	0.0316	0.001	0.00109	0.00419	0.0000025	0.0000025	15.8	0.000014	0.00002	0.0011
Maximum	7.56	441	3.4	2.1	20	-36.3	1.6	0.13	50.2	1.2	0.0159	0.0022	3.35	2.31	0.00966	0.00782	0.000031	0.000141	161	0.000481	0.000154	0.00457
Geometric Mean	7.45	436	2.2	1.15	12	1	1.14	0.12	47.5	0.162	0.0026	0.0014	0.4597	0.2123	0.00205	0.00562	0.0000056	0.000082	40.6	0.0000578	0.000055	0.00161
Count <DL	0	0	0	0	0	0	0	0	0	0	3	3	0	1	0	0	3	1	0	0	2	0
Standard Deviation	0.09	5	1.4	0.56	5	9.3	0.34	0.01	2.7	0.49	0.0066	0.0006	1.4385	0.9429	0.0037	0.00144	0.0000124	0.000047	62	0.0001982	0.000058	0.0015
1st Quartile	7.37	435	1.9	0.81	9	-55.1	0.94	0.11	45.8	0.071	0.001	0.001	0.0598	0.264	0.00128	0.00466	0.0000025	0.000076	21.2	0.00003	0.00002	0.00111
Median	7.47	436	2.4	1	11	-49.8	0.96	0.11	48.1	0.1	0.001	0.001	1.41	0.52	0.00158	0.00581	0.0000025	0.000112	25	0.0000303	0.000076	0.00117
3rd Quartile	7.49	440	3.4	1.5	15	-42.8	1.5	0.12	49.9	0.22	0.0078	0.0021	2.3	1.36	0.00171	0.00633	0.000011	0.000127	81.7	0.000105	0.000109	0.00164
Count Over Guideline	0	0	0	0	0	0	0	0	1	0	0	0	0	0	3	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	0	20	0	0	0	0	0	60	0	0	0	0	0	0	0
<b>MW15-11D</b>																						
Average	7.5	560	2.2	2.2	18	-51.9	1.11	0.16	67.8	0.114	0.001	0.0015	0.0272	0.015	0.00177	0.000291	0.0000025	0.000025	1.634	0.000022	0.00002	0.00066
Count	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	7.41	546	2	1.6	13	-60.5	0.84	0.15	63.1	0.071	0.001	0.001	0.008	0.0041	0.00085	0.000154	0.0000025	0.000025	0.691	0.0000025	0.00002	0.00027
Maximum	7.55	567	2.5	2.7	21	-37	1.3	0.17	74.5	0.19	0.001	0.0025	0.0376	0.0351	0.00296	0.000438	0.0000025	0.000025	2.16	0.000061	0.00002	0.00105
Geometric Mean	7.5	560	2.2	2.1	17	1	1.09	0.16	67.7	0.103	0.001	0.0014	0.0221	0.0094	0.00155	0.000267	0.0000025	0.000025	1.452	0.0000073	0.00002	0.00057
Count <DL	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	3	3	0	2	3	0
Standard Deviation	0.08	12	0.3	0.6	4	13	0.24	0.01	5.9	0.066	0	0.0009	0.0167	0.0174	0.00108	0.000142	0	0	0.818	0.0000338	0	0.00039
1st Quartile	7.47	556	2	1.9	16	-59.4	1.02	0.15	64.5	0.076	0.001	0.001	0.0221	0.0049	0.00117	0.000218	0.0000025	0.000025	1.37	0.0000025	0.00002	0.00047
Median	7.53	566	2.1	2.2	19	-58.2	1.2	0.16	65.9	0.081	0.001	0.001	0.0361	0.0058	0.00149	0.000282	0.0000025	0.000025	2.05	0.0000025	0.00002	0.00067
3rd Quartile	7.54	566	2.3	2.5	20	-47.6	1.25	0.17	70.2	0.136	0.001	0.0018	0.0369	0.0204	0.00222	0.00036	0.0000025	0.000025	2.105	0.0000317	0.00002	0.00086
Count Over Guideline	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0
<b>MW15-11S</b>																						
Average	7.5	612	2.21	1.62	12.3	61.4	4.35	0.16	92.5	0.182	0.0059	0.0264	0.0998	0.0191	0.00911	0.001271	0.0000393	0.000316	3.49	0.0000358	0.000246	0.0031
Count	7	7	7	7	5	6	7	7	7	7	7	7	7	5	6	6	6	6	7	6	6	6
Minimum	7.21	556	0.59	1	9	-81.3	0.93	0.13	61.5	0.054	0.001	0.001	0.0168	0.0114	0.00077	0.000273	0.0000025	0.000025	1.46	0.0000025	0.00002	0.00005
Maximum	7.79	701	4.3	3.2	17	448	24	0.19	138	0.64	0.0216	0.0871	0.35	0.0384	0.0462	0.00284	0.000171	0.00109	7.45	0.000179	0.00135	0.0135
Geometric Mean	7.49	609	1.91	1.51	12	6.5	1.66	0.16	88.4	0.112	0.003	0.0063	0.0547	0.017	0.00254	0.000896	0.0000118	0.000091	2.98	0.0000086	0.000046	0.00071
Count <DL	0	0	0	0	0	0	0	0	0	0	3	2	0	0	0	0	2	3	0	3	4	1
Standard Deviation	0.19	57	1.18	0.76	3	211.9	8.67	0.02	30.5	0.22	0.0076	0.0395	0.1198	0.0114	0.0182	0.001104	0.0000665	0.00046	2.18	0.0000705	0.000541	0.0053
1st Quartile	7.39	569	1.55	1.2	11	-62.2	0.99	0.15	69.4	0.058	0.001	0.0016	0.0181	0.0118	0.00088	0.000492	0.0000036	0.000025	2	0.0000025	0.00002	0.0003
Median	7.5	594	2.3	1.36	11.3	-53.3	1.1	0.16	80.9	0.062	0.0031	0.0024	0.0517	0.0132	0.00194	0.000815	0.0000075	0.000038	2.72	0.0000048	0.00002	0.00043
3rd Quartile	7.59	646	2.6	1.7	13	117	1.2	0.17	114	0.2	0.0067	0.0457	0.122	0.0206	0.00296	0.00208	0.0000358	0.000526	4.4	0.0000175	0.000039	0.00306
Count Over Guideline	0	0	0	0	0	0	0	7	2	2	0	0	0	0	0	0	0	0	0	0	1	0
% Over Guideline	0	0	0	0	0	0	0	100	28.6	28.6	0	0	0	0	0	0	0	0	0	0	16.7	0

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Orp (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetric	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3		*	0.005	*	*	*	*	0.001	0.03	
MW16-15D																						
Average	7.63	380	2.4	2.11	18.8	21.8	0.78	0.108	71.4	0.047	0.0015	0.0018	0.2426	0.1172	0.00754	0.0162	0.000034	0.000073	14.35	0.0000115	0.000045	0.00593
Count	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum	7.4	375	1.4	1.2	11	-52.9	0.25	0.091	66.8	0.041	0.001	0.001	0.0219	0.0181	0.00262	0.0123	0.0000025	0.000025	1.46	0.0000025	0.00002	0.00005
Maximum	7.9	387	3.8	3.4	29	206.1	1.6	0.13	82.6	0.054	0.0041	0.0033	0.577	0.567	0.0127	0.0191	0.000096	0.000151	39.3	0.000032	0.00009	0.0303
Geometric Mean	7.63	380	2.2	1.93	17.2	5.7	0.68	0.108	71.2	0.047	0.0013	0.0015	0.1323	0.0434	0.00666	0.016	0.000015	0.000063	7.89	0.0000077	0.000037	0.00121
Count <DL	0	0	0	0	0	0	1	0	0	0	5	4	0	0	0	0	2	1	0	2	3	1
Standard Deviation	0.18	5	0.9	1.01	8.4	96.8	0.46	0.015	5.7	0.005	0.0013	0.0012	0.2313	0.2206	0.00376	0.0024	0.0000387	0.000044	15.05	0.000011	0.000031	0.01196
1st Quartile	7.53	377	1.7	1.36	11.5	-40.2	0.6	0.099	68.8	0.044	0.001	0.001	0.0612	0.0227	0.0051	0.0153	0.0000049	0.000054	3.37	0.0000036	0.00002	0.00075
Median	7.6	378	2.2	1.71	16.5	-8.9	0.67	0.105	69.3	0.048	0.001	0.001	0.1785	0.0255	0.00729	0.0163	0.000018	0.000057	8.71	0.000009	0.000033	0.00144
3rd Quartile	7.75	384	2.9	3	26.4	32.5	0.86	0.117	71	0.051	0.001	0.0027	0.4027	0.0404	0.01006	0.0177	0.0000562	0.000087	21.93	0.0000133	0.000067	0.00174
Count Over Guideline	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	6	0	0	0	0	0	1
% Over Guideline	0	0	0	0	0	0	16.7	0	0	0	0	0	0	0	0	100	0	0	0	0	0	16.7
MW16-15S																						
Average	7.1	263	3.7	7.8	70.9	178.3	0.75	0.053	41.4	0.0351	0.0015	0.431	0.605	0.1988	0.00367	0.000286	0.00187	0.00455	42.7	0.000174	0.00277	0.1237
Count	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum	6.92	256	1.1	7.2	61.3	118	0.25	0.047	36.6	0.0094	0.001	0.362	0.211	0.0184	0.00219	0.000155	0.00166	0.00371	8.79	0.000067	0.00248	0.0955
Maximum	7.49	274	8.3	8.8	88	320.4	1	0.057	44.6	0.061	0.0036	0.537	1.25	0.641	0.00443	0.000484	0.0021	0.00546	107	0.000249	0.00315	0.164
Geometric Mean	7.1	263	2.9	7.78	70.2	166.9	0.67	0.053	41.3	0.0294	0.0013	0.427	0.496	0.0953	0.00356	0.000267	0.00186	0.00449	27.14	0.00016	0.00276	0.1213
Count <DL	0	0	0	0	0	0	1	0	0	0	4	0	0	0	0	0	0	0	0	0	0	0
Standard Deviation	0.23	7	2.9	0.66	10.8	81	0.33	0.004	3	0.02	0.0012	0.064	0.415	0.2561	0.00091	0.000122	0.00017	0.00083	42.8	0.000069	0.00027	0.0278
1st Quartile	6.96	257	1.7	7.31	62	143.7	0.6	0.052	40.5	0.024	0.001	0.409	0.274	0.0295	0.00342	0.00023	0.00176	0.00376	12.6	0.000159	0.00256	0.103
Median	7.01	262	2.6	7.6	70	147.3	0.96	0.054	42.1	0.034	0.001	0.421	0.603	0.127	0.00411	0.00028	0.00185	0.00452	18.7	0.000182	0.00279	0.118
3rd Quartile	7.11	266	4.7	8.1	73	161.9	0.96	0.055	43	0.047	0.001	0.424	0.688	0.178	0.00422	0.000281	0.00196	0.00531	66.4	0.000215	0.00289	0.138
Count Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	5	5	0	0	5	5
% Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	100	0	0	100	100

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Orp (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetry	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3			*	0.005	*	*	0.3	*	0.001	0.03
BH95G-15D																						
Average	7.4	354	0.9	5.39	45.5	239.7	0.52	0.15	14.2	0.032	0.0027	0.589	0.562	0.4232	0.00062	0.000123	0.000031	0.000092	20.56	0.00001	0.0033	0.00095
Count	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	7.26	349	0.6	1.46	12.1	115.5	0.25	0.14	13.5	0.019	0.001	0.567	0.106	0.0505	0.00025	0.000076	0.000029	0.000025	1.82	0.000008	0.00303	0.0009
Maximum	7.54	359	1.2	8.51	71.5	362	0.71	0.15	15.1	0.053	0.0052	0.603	1.16	1.11	0.0009	0.000187	0.000034	0.000128	53.2	0.000014	0.00377	0.001
Geometric Mean	7.4	354	0.9	4.25	35.8	216.2	0.47	0.15	14.2	0.029	0.0022	0.589	0.372	0.1828	0.00054	0.000115	0.000031	0.000073	8.64	0.00001	0.00329	0.00095
Count <DL	0	0	0	0	0	1	0	0	0	0	1	0	0	0	1	0	0	1	0	0	0	0
Standard Deviation	0.14	5	0.3	3.59	30.4	123.3	0.24	0.01	0.8	0.019	0.0022	0.019	0.541	0.5955	0.00033	0.000057	0.000003	0.000058	28.37	0.000003	0.00041	0.00005
1st Quartile	7.33	351	0.8	3.83	32.5	178.6	0.42	0.15	13.8	0.021	0.0015	0.582	0.263	0.0798	0.00048	0.000091	0.00003	0.000075	4.25	0.000008	0.00307	0.00092
Median	7.4	353	1	6.2	53	241.6	0.59	0.15	14.1	0.023	0.002	0.597	0.42	0.109	0.00071	0.000106	0.000031	0.000124	6.67	0.000008	0.00311	0.00094
3rd Quartile	7.47	356	1.1	7.36	62.2	301.8	0.65	0.15	14.6	0.038	0.0036	0.6	0.79	0.6095	0.0008	0.000146	0.000033	0.000126	29.94	0.000011	0.00344	0.00097
Count Over Guideline	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	3	0
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	100	0
BH95G-2																						
Average	7.54	503	1.35	4.71	40.2	199.5	0.79	0.053	39.71	0.0343	0.0017	0.509	1.0592	0.1785	0.00407	0.000102	0.00147	0.001053	14.0451	0.0000348	0.00465	0.0213
Count	12	12	11	11	7	9	12	12	12	12	12	12	12	11	12	12	12	12	12	12	12	12
Minimum	7.25	263	-0.1	3.4	28	35.1	0.25	0.04	7.43	0.0091	0.001	0.372	0.0069	0.0048	0.00025	0.000066	0.00123	0.000129	0.0036	0.0000025	0.00136	0.0147
Maximum	7.73	586	2.7	6.88	58.8	400	1.2	0.063	55.5	0.085	0.005	1.36	8.66	1.02	0.0244	0.000163	0.00165	0.00309	59.9	0.000105	0.00729	0.0278
Geometric Mean	7.54	493	1.22	4.59	38.9	155.6	0.75	0.052	35.86	0.0273	0.0014	0.473	0.1577	0.0337	0.00178	0.000098	0.00147	0.000619	1.5315	0.0000252	0.00432	0.0209
Count <DL	0	0	0	0	0	1	0	0	0	0	8	0	0	0	2	0	0	0	0	1	0	0
Standard Deviation	0.16	94	0.94	1.17	11.3	135.2	0.26	0.008	14.2	0.0225	0.0013	0.271	2.4298	0.3386	0.00682	0.000032	0.00013	0.001084	21.4896	0.0000277	0.00157	0.0044
1st Quartile	7.5	442	0.67	3.71	31.4	102.3	0.64	0.048	29.88	0.0167	0.001	0.402	0.0255	0.0075	0.00107	0.000079	0.00143	0.000296	0.0914	0.0000172	0.00354	0.0167
Median	7.55	550	1.2	4.7	40.1	128.6	0.8	0.057	42.65	0.032	0.001	0.438	0.2935	0.0194	0.00168	0.000094	0.00152	0.000425	3.44	0.000028	0.00498	0.0227
3rd Quartile	7.67	561	2.1	5.61	46	335.2	0.97	0.059	51.35	0.0465	0.0021	0.467	0.7752	0.0977	0.00271	0.000118	0.00155	0.002208	18.5	0.0000401	0.00541	0.0246
Count Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	1	0	0	12	0
% Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	8.3	0	0	100	0
MW15-07D																						
Average	7.49	404	2.4	3.44	30.9	-28.7	0.63	0.34	30	0.053	0.0013	0.001	0.0175	0.006	0.00401	0.000062	0.0000025	0.000073	1.294	0.0000301	0.00002	0.00051
Count	6	6	6	6	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum	7.34	399	0.5	0.9	7	-59.4	0.25	0.33	27.3	0.043	0.001	0.001	0.0022	0.0021	0.00067	0.00001	0.0000025	0.000025	0.461	0.0000025	0.00002	0.00005
Maximum	7.56	415	3.9	6	50	51.6	1.1	0.36	31.9	0.072	0.0029	0.001	0.0886	0.019	0.0124	0.000245	0.0000025	0.000149	3.02	0.000083	0.00002	0.00119
Geometric Mean	7.49	404	2.1	2.86	24.6	2.2	0.55	0.34	29.9	0.053	0.0012	0.001	0.0055	0.0044	0.00221	0.000031	0.0000025	0.000055	0.93	0.0000099	0.00002	0.00033
Count <DL	0	0	0	0	0	2	0	0	0	0	5	6	0	0	0	2	6	3	0	3	6	1
Standard Deviation	0.08	6	1.1	1.95	18.6	45.7	0.33	0.01	1.5	0.011	0.0008	0	0.0348	0.0064	0.00473	0.000091	0	0.000057	1.179	0.0000403	0	0.00043
1st Quartile	7.49	400	2.2	1.97	15.3	-52.8	0.36	0.33	29.9	0.046	0.001	0.001	0.0026	0.003	0.00094	0.000013	0.0000025	0.000025	0.549	0.0000025	0.00002	0.00023
Median	7.5	402	2.4	3.65	40	-46.6	0.71	0.34	30.2	0.051	0.001	0.001	0.0037	0.0039	0.00163	0.000028	0.0000025	0.000057	0.573	0.0000058	0.00002	0.00037
3rd Quartile	7.53	404	3	4.67	42	-36.5	0.76	0.34	30.3	0.057	0.001	0.001	0.0042	0.0044	0.00564	0.000047	0.0000025	0.000118	2.089	0.000063	0.00002	0.00076
Count Over Guideline	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Opr (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetric	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved	
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
MW15-07S																							
Average	7.53	386	2.45	3.69	41.6	-39.4	0.73	0.29	32.4	0.054	0.0017	0.0017	0.6196	0.0102	0.00405	0.0023	0.0000066	0.000117	21.928	0.0000123	0.000123	0.00102	
Count	9	9	8	9	6	7	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	9	
Minimum	7.23	376	0	0.48	10	-66.8	0.25	0.28	31	0.026	0.001	0.001	0.0028	0.002	0.00025	0.00113	0.0000025	0.000025	0.476	0.0000025	0.00002	0.00005	
Maximum	7.68	393	5.9	10.7	95	-17	1	0.31	33.2	0.13	0.0064	0.0048	2.5	0.0326	0.0239	0.00507	0.000019	0.000248	71.5	0.000057	0.000845	0.00438	
Geometric Mean	7.53	386	2.02	2.37	28.1	-1	0.68	0.29	32.4	0.047	0.0013	0.0014	0.0556	0.0066	0.00169	0.00202	0.0000045	0.000088	5.478	0.0000066	0.000037	0.00044	
Count <DL	0	0	0	0	0	0	1	0	0	0	7	6	0	0	1	0	6	2	0	4	7	2	
Standard Deviation	0.14	5	1.89	3.75	37.8	15.9	0.22	0.01	0.8	0.032	0.0018	0.0013	0.9835	0.0106	0.0075	0.00132	0.0000065	0.000083	26.793	0.0000175	0.000273	0.00136	
1st Quartile	7.53	383	1.53	1.2	12.4	-46.5	0.63	0.29	32.5	0.032	0.001	0.001	0.0103	0.0032	0.00075	0.00133	0.0000025	0.000053	0.624	0.0000025	0.00002	0.00028	
Median	7.57	387	2.15	2	25.9	-37.1	0.8	0.3	32.6	0.051	0.001	0.001	0.0157	0.0053	0.00176	0.00174	0.0000025	0.000093	9.43	0.000005	0.00002	0.00044	
3rd Quartile	7.62	389	3.48	3.7	70.2	-31.1	0.84	0.3	32.7	0.062	0.001	0.002	1.03	0.0141	0.00258	0.00264	0.00001	0.000191	30.9	0.000013	0.00002	0.00128	
Count Over Guideline	0	0	0	0	0	0	0	9	0	0	0	0	0	0	0	1	0	0	0	0	0	0	
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	11.1	0	0	0	0	0	0	
MW15-08D																							
Average	7.25	540	3.3	5.68			1.13	0.57	44.5	0.12	0.001	0.0029	0.0421	0.0423	0.00358	0.00379	0.000025	0.000056	9.03	0.000016	0.000146	0.00235	
Count	2	2	1	2			2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	2	
Minimum	7.22	539	3.3	5.27			0.96	0.54	43.9	0.12	0.001	0.001	0.0048	0.005	0.00356	0.00262	0.000018	0.000025	7.05	0.000012	0.00002	0.00161	
Maximum	7.28	540	3.3	6.1			1.3	0.61	45	0.13	0.001	0.0047	0.0795	0.0796	0.00361	0.00496	0.000032	0.000087	11	0.000019	0.000272	0.00309	
Geometric Mean	7.25	539	3.3	5.67			1.12	0.57	44.4	0.12	0.001	0.0022	0.0195	0.0199	0.00358	0.0036	0.000024	0.000047	8.81	0.000015	0.000074	0.00223	
Count <DL	0	0	0	0			0	0	0	0	2	1	0	0	0	0	0	1	0	0	1	0	
Standard Deviation	0.04	1	0	0.59			0.24	0.05	0.8	0.01	0	0.0026	0.0528	0.0528	0.00004	0.00165	0.00001	0.000044	2.79	0.000005	0.000178	0.00105	
1st Quartile	7.23	539	3.3	5.48			1.04	0.56	44.2	0.12	0.001	0.0019	0.0235	0.0237	0.00357	0.0032	0.000022	0.000041	8.04	0.000014	0.000083	0.00198	
Median	7.25	540	3.3	5.68			1.13	0.57	44.5	0.12	0.001	0.0029	0.0421	0.0423	0.00358	0.00379	0.000025	0.000056	9.03	0.000016	0.000146	0.00235	
3rd Quartile	7.27	540	3.3	5.89			1.22	0.59	44.7	0.13	0.001	0.0038	0.0608	0.061	0.0036	0.00438	0.000028	0.000072	10.01	0.000017	0.000209	0.00272	
Count Over Guideline	0	0	0	0			0	2	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
% Over Guideline	0	0	0	0			0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
MW15-08S																							
Average	7.51	378	2.1	8.98	74	107.6	0.94	0.088	25.8	0.117	0.0019	0.257	0.1635	0.1129	0.00247	0.000354	0.000083	0.000637	45.3314	0.000094	0.00178	0.00201	
Count	6	6	6	6	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	
Minimum	7.35	366	1.1	8.2	70	57.3	0.57	0.084	23.9	0.011	0.001	0.215	0.0026	0.001	0.00059	0.000252	0.000013	0.000106	0.0272	0.000007	0.00148	0.00029	
Maximum	7.68	385	4.7	10.58	79	147.2	1.5	0.093	28.2	0.41	0.0048	0.276	0.505	0.518	0.00408	0.000454	0.000124	0.00091	136	0.00024	0.00217	0.00412	
Geometric Mean	7.51	378	1.9	8.95	74	99.6	0.89	0.088	25.8	0.063	0.0015	0.256	0.0471	0.0246	0.00205	0.000346	0.000068	0.000534	4.2082	0.000053	0.00176	0.00154	
Count <DL	0	0	0	0	0	0	0	0	0	0	4	0	0	1	0	0	0	0	0	0	0	0	
Standard Deviation	0.15	8	1.3	0.87	4	43.3	0.33	0.003	1.6	0.148	0.0015	0.022	0.2043	0.2017	0.00141	0.000083	0.000042	0.000276	55.0052	0.000085	0.00024	0.00136	
1st Quartile	7.38	374	1.4	8.45	72	63.9	0.77	0.086	24.6	0.037	0.001	0.256	0.013	0.01	0.00152	0.000292	0.000065	0.000655	1.9909	0.000032	0.00164	0.00143	
Median	7.51	381	1.6	8.7	73	132.1	0.84	0.088	25.8	0.08	0.001	0.266	0.0769	0.0245	0.00244	0.000356	0.000093	0.000705	26.605	0.000094	0.00173	0.0016	
3rd Quartile	7.64	384	2.2	9.18	78	137.4	1.04	0.09	26.7	0.093	0.0021	0.268	0.2652	0.0844	0.00367	0.000418	0.000113	0.000747	73.375	0.000112	0.00189	0.00274	
Count Over Guideline	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	6	0	
% Over Guideline	0	0	0	0	0	0	0	0	0	16.7	0	0	0	0	0	0	0	0	0	0	100	0	

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	ORP (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetric	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved	
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	
MW15-09D																							
Average	5.68	813	0.6	4.23			1.1	0.73	15.3	0.1	0.001	0.0021	1.16	0.0054	0.17	0.00848	0.000008	0.000416	27.9	0.000121	0.000062	0.00568	
Count	1	1	1	1			1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1	1
Minimum	5.68	813	0.6	4.23			1.1	0.73	15.3	0.1	0.001	0.0021	1.16	0.0054	0.17	0.00848	0.000008	0.000416	27.9	0.000121	0.000062	0.00568	
Maximum	5.68	813	0.6	4.23			1.1	0.73	15.3	0.1	0.001	0.0021	1.16	0.0054	0.17	0.00848	0.000008	0.000416	27.9	0.000121	0.000062	0.00568	
Geometric Mean	5.68	813	0.6	4.23			1.1	0.73	15.3	0.1	0.001	0.0021	1.16	0.0054	0.17	0.00848	0.000008	0.000416	27.9	0.000121	0.000062	0.00568	
Count <DL	0	0	0	0			0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	
Standard Deviation	0	0	0	0			0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1st Quartile	5.68	813	0.6	4.23			1.1	0.73	15.3	0.1	0.001	0.0021	1.16	0.0054	0.17	0.00848	0.000008	0.000416	27.9	0.000121	0.000062	0.00568	
Median	5.68	813	0.6	4.23			1.1	0.73	15.3	0.1	0.001	0.0021	1.16	0.0054	0.17	0.00848	0.000008	0.000416	27.9	0.000121	0.000062	0.00568	
3rd Quartile	5.68	813	0.6	4.23			1.1	0.73	15.3	0.1	0.001	0.0021	1.16	0.0054	0.17	0.00848	0.000008	0.000416	27.9	0.000121	0.000062	0.00568	
Count Over Guideline	1	0	0	0			0	1	0	0	0	0	0	0	1	1	0	0	0	0	0	0	
% Over Guideline	100	0	0	0			0	100	0	0	0	0	0	0	100	100	0	0	0	0	0	0	
MW15-09S																							
Average	7.48	413	2	1.44	13.9	-57	0.82	0.25	18.5	0.042	0.005	0.0579	0.0424	0.0316	0.2166	0.000725	0.0001046	0.003025	4.83	0.002533	0.000817	0.0049	
Count	7	7	7	7	6	6	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	7	
Minimum	7.28	402	-0.3	0.4	6	-89.6	0.59	0.22	17.2	0.019	0.002	0.036	0.005	0.006	0.00025	0.000438	0.0000025	0.000025	1.7	0.0000025	0.000625	0.00005	
Maximum	7.74	420	3.5	2.2	19.3	-29.5	1.2	0.29	20.9	0.094	0.0072	0.0873	0.181	0.142	1.51	0.00177	0.000544	0.0207	8.8	0.0177	0.000971	0.0284	
Geometric Mean	7.48	413	2.1	1.19	12.6	1	0.79	0.24	18.5	0.037	0.0046	0.0559	0.0205	0.0156	0.00219	0.00064	0.000034	0.000148	4.06	0.0000134	0.000808	0.00108	
Count <DL	0	0	0	0	0	0	0	0	0	0	0	0	0	0	2	0	1	2	0	4	0	1	
Standard Deviation	0.15	7	1.2	0.8	5.9	21.7	0.24	0.02	1.2	0.026	0.0018	0.0167	0.0627	0.0496	0.57034	0.000475	0.0001947	0.007794	2.9	0.006688	0.000123	0.01038	
1st Quartile	7.39	410	1.9	0.7	9	-67.5	0.66	0.23	17.9	0.024	0.0042	0.0474	0.0081	0.0069	0.00042	0.000499	0.0000205	0.000051	2.51	0.0000025	0.000741	0.00066	
Median	7.45	413	2.3	1.8	16.5	-57.5	0.75	0.24	18.4	0.039	0.0054	0.0571	0.0194	0.0097	0.00105	0.000535	0.000042	0.000106	3.72	0.0000025	0.000843	0.00138	
3rd Quartile	7.54	418	2.4	2.13	18	-42.3	0.93	0.25	18.8	0.048	0.0059	0.065	0.0375	0.025	0.00203	0.000669	0.0000515	0.000122	7.29	0.0000105	0.000897	0.00159	
Count Over Guideline	0	0	0	0	0	0	0	0	7	0	0	0	0	0	1	0	1	0	0	1	0	0	
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	14.3	0	14.3	14.3	0	14.3	0	0	
MW15-10D																							
Average	6.04	2952	1.7	4.61	46.3	30.3	3.5	1.3	6.41	0.25	0.002	0.0041	0.1422	0.0243	0.14521	0.000566	0.000074	0.000503	31.4	0.000378	0.000045	0.00636	
Count	9	9	8	9	6	7	9	9	9	9	9	9	9	8	9	9	9	9	9	9	9	9	
Minimum	5.82	2780	1	2.12	26.6	-7	2.8	1.2	1.01	0.22	0.001	0.001	0.0122	0.0058	0.00948	0.00011	0.000017	0.000025	27.1	0.000008	0.00002	0.00197	
Maximum	6.24	3090	2.3	9.9	86	126	4	1.4	12	0.3	0.01	0.01	0.483	0.063	0.438	0.00167	0.000172	0.00216	39.2	0.00136	0.0001	0.0217	
Geometric Mean	6.04	2951	1.7	4.21	43	11.2	3.5	1.3	4.55	0.25	0.0013	0.0031	0.0772	0.0176	0.06871	0.000379	0.000053	0.000213	31.2	0.000103	0.000036	0.00437	
Count <DL	0	0	0	0	0	0	0	0	0	0	9	3	0	0	0	0	0	1	0	0	7	0	
Standard Deviation	0.15	91	0.4	2.28	21.1	45.2	0.4	0	4.24	0.03	0.003	0.003	0.157	0.0214	0.15512	0.000534	0.000061	0.000693	4.5	0.000534	0.000035	0.00661	
1st Quartile	5.9	2920	1.6	3.27	33.8	5.6	3.3	1.3	1.76	0.23	0.001	0.002	0.0508	0.0117	0.0298	0.0002	0.000032	0.000053	28.5	0.000029	0.00002	0.00228	
Median	6.03	2970	1.7	3.8	42	13.4	3.4	1.3	8.26	0.24	0.001	0.0035	0.0749	0.0132	0.0481	0.000234	0.000045	0.000262	29.7	0.00014	0.00002	0.00293	
3rd Quartile	6.16	3000	1.9	5.3	48	34.3	3.8	1.3	9.31	0.27	0.001	0.0051	0.252	0.0325	0.243	0.000782	0.000135	0.00052	32.1	0.000346	0.000066	0.00957	
Count Over Guideline	9	0	0	0	0	0	0	9	0	1	0	0	0	0	9	0	0	0	0	0	0	0	
% Over Guideline	100	0	0	0	0	0	0	100	0	11.1	0	0	0	0	100	0	0	0	0	0	0	0	

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Opr (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetric	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
MW15-10S																						
Average	6	697	2.8	3.11	26.1	80.9	1.26	0.19	32.8	0.404	0.0073	0.108	2.2818	0.024	0.00409	0.006502	0.000795	0.006839	91.36	0.0000872	0.00208	0.0126
Count	6	6	6	6	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum	5.8	503	-0.1	2.1	19	59.3	0.89	0.16	28.1	0.033	0.001	0.0435	0.0148	0.0054	0.00134	0.000799	0.000154	0.000182	1.65	0.0000025	0.00172	0.00493
Maximum	6.17	853	3.7	4.1	36	114.4	2.5	0.22	47.8	0.67	0.0142	0.184	13.4	0.0839	0.00818	0.0117	0.00139	0.0358	170	0.000187	0.00242	0.0191
Geometric Mean	6	686	2.7	3.02	25.4	79	1.17	0.19	32.2	0.284	0.0057	0.0966	0.1143	0.0158	0.00345	0.004854	0.000583	0.001335	50.97	0.0000362	0.00206	0.01141
Count <DL	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	1	0	0
Standard Deviation	0.15	136	1.4	0.82	7	20.6	0.62	0.02	7.5	0.26	0.0044	0.0529	5.4469	0.0296	0.00253	0.004121	0.000535	0.01422	59.42	0.0000848	0.00027	0.00537
1st Quartile	5.9	632	2.9	2.47	20	72.3	0.96	0.18	28.6	0.25	0.0055	0.0732	0.0297	0.0112	0.00239	0.003853	0.000342	0.000486	59.48	0.000013	0.00189	0.00901
Median	6	677	3.4	3.1	26.4	75.3	1	0.2	30.5	0.405	0.0072	0.1009	0.0688	0.0145	0.00354	0.00667	0.000855	0.00087	99.65	0.000085	0.00209	0.01395
3rd Quartile	6.12	811	3.4	3.77	29	83.3	1.15	0.21	31.7	0.635	0.0086	0.1415	0.1088	0.0156	0.00535	0.00936	0.001225	0.002433	123.25	0.0001525	0.00227	0.0157
Count Over Guideline	6	0	0	0	0	0	0	6	0	3	0	0	0	0	2	3	4	1	0	0	6	0
% Over Guideline	100	0	0	0	0	0	0	100	0	50	0	0	0	0	33.3	50	66.7	16.7	0	0	100	0
MW16-13	Well is Frozen																					
MW16-14D																						
Average	7.55	463	2.1	1.2	11	14.9	0.87	0.23	85.2	0.049	0.001	0.001	0.046	0.0158	0.0022	0.00369	0.0000065	0.000037	1.896	0.0000053	0.00002	0.01681
Count	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	7.43	452	1.7	0.9	8	8	0.78	0.23	81.7	0.031	0.001	0.001	0.023	0.0112	0.00099	0.00312	0.0000025	0.000025	0.887	0.0000025	0.00002	0.00037
Maximum	7.67	472	2.4	1.9	16	28.2	0.96	0.23	87.7	0.059	0.001	0.001	0.0875	0.0227	0.00312	0.0041	0.000012	0.00006	3.33	0.000011	0.00002	0.0496
Geometric Mean	7.55	463	2	1.2	10	12.5	0.87	0.23	85.2	0.047	0.001	0.001	0.0381	0.0151	0.00197	0.00367	0.0000053	0.000033	1.631	0.0000041	0.00002	0.00205
Count <DL	0	0	0	0	0	0	0	0	0	0	3	3	0	0	0	0	1	2	0	2	3	0
Standard Deviation	0.12	10	0.4	0.6	5	11.5	0.09	0	3.1	0.016	0	0	0.036	0.0061	0.00109	0.00051	0.0000049	0.00002	1.276	0.0000049	0	0.02839
1st Quartile	7.49	459	1.9	0.9	8	8.3	0.83	0.23	84	0.044	0.001	0.001	0.0252	0.0123	0.00173	0.00349	0.0000038	0.000025	1.179	0.0000025	0.00002	0.00042
Median	7.56	466	2.1	0.9	8	8.6	0.88	0.23	86.3	0.058	0.001	0.001	0.0274	0.0135	0.00248	0.00386	0.000005	0.000025	1.47	0.0000025	0.00002	0.00047
3rd Quartile	7.62	469	2.2	1.4	12	18.4	0.92	0.23	87	0.058	0.001	0.001	0.0575	0.0181	0.0028	0.00398	0.0000085	0.000043	2.4	0.0000067	0.00002	0.02503
Count Over Guideline	0	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	1
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	33.3
MW16-17																						
Average	7.71	363	1.8	2.05	17.7	7.8	0.63	0.54	32.4	0.051	0.001	0.0018	0.387	0.1912	0.00716	0.000591	0.0000025	0.000149	37.01	0.0000031	0.00011	0.00065
Count	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	5	4	4	4
Minimum	7.59	361	1.4	0.76	6.5	-63.2	0.25	0.49	31.2	0.036	0.001	0.001	0.038	0.0294	0.00173	0.00018	0.0000025	0.000099	2.91	0.0000025	0.00002	0.00038
Maximum	7.88	365	2.5	6.28	53.9	96.7	0.95	0.57	34.3	0.06	0.001	0.0037	0.71	0.632	0.0114	0.000901	0.0000025	0.000219	111	0.000005	0.000201	0.00094
Geometric Mean	7.71	363	1.8	1.4	12.2	6	0.58	0.54	32.4	0.05	0.001	0.0016	0.272	0.0833	0.00581	0.000486	0.0000025	0.000141	16.06	0.000003	0.000083	0.00059
Count <DL	0	0	0	0	0	0	1	0	0	0	5	3	0	0	0	0	0	0	0	3	1	0
Standard Deviation	0.11	2	0.5	2.38	20.4	74.3	0.27	0.03	1.3	0.01	0	0.0012	0.256	0.2941	0.00419	0.000367	0	0.000056	44.74	0.0000012	0.000074	0.0003
1st Quartile	7.65	362	1.5	0.8	7	-45	0.54	0.54	31.3	0.049	0.001	0.001	0.273	0.0394	0.00513	0.000332	0.0000025	0.000106	3.14	0.0000025	0.000084	0.00039
Median	7.72	364	1.6	1	9	-28.2	0.61	0.55	32.3	0.053	0.001	0.001	0.375	0.0517	0.00775	0.000641	0.0000025	0.000139	23.9	0.0000025	0.000109	0.00064
3rd Quartile	7.73	364	2	1.4	12	78.9	0.81	0.55	33	0.058	0.001	0.0025	0.537	0.2035	0.00978	0.000899	0.0000025	0.000181	44.1	0.0000031	0.000134	0.00089
Count Over Guideline	0	0	0	0	0	0	0	5	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0



	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Orp (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetry	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	100	0.282	0.06	3			*	0.005	*	*		*	0.001		0.03
BH95G-32																						
Average	7.47	396	1.83	2.33	24.1	61.8	0.62	0.038	34.7	0.087	0.0015	0.0522	0.716	0.0257	0.00364	0.000252	0.000062	0.000229	35.095	0.0000443	0.000623	0.00138
Count	12	12	11	12	8	9	12	12	12	12	12	12	12	11	12	12	12	12	12	12	12	12
Minimum	6.59	375	0.3	0	10.5	-23	0.25	0.032	32	0.015	0.001	0.027	0.001	0.001	0.00129	0.000162	0.00002	0.00009	0.888	0.0000025	0.000326	0.00005
Maximum	7.77	410	3.8	6.45	54	320.2	0.92	0.041	36.8	0.29	0.0058	0.0755	4.34	0.145	0.0142	0.000376	0.00013	0.000599	203	0.000141	0.000835	0.00346
Geometric Mean	7.46	396	1.48	2.04	20.6	23.4	0.55	0.038	34.6	0.05	0.0012	0.0509	0.1439	0.0094	0.000279	0.000244	0.000054	0.000204	10.588	0.0000163	0.000599	0.00089
Count <DL	0	0	0	0	0	0	3	0	0	0	10	0	1	0	0	0	0	0	0	3	0	1
Standard Deviation	0.36	13	1.08	1.72	15.2	105.8	0.26	0.003	1.3	0.097	0.0014	0.0115	1.29	0.0433	0.00362	0.000065	0.000033	0.000131	62.81	0.0000555	0.000166	0.00111
1st Quartile	7.53	392	1.1	1.29	12.8	12.5	0.46	0.036	34.2	0.026	0.001	0.048	0.066	0.003	0.00184	0.00022	0.000046	0.000168	4.008	0.0000044	0.000557	0.00055
Median	7.54	400	1.9	1.7	19	25	0.65	0.038	34.5	0.033	0.001	0.0519	0.16	0.0098	0.00236	0.000249	0.00005	0.000208	8.08	0.0000115	0.000639	0.00135
3rd Quartile	7.67	404	2.5	3.05	29.9	30.3	0.83	0.04	35.5	0.125	0.001	0.057	0.5555	0.0178	0.00342	0.000269	0.000071	0.00024	19.2	0.0000693	0.00076	0.00163
Count Over Guideline	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	0	0	8.3	0	0	0	0	0	0	0	0	0	0	0	0
BH95G-33D																						
Average	7.56	453	2.31	5.6	44.2	120.3	0.57	0.054	68	0.0366	0.0022	0.195	0.742	0.066	0.00142	0.000287	0.000004	0.000211	30.208	0.0000049	0.00547	0.00058
Count	12	12	11	12	8	9	12	12	12	12	12	12	12	11	12	12	12	12	12	12	12	12
Minimum	7.39	408	-0.2	3.56	3.9	17	0.25	0.045	62.3	0.0086	0.001	0.164	0.0068	0.001	0.00025	0.000137	0.0000025	0.000068	0.496	0.0000025	0.00383	0.00005
Maximum	7.8	480	4.7	8.69	74.7	325.1	0.95	0.062	77	0.12	0.0041	0.247	3.48	0.243	0.00506	0.000758	0.00001	0.000899	150	0.000016	0.00791	0.00182
Geometric Mean	7.56	452	2.2	5.41	35.3	93.5	0.5	0.054	67.8	0.0279	0.0019	0.194	0.1749	0.0192	0.00112	0.000248	0.0000034	0.000153	13.855	0.0000038	0.0053	0.00038
Count <DL	0	0	0	0	0	0	4	0	0	0	5	0	0	1	1	0	9	0	0	8	0	1
Standard Deviation	0.14	19	1.3	1.53	21	89.2	0.26	0.005	4.8	0.0312	0.0012	0.023	1.1516	0.0868	0.00123	0.000183	0.000003	0.000232	40.894	0.0000044	0.00146	0.00054
1st Quartile	7.44	447	1.6	4.35	37.5	66.8	0.25	0.051	64.3	0.0165	0.001	0.178	0.0728	0.0067	0.00086	0.000154	0.0000025	0.000094	7.24	0.0000025	0.00426	0.00022
Median	7.55	451	2.1	5.53	44.5	109.8	0.61	0.054	68.5	0.027	0.0023	0.192	0.2035	0.0105	0.00117	0.000214	0.0000025	0.000127	15.85	0.0000025	0.00502	0.00038
3rd Quartile	7.68	462	3.1	6.4	53.6	127.8	0.79	0.056	69.7	0.0467	0.0032	0.207	0.8865	0.1285	0.00137	0.000336	0.0000034	0.000207	33.45	0.000006	0.00644	0.0008
Count Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	12	0
% Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
BH95G-33S																						
Well is dry																						
MW15-01																						
Average	7.79	408	0.9	8.51	83	114.5	0.73	0.095	71.2	0.0433	0.0029	0.357	0.8109	0.0266	0.0054	0.000204	0.0000126	0.000461	24.4828	0.0000072	0.000589	0.00139
Count	10	10	9	9	7	8	10	10	10	10	10	10	10	9	10	10	10	10	10	10	10	10
Minimum	7.48	316	-0.1	2.7	46.3	11	0.25	0.086	36.2	0.0068	0.001	0.189	0.0029	0.0021	0.00204	0.0000075	0.0000025	0.000072	0.0381	0.0000025	0.00026	0.00005
Maximum	8.5	551	2.1	11.8	108	339.9	1.4	0.12	138	0.13	0.0056	0.464	7.34	0.0946	0.00921	0.00088	0.000025	0.000744	200	0.000025	0.0015	0.00503
Geometric Mean	7.79	401	0.8	7.84	80.2	81.7	0.62	0.095	64.4	0.0226	0.0023	0.342	0.0687	0.0121	0.00481	0.000152	0.0000107	0.000403	3.8991	0.0000045	0.000514	0.00079
Count <DL	0	0	0	0	0	0	3	0	0	0	4	0	0	0	0	0	1	0	0	7	0	1
Standard Deviation	0.28	85	0.7	3.07	21.6	99.2	0.38	0.01	35	0.0477	0.0018	0.099	2.296	0.0346	0.00256	0.00024	0.0000067	0.000185	61.7987	0.000008	0.000364	0.00148
1st Quartile	7.63	341	0.3	7.2	72	71	0.39	0.09	45.3	0.0074	0.001	0.276	0.0207	0.0041	0.00312	0.000112	0.0000083	0.000362	1.7075	0.0000025	0.000361	0.00048
Median	7.78	392	0.9	9.5	86	83.8	0.81	0.094	59.8	0.0169	0.003	0.393	0.059	0.0128	0.0053	0.000133	0.0000115	0.000494	5.325	0.0000025	0.000539	0.00087
3rd Quartile	7.84	452	1.3	11.2	98.3	129.3	0.92	0.096	89	0.0755	0.0046	0.427	0.1874	0.0194	0.00715	0.000158	0.0000164	0.000566	8.3325	0.0000111	0.000641	0.00189
Count Over Guideline	0	0	0	0	0	0	0	0	2	0	0	0	0	0	0	0	0	0	0	0	1	0
% Over Guideline	0	0	0	0	0	0	0	0	20	0	0	0	0	0	0	0	0	0	0	0	10	0

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Orp (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetric	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
<b>Station Name</b>	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3		*	0.005	*	*	*		*	0.001	0.03
MW15-02																						
Average	7.63	431	1.8	5.87	51	116.7	0.71	0.089	55.6	0.0129	0.001	0.256	0.124	0.0018	0.00209	0.000718	0.0000034	0.000178	3.443	0.0000184	0.001566	0.00041
Count	5	5	4	5	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Minimum	7.37	323	1.2	4.9	42	87.9	0.53	0.088	37.4	0.0079	0.001	0.212	0.001	0.00069	0.000114	0.0000025	0.000058	0.0005	0.0000025	0.000371	0.00005	
Maximum	7.81	463	2.6	7.3	63	154.8	0.88	0.092	65.6	0.019	0.001	0.399	0.612	0.0048	0.000599	0.000891	0.000007	0.000613	17.2	0.000082	0.00196	0.00071
Geometric Mean	7.62	427	1.7	5.82	50	114.2	0.7	0.089	54.6	0.0121	0.001	0.248	0.0056	0.0014	0.000579	0.0000031	0.000106	0.0152	0.000005	0.001349	0.0003	
Count <DL	0	0	0	0	0	0	0	0	0	0	5	0	2	4	0	0	4	0	2	4	0	1
Standard Deviation	0.19	61	0.6	0.92	9	28.3	0.13	0.002	10.7	0.0052	0	0.08	0.2728	0.0017	0.00226	0.000339	0.000002	0.000244	7.6904	0.0000356	0.000675	0.00027
1st Quartile	7.49	452	1.5	5.3	46	101.2	0.68	0.089	57.8	0.0097	0.001	0.218	0.001	0.00075	0.00082	0.0000025	0.000065	0.0025	0.0000025	0.00171	0.00024	
Median	7.68	457	1.7	5.77	50	112	0.72	0.089	58.4	0.01	0.001	0.224	0.0026	0.001	0.00089	0.000875	0.0000025	0.000067	0.0061	0.0000025	0.00188	0.00048
3rd Quartile	7.78	461	2	6.1	55	127.6	0.74	0.089	58.8	0.018	0.001	0.228	0.0034	0.001	0.00211	0.00089	0.0000025	0.000085	0.0061	0.0000025	0.00191	0.00059
Count Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	4	0
% Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	80	0
MW16-12D																						
Average	6.42	1543	2.6	3.7	23	38.1	2	1.1	0.25	0.32	0.0014	0.001	0.176	0.184	0.00529	0.000027	0.000007	0.000058	8.65	0.000015	0.00002	0.08203
Count	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	6.27	1510	2.5	2.4	21	23	1.9	1.1	0.25	0.27	0.001	0.001	0.138	0.125	0.00169	0.00001	0.000006	0.000025	7.67	0.0000025	0.00002	0.00192
Maximum	6.53	1610	2.8	6.2	28	45.7	2.2	1.1	0.25	0.4	0.0023	0.001	0.223	0.252	0.0116	0.00006	0.000007	0.000124	10.4	0.00004	0.00002	0.242
Geometric Mean	6.42	1543	2.6	3.3	23	36.3	2	1.1	0.25	0.31	0.0013	0.001	0.172	0.177	0.0037	0.000018	0.000007	0.000043	8.57	0.0000063	0.00002	0.01003
Count <DL	0	0	0	0	0	0	0	0	3	0	2	3	0	0	2	0	2	0	2	3	0	0
Standard Deviation	0.13	58	0.2	2.2	4	13.1	0.2	0	0.07	0.0008	0	0.043	0.064	0.00548	0.000029	0.000001	0.000057	1.52	0.0000217	0	0.13854	
1st Quartile	6.37	1510	2.5	2.4	21	34.3	1.9	1.1	0.25	0.28	0.001	0.001	0.152	0.15	0.00213	0.00001	0.000007	0.000025	7.78	0.0000025	0.00002	0.00204
Median	6.46	1510	2.6	2.4	21	45.6	2	1.1	0.25	0.28	0.001	0.001	0.166	0.175	0.00258	0.00001	0.000007	0.000025	7.88	0.0000025	0.00002	0.00217
3rd Quartile	6.5	1560	2.7	4.3	24	45.7	2.1	1.1	0.25	0.34	0.0016	0.001	0.195	0.213	0.00709	0.000035	0.000007	0.000075	9.14	0.0000213	0.00002	0.12208
Count Over Guideline	2	0	0	0	0	0	0	3	0	1	0	0	0	0	1	0	0	0	0	0	0	1
% Over Guideline	66.7	0	0	0	0	0	0	100	0	33.3	0	0	0	0	33.3	0	0	0	0	0	0	33.3
MW16-12S																						
Average	6.58	1567	2.9	5.2	45	-65.2	2.3	0.82	5.29	0.175	0.0057	0.0049	0.405	0.2797	0.00078	0.001252	0.000022	0.000025	145	0.0000025	0.00002	0.0742
Count	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3	3
Minimum	6.53	1500	2.2	4.8	43	-115	2	0.72	0.25	0.085	0.0024	0.001	0.308	0.0682	0.00025	0.000187	0.000012	0.000025	138	0.0000025	0.00002	0.0325
Maximum	6.66	1610	3.8	5.4	47	-26.3	2.7	0.88	11.9	0.26	0.01	0.01	0.465	0.473	0.00118	0.00336	0.000038	0.000025	159	0.0000025	0.00002	0.0994
Geometric Mean	6.58	1566	2.8	5.2	45	1	2.3	0.81	2.23	0.158	0.0048	0.0033	0.399	0.2126	0.00065	0.000508	0.000019	0.000025	145	0.0000025	0.00002	0.0664
Count <DL	0	0	0	0	0	0	0	0	1	0	1	2	0	0	1	0	0	3	0	3	3	0
Standard Deviation	0.07	59	0.8	0.3	2	45.3	0.4	0.09	5.98	0.088	0.0039	0.0046	0.085	0.203	0.00048	0.001826	0.000014	0	12	0	0	0.0364
1st Quartile	6.54	1545	2.5	5	44	-84.7	2.1	0.78	1.99	0.133	0.0035	0.0024	0.375	0.1831	0.00059	0.000198	0.000014	0.000025	138	0.0000025	0.00002	0.0617
Median	6.54	1590	2.7	5.3	46	-54.3	2.2	0.85	3.72	0.18	0.0046	0.0037	0.442	0.298	0.00092	0.000209	0.000016	0.000025	139	0.0000025	0.00002	0.0908
3rd Quartile	6.6	1600	3.2	5.3	46	-40.3	2.5	0.86	7.81	0.22	0.0073	0.0069	0.454	0.3855	0.00105	0.001785	0.000027	0.000025	149	0.0000025	0.00002	0.0951
Count Over Guideline	0	0	0	0	0	0	0	3	0	1	0	0	0	0	0	0	0	0	0	0	0	3
% Over Guideline	0	0	0	0	0	0	0	100	0	33.3	0	0	0	0	0	0	0	0	0	0	0	100

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Opr (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetry	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
Station Name	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3			*	0.005	*	*		*	0.001	0.03
BH95G-30																						
Average	7.61	385	5.9	8.35	73.7	103.1	0.7	0.14	24.6	0.026	0.0041	0.317	0.0562	0.0143	0.00319	0.000052	0.000132	0.00047	0.589	0.000031	0.00248	0.00788
Count	6	6	5	5	4	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum	7.23	371	3.2	5.8	52	64.8	0.25	0.13	22.4	0.015	0.001	0.279	0.0043	0.003	0.0005	0.000028	0.000095	0.000262	0.126	0.000006	0.00211	0.00697
Maximum	7.85	392	9.6	10.94	101.8	161	0.93	0.14	26.4	0.047	0.013	0.351	0.228	0.0438	0.0129	0.000085	0.000186	0.000623	1.32	0.000084	0.00277	0.00926
Geometric Mean	7.6	385	5.5	8.12	71.6	98.1	0.65	0.14	24.6	0.024	0.0025	0.316	0.026	0.0095	0.00157	0.000048	0.000127	0.000451	0.433	0.000022	0.00247	0.00785
Count <DL	0	0	0	0	0	0	1	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0
Standard Deviation	0.23	8	2.4	2.22	20.7	37.1	0.24	0.01	1.5	0.013	0.0047	0.028	0.0851	0.0154	0.00484	0.000023	0.000038	0.00014	0.459	0.000029	0.00023	0.00076
1st Quartile	7.5	384	4.6	7.2	65.5	78.1	0.68	0.13	23.7	0.016	0.001	0.296	0.0141	0.0051	0.00081	0.000033	0.000099	0.000386	0.234	0.000015	0.00238	0.0076
Median	7.64	386	5.6	7.4	70.5	100.8	0.74	0.14	24.8	0.021	0.0023	0.32	0.0269	0.0083	0.00101	0.000051	0.000129	0.000487	0.53	0.000018	0.00254	0.00771
3rd Quartile	7.77	391	6.5	10.43	78.7	110.9	0.84	0.14	25.8	0.034	0.0048	0.338	0.0379	0.016	0.00248	0.000066	0.000155	0.000581	0.803	0.000038	0.00259	0.00797
Count Over Guideline	0	0	0	0	0	0	0	6	0	0	0	0	0	0	0	0	0	0	0	0	6	0
% Over Guideline	0	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	100	0
BH95G-31																						
Average	7.9	293	1.7	9.29	79.6	150.3	0.6	0.095	22.7	0.095	0.0029	0.197	1.0418	0.0841	0.01661	0.000147	0.000021	0.000655	69.15	0.000062	0.00154	0.0009
Count	6	6	6	6	4	4	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum	7.71	286	-0.2	7.8	67.9	62.6	0.25	0.09	20	0.028	0.001	0.161	0.0129	0.0028	0.00182	0.00006	0.000018	0.000433	3.01	0.000012	0.00136	0.00005
Maximum	8.1	300	3.1	11.24	96.4	322.5	0.81	0.1	25.4	0.22	0.0075	0.211	4.67	0.239	0.0852	0.000248	0.000023	0.00132	228	0.000259	0.00166	0.0026
Geometric Mean	7.9	293	1.8	9.18	78.8	123.6	0.57	0.095	22.6	0.066	0.0022	0.196	0.2055	0.0223	0.00497	0.000132	0.000021	0.000598	33.88	0.000032	0.00153	0.00054
Count <DL	0	0	0	0	0	0	1	0	0	0	2	0	0	0	0	0	0	0	0	0	0	1
Standard Deviation	0.13	5	1.2	1.59	13.3	117.1	0.2	0.005	2.2	0.089	0.0024	0.019	1.8215	0.1152	0.03361	0.00007	0.000002	0.000346	82.55	0.000097	0.00013	0.00089
1st Quartile	7.87	290	1.2	7.93	69.5	88.6	0.56	0.091	20.8	0.038	0.0013	0.194	0.0713	0.0058	0.00285	0.000106	0.00002	0.000441	21.07	0.000017	0.00143	0.00045
Median	7.9	294	1.8	8.95	77	108	0.65	0.097	23	0.042	0.0022	0.203	0.228	0.017	0.00302	0.000131	0.000022	0.0005	44.25	0.000025	0.00159	0.00075
3rd Quartile	7.94	296	2.5	10.65	87.1	169.7	0.71	0.1	24.1	0.161	0.003	0.209	0.8768	0.1744	0.0036	0.000192	0.000023	0.000691	72.6	0.000031	0.00164	0.00086
Count Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
% Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
MW15-03D																						
Average	7.37	391	2.02	1.86	18.4	-36.2	0.78	0.16	22.7	0.123	0.001	0.0014	0.0057	0.0042	0.00331	0.00164	0.0000038	0.000209	1.208	0.0000078	0.000041	0.00063
Count	11	11	11	11	8	9	11	11	11	11	11	11	11	10	11	11	11	11	11	11	11	11
Minimum	6.66	386	0	0.52	6	-85	0.25	0.15	21.1	0.072	0.001	0.001	0.0027	0.0021	0.00057	0.00106	0.0000025	0.000025	0.433	0.0000025	0.00002	0.00011
Maximum	7.67	395	3.3	3.76	34.1	111.2	1.7	0.17	25.3	0.3	0.001	0.0027	0.0123	0.0091	0.0144	0.00236	0.00001	0.00162	3.32	0.000044	0.000256	0.00238
Geometric Mean	7.36	391	1.95	1.56	15.8	2.7	0.65	0.16	22.7	0.107	0.001	0.0013	0.0051	0.0039	0.00196	0.00157	0.0000032	0.000063	1.045	0.0000043	0.000025	0.00042
Count <DL	0	0	0	0	0	0	3	0	0	0	11	8	0	0	0	0	9	6	0	7	10	0
Standard Deviation	0.32	3	1.03	1.06	9.9	71.8	0.44	0.01	1.3	0.078	0	0.0007	0.0029	0.002	0.00424	0.00051	0.0000028	0.000473	0.793	0.0000125	0.000071	0.00066
1st Quartile	7.23	388	1.5	1.1	10.9	-74.4	0.45	0.15	21.9	0.076	0.001	0.001	0.0036	0.0032	0.00105	0.00122	0.0000025	0.000025	0.835	0.0000025	0.00002	0.00024
Median	7.51	391	1.8	1.6	18.4	-66.9	0.82	0.16	22.6	0.087	0.001	0.001	0.0046	0.0036	0.00132	0.00137	0.0000025	0.000025	0.918	0.0000025	0.00002	0.00047
3rd Quartile	7.64	394	2.85	2.64	24.5	-61.4	0.98	0.16	23.5	0.13	0.001	0.0016	0.0067	0.0044	0.00323	0.00213	0.0000025	0.000134	1.365	0.000005	0.00002	0.0007
Count Over Guideline	0	0	0	0	0	0	0	11	0	1	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	100	0	9.1	0	0	0	0	0	0	0	0	0	0	0	0

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Oppr (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetry	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
<b>Station Name</b>	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3			*	0.005	*	*		*	0.001	0.03
MW15-03S																						
Average	7.46	276	2.17	7.15	72.1	81.6	0.85	0.075	14.73	0.045	0.0031	0.0966	1.8709	1.0923	0.0064	0.000186	0.000017	0.000476	47.47	0.0000247	0.000244	0.00141
Count	11	11	11	11	8	9	11	11	11	11	11	11	10	11	11	11	11	11	11	11	11	11
Minimum	6.06	255	0.5	2.9	50.3	19.5	0.5	0.057	9.77	0.011	0.001	0.0454	0.0144	0.0027	0.00182	0.000122	0.000005	0.000072	7.41	0.0000025	0.000188	0.00005
Maximum	8.04	300	3.9	9.6	85	277	1.7	0.12	33.3	0.15	0.0093	0.134	9.38	9.24	0.0266	0.00027	0.000033	0.00202	134	0.000127	0.000322	0.0106
Geometric Mean	7.44	275	1.74	6.85	71.1	60.3	0.79	0.073	13.76	0.037	0.002	0.0914	0.621	0.0541	0.00439	0.00018	0.000015	0.000326	29.89	0.0000081	0.00024	0.00043
Count <DL	0	0	0	0	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	5	0	1
Standard Deviation	0.56	14	1.34	1.92	11.9	78.6	0.35	0.019	6.79	0.037	0.0031	0.0311	2.7386	2.8764	0.00728	0.000048	0.000009	0.000544	41.86	0.00004	0.000045	0.00308
1st Quartile	7.19	266	0.96	6.31	68.1	46.1	0.57	0.065	11.3	0.028	0.001	0.0751	0.2065	0.0051	0.00223	0.00015	0.000012	0.000218	11.4	0.0000025	0.000208	0.0002
Median	7.65	276	2.1	7.16	74.5	61.9	0.77	0.069	11.6	0.042	0.001	0.0941	0.984	0.0284	0.00324	0.000174	0.000013	0.000344	48.4	0.000005	0.000255	0.00027
3rd Quartile	7.74	282	3.5	8.6	79.5	73.1	0.99	0.077	15.75	0.047	0.0057	0.125	1.99	0.398	0.00609	0.000212	0.000022	0.000385	75.35	0.000031	0.000271	0.00088
Count Over Guideline	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0
% Over Guideline	9.1	0	0	0	0	0	0	0	0	0	0	0	0	0	9.1	0	0	0	0	0	0	0
MW15-04D																						
Average	7.64	297	2.28	27.5	19.3	5.1	0.89	0.22	20.9	0.043	0.0015	0.0093	1.6572	0.0198	0.00206	0.00151	0.0000158	0.00017	45.1009	0.0000164	0.000063	0.00149
Count	11	11	10	11	8	9	11	11	11	11	11	11	10	11	11	11	11	11	11	11	11	11
Minimum	7.4	287	0.9	1.12	9.6	-56.9	0.25	0.2	17.8	0.026	0.001	0.001	0.0059	0.0026	0.00078	0.00116	0.0000025	0.000025	0.0005	0.0000025	0.00002	0.00016
Maximum	7.92	344	3.8	280	30	226.7	2.6	0.24	34.8	0.11	0.0037	0.0256	9.09	0.0848	0.00369	0.00184	0.00004	0.000885	264	0.000096	0.000132	0.00956
Geometric Mean	7.64	296	2.12	3.32	18	3.1	0.72	0.22	20.6	0.04	0.0013	0.007	0.1149	0.0103	0.00183	0.00149	0.0000111	0.000083	2.9339	0.0000071	0.00005	0.00066
Count <DL	0	0	0	0	0	2	0	0	0	0	8	1	0	0	0	0	2	4	1	5	4	0
Standard Deviation	0.16	16	0.87	83.75	7.4	99.1	0.65	0.01	4.7	0.023	0.0009	0.0069	3.4713	0.0268	0.00101	0.00025	0.0000123	0.000258	91.5722	0.000028	0.000039	0.00272
1st Quartile	7.54	291	1.75	1.8	13.5	-48.7	0.56	0.21	19.1	0.032	0.001	0.0052	0.0156	0.0047	0.00131	0.00126	0.000006	0.000025	1.245	0.0000025	0.00002	0.0003
Median	7.67	292	2.1	2.3	19.5	-35.7	0.71	0.21	19.9	0.038	0.001	0.0067	0.113	0.0085	0.00175	0.00163	0.000011	0.000083	3.27	0.000007	0.000075	0.00073
3rd Quartile	7.74	295	2.88	3.17	23.1	-33	1.04	0.22	20.2	0.046	0.0016	0.0124	0.2495	0.0174	0.00272	0.00169	0.0000245	0.000124	12.46	0.0000105	0.000083	0.00117
Count Over Guideline	0	0	0	0	0	0	11	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	100	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
MW15-04S																						
Average	7.75	238	2.28	8.95	79.9	106.7	0.71	0.085	9.85	0.05	0.0031	0.207	0.9524	0.0985	0.00386	0.000223	0.0000064	0.000404	55.1	0.0000041	0.000771	0.00074
Count	11	11	10	10	8	9	11	11	11	11	11	11	11	10	11	11	11	11	11	11	11	11
Minimum	7.49	231	0.3	7.12	61.4	62	0.25	0.078	8.81	0.021	0.001	0.155	0.0188	0.0023	0.0016	0.000155	0.0000025	0.000025	4.72	0.0000025	0.000703	0.00005
Maximum	7.92	245	4.2	11	101	278.7	1.1	0.1	10.5	0.09	0.013	0.236	2.66	0.601	0.00702	0.000339	0.000015	0.00117	130	0.00001	0.000848	0.00255
Geometric Mean	7.75	238	1.87	8.88	79.1	94.7	0.64	0.085	9.83	0.045	0.0018	0.205	0.3752	0.0257	0.0035	0.000217	0.0000048	0.000283	39.55	0.0000036	0.00077	0.0004
Count <DL	0	0	0	0	0	2	0	0	0	0	8	0	0	0	0	0	6	1	0	7	0	2
Standard Deviation	0.14	4	1.24	1.19	12.2	68.1	0.3	0.006	0.53	0.025	0.004	0.024	1.0302	0.1824	0.00173	0.000056	0.000005	0.000318	37.5	0.0000026	0.000039	0.0008
1st Quartile	7.65	235	1.41	8.16	71.4	69.2	0.54	0.082	9.73	0.029	0.001	0.199	0.1708	0.0063	0.00241	0.000189	0.0000025	0.000237	30.55	0.0000025	0.000754	0.00022
Median	7.78	239	2.05	8.76	81	85.4	0.69	0.084	10	0.047	0.001	0.21	0.529	0.0271	0.00377	0.000203	0.0000025	0.000313	52.2	0.0000025	0.000769	0.00045
3rd Quartile	7.86	241	3.35	9.49	84.3	96.3	0.91	0.087	10.1	0.064	0.0034	0.222	1.634	0.0854	0.0051	0.00026	0.0000095	0.000509	72.75	0.0000055	0.000775	0.00104
Count Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

	pH (field)	Specific Conductance (lab)	Temperature (field)	Dissolved Oxygen (field)	Dissolved Oxygen (field)	Orp (field)	Chloride	Fluoride	Sulphate, dissolved	Ammonia (N)	Nitrite (N)	Nitrate (N)	Phosphorus, total-colourimetry	Phosphorus Total Dissolved	Aluminum (Al), dissolved	Arsenic (As), dissolved	Cadmium (Cd), dissolved	Copper (Cu), dissolved	Iron (Fe), total	Lead (Pb), dissolved	Selenium (Se), dissolved	Zinc (Zn), dissolved
<b>Station Name</b>	pH units	µS/cm	C	mg/L	%	mV	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
FIGWQG-Industrial-Tier1	6.5-9						120	0.12	100	0.282	0.06	3		*	0.005	*	*			*	0.001	0.03
MW15-05D																						
Average	7.57	389	1.6	7.24	64	130.1	0.74	0.13	31.5	0.0266	0.0034	0.222	0.1089	0.0128	0.00292	0.000118	0.000065	0.000392	6.162	0.000097	0.00167	0.00315
Count	11	11	10	11	8	9	11	11	11	11	11	11	10	11	11	11	11	11	11	11	11	11
Minimum	7.35	377	0	4.29	36	47.4	0.25	0.11	29	0.0025	0.001	0.122	0.0032	0.001	0.00053	0.00004	0.000027	0.000079	0.369	0.000008	0.00149	0.00053
Maximum	7.79	437	4.6	9.32	92.8	335.4	1.8	0.18	42.2	0.056	0.0161	0.259	0.327	0.0353	0.0075	0.00022	0.000197	0.00166	16.5	0.000215	0.00182	0.0112
Geometric Mean	7.57	389	0.97	7.07	61.6	111.8	0.59	0.13	31.3	0.0217	0.0022	0.218	0.0488	0.0074	0.00213	0.000101	0.000055	0.000251	3.215	0.000064	0.00166	0.00243
Count <DL	0	0	0	0	0	0	4	0	0	1	4	0	0	2	0	0	0	0	0	0	0	0
Standard Deviation	0.14	17	1.55	1.58	18	86.2	0.5	0.02	3.8	0.014	0.0043	0.038	0.1096	0.0116	0.00238	0.000064	0.000047	0.00046	6.102	0.000078	0.00011	0.00284
1st Quartile	7.47	379	0.19	5.75	50	96.9	0.25	0.12	29.3	0.02	0.001	0.212	0.0166	0.0047	0.00113	0.000061	0.000042	0.000124	1.27	0.000041	0.00161	0.00181
Median	7.57	386	1.6	7.89	66.9	107.2	0.77	0.13	30.4	0.026	0.0024	0.236	0.109	0.0079	0.00211	0.000104	0.000054	0.000236	3.71	0.000084	0.00167	0.00258
3rd Quartile	7.64	388	2.1	8.3	73.2	116.4	1	0.13	32	0.034	0.0032	0.244	0.1355	0.021	0.00433	0.000179	0.000069	0.000482	10.205	0.000151	0.00173	0.00321
Count Over Guideline	0	0	0	0	0	0	7	0	0	0	0	0	0	0	0	0	0	0	0	0	11	0
% Over Guideline	0	0	0	0	0	0	63.6	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
MW15-05S	Well is dry																					
MW15-06																						
Average	7.43	373	1.7	8.39	71	90.7	0.96	0.11	22.7	0.0435	0.0029	0.333	0.069	0.0305	0.00179	0.000059	0.000153	0.000429	17.4184	0.0000108	0.00262	0.00283
Count	6	6	5	6	5	5	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6	6
Minimum	7.28	366	0.7	7.2	62	78.3	0.67	0.11	21.8	0.0051	0.001	0.307	0.0049	0.0025	0.00098	0.000037	0.000135	0.000341	0.0005	0.0000025	0.00238	0.00143
Maximum	7.63	382	2.6	8.86	75	117.2	1.3	0.12	23.1	0.1	0.0072	0.356	0.173	0.105	0.00255	0.000102	0.000175	0.000593	69.1	0.000017	0.00285	0.00403
Geometric Mean	7.43	373	1.5	8.37	71	89.8	0.94	0.11	22.6	0.0298	0.0019	0.333	0.0428	0.0138	0.00171	0.000055	0.000152	0.000421	1.4081	0.0000094	0.00262	0.00264
Count <DL	0	0	0	0	0	0	0	0	0	0	4	0	0	0	0	0	0	0	1	1	0	0
Standard Deviation	0.14	7	0.7	0.63	5	15.3	0.25	0.01	0.5	0.0363	0.003	0.021	0.0613	0.0393	0.00057	0.000025	0.000016	0.000095	27.6449	0.0000048	0.00018	0.00109
1st Quartile	7.34	366	1.3	8.3	72	84.2	0.8	0.11	22.4	0.022	0.001	0.318	0.03	0.005	0.00145	0.00004	0.000141	0.000374	1.5925	0.0000103	0.00252	0.00197
Median	7.37	372	1.7	8.65	73	85.6	0.91	0.11	22.9	0.031	0.001	0.335	0.0529	0.0152	0.00195	0.000053	0.00015	0.000389	2.315	0.000011	0.0026	0.00292
3rd Quartile	7.53	378	2.2	8.78	74	88.1	1.15	0.12	23	0.064	0.0049	0.351	0.094	0.0364	0.00202	0.000067	0.000163	0.000467	22.65	0.0000125	0.00275	0.00375
Count Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	6	0
% Over Guideline	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	100	0
MW16-16D																						
Average	7.59	440	1.6	2.54	21.4	39.3	0.55	0.131	37.8	0.03	0.0025	0.0013	0.058	0.0488	0.00323	0.000318	0.0000039	0.000048	7.39	0.0000058	0.000043	0.00171
Count	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4	4
Minimum	7.47	438	1.1	1	8	-57.7	0.25	0.005	36.3	0.019	0.001	0.001	0.0241	0.0177	0.0007	0.000135	0.0000025	0.000025	1.82	0.0000025	0.00002	0.00014
Maximum	7.73	443	2.2	6.87	58.2	202.8	0.67	0.18	38.9	0.051	0.0058	0.0023	0.0959	0.0908	0.00467	0.000538	0.000008	0.00009	20.9	0.000012	0.000111	0.00581
Geometric Mean	7.59	440	1.6	1.74	14.4	10	0.51	0.071	37.7	0.028	0.0019	0.0012	0.0514	0.0394	0.00261	0.000274	0.0000033	0.000042	4.58	0.0000046	0.000031	0.00063
Count <DL	0	0	0	0	0	0	1	1	0	0	2	3	0	0	0	0	3	2	0	2	3	0
Standard Deviation	0.11	2	0.5	2.89	24.6	118.3	0.2	0.085	1.2	0.014	0.0023	0.0006	0.0307	0.0343	0.00174	0.000188	0.0000027	0.000031	9.04	0.0000045	0.000046	0.00274
1st Quartile	7.54	438	1.4	1.08	8.9	-42	0.53	0.121	37	0.022	0.001	0.001	0.0399	0.0224	0.00292	0.000177	0.0000025	0.000025	2.67	0.0000025	0.00002	0.00029
Median	7.59	439	1.6	1.15	9.6	6	0.63	0.17	37.9	0.025	0.0015	0.001	0.056	0.0432	0.00377	0.000299	0.0000025	0.000039	3.43	0.0000042	0.00002	0.00045
3rd Quartile	7.64	441	1.8	2.62	22.1	87.3	0.65	0.18	38.7	0.032	0.003	0.0013	0.0741	0.0696	0.00408	0.00044	0.0000039	0.000062	8.15	0.0000075	0.000043	0.00187
Count Over Guideline	0	0	0	0	0	0	3	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% Over Guideline	0	0	0	0	0	0	75	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0

APPENDIX E  
GROUNDWATER QUALITY DATA 2015-2017

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-02	MW15-02	MW15-02	MW15-02	MW15-02	MW15-02
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depth to Water (mbTOC)	m				8.54	11.396	9.088	10.366	8.581	11.289	11.856	9.045	11.596	11.946		0	0.000	0	0		
Well Depth	mbTOC				20.22	20.055	20.05	20.057	20.062	20.063	20.058	20.065	20.077	22.005		32.95	32.950	32.95	32.95	0	
Total Suspended Solids	mg/L		<1.0	1910	179	427	183	32.4	67.1	54.1	36.3	191	318	83.1	34.6	410	<1.0	<1.0	<1.0	<1.0	
pH (field)	pH units		7.62	8.5	7.56	7.77	7.78	7.68	7.84	7.83	7.85	7.48	7.83	8.14	8.25	7.37	7.49	7.68	7.78	7.81	
pH (lab)	pH units		8.16	8.19	8.07	8.11	7.68	8.15	8.08	8.03	7.97	7.92	8.21	7.81	7.84	7.94	8.3	8.04	8.01	8.01	
Specific Conductance (field)	µS/cm		353.7	394	572	275.5	351.1	334.9	355.1	339.3	353.2	535.2	318.1	378.9	246.1	483.2	478.1	463.2	459.1	353.1	
Specific Conductance (lab)	µS/cm		432	459	551	316	356	325	350	338	428	526	307	406	455	323	452	461	457	463	
Temperature (field)	C			-0.1	0.3	1.1	1.3	0.9	2.1	1.6	0.4	0.3	3.9	0.9	-0.9		1.8	2.6	1.6	1.2	
Dissolved Oxygen (field)	mg/L		11.39	2.7	7.2		11.2	7.2	11.8	10	9.5	5.58	9.44	7.4	6.6	5.77	4.9	7.3	6.1	5.3	
Dissolved Oxygen (field)	%					100.6	96	65	108	86	79	46.3	71.4	62	54		42	63	52	47	
ORP (field)	mV				11	75.2	75.1	92.3	126.6	58.6	137.4	339.9	359.6	144.1	119.7		154.8	118.5	87.9	105.6	
Hardness (from total)	mg/L		233	1010	323	196	213	169	201	182	228	275	187	210	249	232	260	249	241	260	
Hardness (from dissolved)	mg/L		239	251	296	189	176	174	191	178	222	259	150	211	215	181	248	252	244	247	
Total Acidity	mg/L		<0.50	3.19	<0.50	<0.50	<0.50	1.06	<0.50	1.77	<0.50	2.21	<0.50	<1.0	3.1	<0.50	<0.50	1.94	1.79	0.97	
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, total	mg/L		179	147	156	113	119	122	133	140	152	163	109	144	144	130	186	195	180	187	
Alkalinity, bicarbonate HCO3	mg/L		218	179	191	138	146	149	162	171	185	199	132	176	175	159	228	238	220	228	
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Chloride	mg/L		0.8	1.4	<0.50	0.81	1	<0.50	0.79	0.83	0.95	<0.50	<0.50	<0.50	0.56	0.68	0.53	0.74	0.72	0.88	
Fluoride	mg/L	*	0.094	0.086	0.094	0.097	0.09	0.094	0.09	0.086	0.099	0.12	0.096	0.1	0.086	0.089	0.088	0.089	0.089	0.092	
Sulphate, dissolved	mg/L	1000	52.1	94.3	138	50	67.5	39.6	43.7	36.2	73	118	47.9	72.3	102	37.4	65.6	57.8	58.4	58.8	
Ammonia (N)	mg/L	*	0.0073	0.086	0.044	0.0071	0.0076	0.11	0.0098	0.0068	0.13	0.024	0.014	<0.0050	0.012	0.019	0.018	0.01	0.0097	0.0079	
Nitrite (N)	mg/L	*	<0.0020	<0.0020	<0.0020	0.0056	0.0047	0.0031	0.0045	0.0046	0.003	<0.0020	0.0078	<0.0020	0.0037	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Nitrate (N)	mg/L	400	0.189	0.392	0.231	0.428	0.324	0.26	0.426	0.464	0.458	0.394	0.247	0.428	0.46	0.399	0.228	0.212	0.218	0.224	
Nitrite & Nitrate, as N	mg/L	400	0.189	0.392	0.231	0.433	0.329	0.263	0.43	0.469	0.461	0.394	0.255	0.428	0.464	0.399	0.228	0.212	0.218	0.224	
Phosphorus, total-colourimetric	mg/L		0.0029	7.34	0.219	0.0128	0.0181	0.0362	0.0925	0.0817	0.0286	0.277	0.467	0.12	0.0503	0.612	<0.0020	0.0034	<0.0020	0.0026	
Phosphorus, Total Dissolved	mg/L		0.0029	0.0021		0.0128	0.0191	0.0065	0.0946	0.0776	0.0041	0.0194	0.0997	0.0167	0.0225	0.0048	<0.0020	<0.0020	<0.0020	<0.0020	
Dissolved Organic Carbon	mg/L				1.45	1.31	0.94	1.84	2.19	2.21	1.69	0.7	1.42	1.57	1.32		<0.50	0.76	0.65	1.63	
Aluminum (Al), total	mg/L		0.0153	83.6	2.27	1.5	2.42	0.575	1.2	0.602	0.432	1.78	4.51	0.983	0.449	6.57	0.001	0.0042	<0.0030	0.0037	
Antimony (Sb), total	mg/L		0.000023	0.000448	0.00028	0.000102	0.000205	0.000052	0.000102	0.000048	0.000082	0.000138	0.000258	0.000154	0.000082	0.000276	<0.000020	<0.000020	0.000037	0.000062	
Arsenic (As), total	mg/L		0.00105	0.0239	0.00363	0.00109	0.00163	0.000477	0.00178	0.000588	0.000671	0.0026	0.00393	0.0023	0.000803	0.00371	0.000861	0.000891	0.00092	0.000934	
Barium (Ba), total	mg/L		0.098	0.599	0.106	0.0349	0.044	0.0187	0.0348	0.0208	0.0345	0.0681	0.0654	0.0663	0.0364	0.0991	0.0977	0.0953	0.0961	0.0998	
Beryllium (Be), total	mg/L		<0.000010	0.00155	0.00014	0.000058	0.00012	0.000021	0.000035	0.000014	0.000013	0.000085	0.000205	0.000045	0.000029	0.000177	<0.000010	<0.000010	<0.000010	<0.000010	
Bismuth (Bi), total	mg/L		<0.0000050	0.000683	0.000051	0.000024	0.000024	<0.000010	0.000013	<0.000010	<0.000010	0.000054	0.000061	0.00002	<0.000010	0.000071	<0.0000050	<0.0000050	<0.000010	<0.000010	
Boron (B), total	mg/L		<0.010	<0.050	<0.050	<0.050	<0.050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd), total	mg/L		<0.0000050	0.00314	0.000265	0.000135	0.000316	0.000028	0.000063	0.000033	0.000044	0.00015	0.000323	0.000096	0.0000485	0.000355	<0.0000050	<0.0000050	<0.0000050	0.000009	
Calcium (Ca), total	mg/L		74.9	305	108	66.3	72.7	56.5	67.3	60.3	75.5	90.3	61.7	69.7	84.5	76.5	84.6	78.6	77.1	83.6	
Chromium (Cr), total	mg/L		<0.00010	0.119	0.0099	0.00667	0.0144	0.00168	0.00282	0.00096	0.00148	0.00426	0.0141	0.00331	0.00158	0.0104	<0.00010	<0.00010	<0.00010	<0.00010	
Cobalt (Co), total	mg/L		0.000054	0.076	0.00454	0.00164	0.00236	0.000418	0.0013	0.000531	0.000638	0.00358	0.00647	0.00257	0.000944	0.00538	0.000035	0.000036	0.000033	0.000041	
Copper (Cu), total	mg/L		0.000119	0.263	0.0175	0.00815	0.0118	0.00305	0.00575	0.00279	0.00281	0.0133	0.018	0.00703	0.00276	0.0256	0.00008	0.000109	0.00026	0.00046	
Iron (Fe), total	mg/L		0.0381	200	13	4.72	7.56	1.44	5.93	1.64	1.91	8.59	14.8	5.87	2.69	17.2	<0.0010	0.0061	<0.0050	0.0061	
Lead (Pb), total	mg/L		0.000012	0.0424	0.00621	0.00338	0.00685	0.00112	0.00153	0.000658	0.000811	0.00257	0.00707	0.00209	0.000922	0.0062	<0.0000050	0.000071	<0.000020	0.000151	
Lithium (Li), total	mg/L		0.00187	0.0449	0.00366	0.00225	0.0016	0.00109	0.0022	0.00124	0.00224	0.00312	0.00328	0.00222	0.00192	0.00451	0.00189	0.00207	0.00171	0.00151	
Magnesium (Mg), total	mg/L		11.2	60.7	12.8	7.44	7.6	6.81	7.99	7.58	9.5	12.1	8.12	8.81	9.32	9.88	11.9	12.9	11.7	12.4	
Manganese (Mn), total	mg/L		0.00238	3.86	0.161	0.11	0.119	0.0234	0.0553	0.0307	0.0338	0.109	0.26	0.0738	0.0288	0.31	<0.000050	0.000346	<0.00010	0.00014	
Mercury (Hg), total	mg/L		<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000027	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	
Molybdenum (Mo), total	mg/L		0.00086	0.00435	0.00245	0.00127	0.00317	0.000873	0.00098	0.000728	0.000859	0.000793	0.00213	0.00106	0.000903	0.00323	0.000809	0.000784	0.000802	0.000819	
Nickel (Ni), total	mg/L		0.000208	0.122	0.0122	0.00278	0.00401	0.001	0.00313	0.00105	0.00173	0.0126	0.0116	0.00705	0.00207	0.0124	0.000152	0.000159	0.00015	0.0002	
Phosphorus (P), total	mg/L		0.0043	7.06	0.234	0.217															

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-01	MW15-02	MW15-02	MW15-02	MW15-02	MW15-02	MW15-02
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L		2.12	89.6	5.59	3.61	4.19	2.46	3.32	2.34	2.65	4.34	7.35	3.08	2.53	10.8	2.36	2.01	2.21	2.38	
Silver (Ag), total	mg/L		<0.0000050	0.0428	0.00114	0.000956	0.00183	0.000453	0.000791	0.000287	0.000229	0.00171	0.00773	0.00217	0.000442	0.00413	<0.0000050	<0.0000050	0.000017	<0.000010	
Sodium (Na), total	mg/L		0.76	3.03	1.73	0.92	1.84	0.76	0.9	1	1.69	1.3	0.91	1.11	1.18	1.05	0.735	0.784	0.73	0.77	
Strontium (Sr), total	mg/L		0.283	1.09	0.336	0.189	0.183	0.146	0.18	0.161	0.211	0.247	0.173	0.199	0.203	0.215	0.303	0.289	0.301	0.328	
Sulphur (S), total	mg/L		18.4	38	54	20	23	13.3	15.8	12.4	24.8	37	16.5	24.9	32.1	15	20.9	21	19.5	21	
Thallium (Tl), total	mg/L		<0.0000020	0.000328	0.000037	0.000015	0.000019	0.000006	0.000012	0.000007	0.00001	0.000023	0.00005	0.000021	0.0000068	0.000072	<0.0000020	<0.0000020	0.000002	<0.0000020	
Tin (Sn), total	mg/L		<0.00020	0.00157	0.00028	0.00028	0.00028	<0.00020	0.00047	<0.00020	0.00022	<0.00020	0.00041	0.00023	<0.00020	0.00075	<0.00020	<0.00020	<0.00020	<0.00020	
Titanium (Ti), total	mg/L		<0.00050	4.24	0.139	0.0892	0.0959	0.0467	0.0821	0.0397	0.0265	0.107	0.252	0.0509	0.0264	0.386	<0.00050	<0.00050	<0.0020	<0.0020	
Uranium (U), total	mg/L		0.00303	0.0179	0.00485	0.00208	0.00223	0.00172	0.00211	0.00178	0.00325	0.00401	0.0019	0.00275	0.00259	0.00238	0.00353	0.00323	0.00336	0.00344	
Vanadium (V), total	mg/L		<0.00020	0.463	0.013	0.00782	0.00611	0.00253	0.00631	0.00313	0.00216	0.0105	0.0219	0.00489	0.00225	0.0276	<0.00020	<0.00020	<0.00020	<0.00020	
Zinc (Zn), total	mg/L		0.00036	0.719	0.0835	0.0304	0.074	0.0087	0.0199	0.0088	0.0144	0.0518	0.0771	0.0315	0.014	0.0752	0.0002	0.0005	<0.0010	0.0013	
Zirconium (Zr), total	mg/L		0.0001	0.0147	0.00546	0.0004	0.00061	0.00023	0.00076	0.00023	0.00068	0.00259	0.00358	0.00242	0.00072	0.00328	<0.00010	<0.00010	<0.00010	<0.00010	
Aluminum (Al), dissolved	mg/L		0.00636	0.00921	0.00293	0.00698	0.00848	0.00721	0.00355	0.00424	0.00297	0.00204	0.0129	0.00227	0.00667	0.00599	0.00075	0.00211	0.00069	0.00089	
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	<0.000020	0.000048	0.000029	0.000023	0.000044	0.000023	0.000035	0.000022	0.000041	0.000035	0.000033	0.000039	0.000023	0.00003	<0.000020	<0.000020	<0.000020	<0.000020	
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.00088	0.000126	0.000098	0.000141	0.000142	0.000192	0.000116	0.000163	0.000111	0.000075	0.000237	0.000074	0.000071	0.000114	0.00082	0.00089	0.000891	0.000875	
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0966	0.0224	0.0388	0.0163	0.0188	0.0146	0.0177	0.0166	0.0259	0.0307	0.0146	0.026	0.0258	0.0159	0.0937	0.0962	0.0956	0.0944	
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd), dissolved	mg/L	*	<0.0000050	0.00002	0.000017	0.000013	0.0000144	0.000009	0.000008	0.000007	0.00001	0.000025	0.000013	0.000011	0.00001	0.000007	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
Calcium (Ca), dissolved	mg/L		77.5	85.7	101	64.8	60.1	58.6	64.6	59.1	74	85.4	50	70.4	72.8	61.7	80.7	80.7	78.9	79.8	
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.00004	0.000076	0.000069	0.000029	0.0000308	0.000011	0.000031	0.000027	0.000045	0.000027	0.000028	0.000072	0.000059	0.00004	0.00003	0.000032	0.000033	0.000037	
Copper (Cu), dissolved	mg/L	*	0.000072	0.00049	0.000417	0.000744	0.000524	0.000612	0.000498	0.00058	0.000344	0.000328	0.000694	0.000325	0.000262	0.000613	0.000058	0.000085	0.000067	0.000065	
Iron (Fe), dissolved	mg/L		0.0122	0.0076	0.108	0.0026	<0.0010	<0.0010	0.0052	<0.0010	<0.0010	0.0014	0.0236	0.005	0.0014	0.0022	<0.0010	<0.0010	<0.0010	<0.0010	
Lead (Pb), dissolved	mg/L	*	0.000025	0.000014	0.000015	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000241	0.000009	<0.0000050	<0.0000050	<0.0000050	0.000082	<0.0000050	<0.0000050	
Lithium (Li), dissolved	mg/L		0.00175	0.00113	0.00229	0.00124	0.00137	0.00124	0.00125	0.00094	0.00204	0.00308	0.00143	0.0019	0.00163	0.00114	0.00187	0.00222	0.00122	0.00164	
Magnesium (Mg), dissolved	mg/L		10.9	9.01	10.6	6.64	6.42	6.59	7.27	7.28	8.99	11.2	6.02	8.52	8.11	6.49	11.4	12.3	11.4	11.5	
Manganese (Mn), dissolved	mg/L		0.0019	0.00541	0.0112	0.000869	0.000764	0.000111	0.00064	0.00026	0.00238	0.00553	0.00112	0.00337	0.00179	0.00285	<0.000050	0.00005	0.000076	0.000053	
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00083	0.000912	0.000605	0.00074	0.000868	0.000809	0.000764	0.000716	0.000728	0.000729	0.000679	0.000667	0.000622	0.000951	0.000756	0.000789	0.000786	0.000749	
Nickel (Ni), dissolved	mg/L	*	0.000167	0.000512	0.000414	0.000222	0.000228	0.000187	0.000332	0.000201	0.000499	0.000554	0.000325	0.00061	0.000287	0.000346	0.00014	0.000157	0.000153	0.000156	
Phosphorus (P), dissolved	mg/L		0.0046	0.0028	0.0055	0.0031	<0.0020	<0.0020	<0.0020	0.0025	0.0029	0.0043	0.0032	0.0022	0.0036	0.0042	<0.0020	<0.0020	<0.0020	<0.0020	
Potassium (K), dissolved	mg/L		2.43	0.633	0.841	0.552	0.538	0.444	0.48	0.473	0.57	0.623	0.468	0.546	0.515	0.519	2.17	2.33	2.43	2.24	
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.0015	0.000579	0.000788	0.000389	0.000499	0.000268	0.000352	0.00026	0.000599	0.000655	0.000417	0.000504	0.000683	0.000371	0.00188	0.00191	0.00171	0.00196	
Silicon (Si), dissolved	mg/L		2.48	1.99	2.37	1.71	1.82	1.89	1.73	1.69	2.18	2.38	1.64	1.84	1.76	1.96	2.53	2.11	2.1	2.28	
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000011	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	
Sodium (Na), dissolved	mg/L		0.715	1.32	1.47	0.899	1.87	0.755	0.867	0.963	1.63	1.26	0.816	1.01	1.13	0.843	0.689	0.723	0.714	0.713	
Strontium (Sr), dissolved	mg/L		0.297	0.217	0.303	0.163	0.158	0.148	0.171	0.154	0.212	0.238	0.131	0.194	0.185	0.157	0.286	0.301	0.295	0.304	
Sulphur (S), dissolved	mg/L		18.8	31.5	48.3	18.8	20.8	14.4	15.9	12	25.4	38.6	16.3	23.9	29	13.8	19.9	20.4	17.7	20.5	
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	<0.0000020	0.000002	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.000002	0.000002	<0.0000020	<0.0000020	0.000002	<0.0000020	0.000002	<0.0000020	<0.0000020	
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	
Uranium (U), dissolved	mg/L	<b>3</b>																			



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-02	MW15-02	MW15-02	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03D	MW15-03D		
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		
Depth to Water (mbTOC)	m		1.342	0	0				7.09	4.329	5.646	5.372	3.603	3.861	6.176	7.395	5.461	5.423	8.136		
Well Depth	mbTOC		3.051	32.97	32.969				8.42	8.405	8.4	8.450	8.406	8.418	8.439	8.422	8.439	8.431	8.431		
Total Suspended Solids	mg/L			1.2	<1.0	262	821	2340	996	3740	1070	5380	2680	166	3530	7090	1400	3860		8.3	3.5
pH (field)	pH units			7.92	8.15	7.65	8.02	6.06	8.04	7.69	7.72	7.64	7.15	7.76	7.22	7.16	7.77	8		7.52	7.64
pH (lab)	pH units			8.23	8.11	7.98	8.24	8.03	8.16	8.21	8.24	8	8.03	7.97	7.97	8.08	8.27	8.1		8.04	8.29
Specific Conductance (field)	µS/cm			414.5	432.7	313.9	211	266	263.3	245.8	289	272.5	236.1	221.1	284.4	306	314.3	178.2		403	375
Specific Conductance (lab)	µS/cm			446	453	300	269	265	282	255	276	276	265	267	281	297	299	199		388	395
Temperature (field)	C			1.4	0	0.5	0.8	1.02	3.9	2.6	3.6	3.4	3.8	2.1	0.9	1.2	6.5	2.6		0	1.1
Dissolved Oxygen (field)	mg/L			8.2	14.5	5.48	2.9	6.7	7.81	9.6	8.7	6.9	9	8.5	5.93	7.16	7.91	8.8		0.52	1.3
Dissolved Oxygen (field)	%			69	117				71.1	85	78	76	84	73	50.3	59.3	64.8	77			
ORP (field)	mV			146.5	110.7			66	73.1	19.5	61.9	50.8	23.9	46.1	277	116.3	366.7	28.8			
Hardness (from total)	mg/L			234	245	152	159	378	149	243	178	319	268	167	286	263	208	323		196	199
Hardness (from dissolved)	mg/L			218	213	129	135	145	137	121	153	137	133	137	134	158	151	95.5		207	210
Total Acidity	mg/L			<1.0	2.7	2.24	1.28	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.14	<0.50	1.37	<1.0		7.27	4.26
Acidity (pH 4.5)	mg/L			<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0		<0.50	<0.50
Alkalinity, total	mg/L			185	186	114	129	125	139	128	137	130	132	131	140	137	147	93.6		179	188
Alkalinity, bicarbonate HCO3	mg/L			226	227	139	157	152	169	156	167	159	162	160	171	167	180	114		219	229
Alkalinity, hydroxide OH	mg/L			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50
Alkalinity, carbonate CO3	mg/L			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50
Chloride	mg/L			<0.50	0.59	1.7	0.99	0.59	1	0.77	1	0.98	0.53	0.73	0.55	0.5	<0.50	1.4		1.7	1.1
Fluoride	mg/L	*		0.09	0.085	0.12	0.069	0.099	0.081	0.069	0.065	0.065	0.057	0.058	0.064	0.074	0.054	0.13		0.17	0.15
Sulphate, dissolved	mg/L	1000		58.3	58.9	33.3	11.6	14.6	16.9	11.3	12.5	11.3	10.2	9.77	11.6	19	13.5	13.4		25.3	24
Ammonia (N)	mg/L	*		<0.0050	0.005	0.042	0.027	0.048	0.031	0.044	0.02	0.15	0.011	0.046	0.028	0.053	0.029	0.029		0.3	0.16
Nitrite (N)	mg/L	*		<0.0020	<0.0020	0.0067	<0.0020	0.0093	0.0059	0.0056	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0059	<0.0020		<0.0020	<0.0020
Nitrate (N)	mg/L	400		0.227	0.224	0.0454	0.0723	0.058	0.078	0.131	0.134	0.122	0.128	0.114	0.0853	0.0941	0.235	0.118		0.0022	0.0027
Nitrite & Nitrate, as N	mg/L	400		0.227	0.224	0.0521	0.0723	0.0673	0.0839	0.137	0.134	0.122	0.128	0.114	0.0853	0.0941	0.241	0.118		0.0022	0.0027
Phosphorus, total-colourimetric	mg/L			0.0025	<0.0020	0.397	2.15	3.71	0.101	0.0144	1.6	0.984	0.215	0.198	1.83	9.38	0.747	1.93		0.0072	0.0092
Phosphorus, Total Dissolved	mg/L			0.0038	<0.0020	0.0027	0.0035		0.0032	0.0159	0.335	0.853	0.0099	0.0408	0.419	9.24	0.0492	2.04		0.0036	0.0031
Dissolved Organic Carbon	mg/L			0.8	<0.50			3.07	1.35	1.23	<0.50	1.01	<0.50	<0.50	0.51	<0.50	<0.50	0.99			
Aluminum (Al), total	mg/L			0.0209	<0.00050	3.15	4.13	42.4	3.05	27.1	2.23	22.8	22.8	6	40.1	18.9	13.2	18.9		0.0349	0.0138
Antimony (Sb), total	mg/L			0.000034	<0.000020	0.000156	0.000174	0.000752	0.000152	0.000709	0.000073	0.000456	0.00017	0.000135	0.00057	0.00015	0.000302	0.00017		0.00325	0.00181
Arsenic (As), total	mg/L			0.0013	0.000778	0.00425	0.00616	0.0553	0.0032	0.044	0.00393	0.0295	0.0256	0.00942	0.0595	0.0158	0.0145	0.0212		0.00195	0.00244
Barium (Ba), total	mg/L			0.0912	0.0924	0.0902	0.106	0.597	0.117	0.393	0.0992	0.413	0.435	0.122	0.595	0.483	0.251	0.714		0.0465	0.0494
Beryllium (Be), total	mg/L			<0.000010	<0.000010	0.000186	0.000234	0.00168	0.000245	0.00103	0.000168	0.00109	0.00103	0.000257	0.00167	0.00111	0.000708	0.0017		<0.000010	<0.000010
Bismuth (Bi), total	mg/L			<0.000010	<0.0000050	0.000074	0.000103	0.000936	0.000086	0.000696	0.000069	0.000591	0.000603	0.000133	0.00102	0.000177	0.000322	0.000298		<0.0000050	<0.0000050
Boron (B), total	mg/L			<0.010	<0.010	<0.050	<0.050	<0.050	<0.050	<0.050	<0.010	<0.010	<0.050	<0.010	<0.050	<0.050	<0.010	<0.050		<0.010	<0.010
Cadmium (Cd), total	mg/L			0.0000163	<0.0000050	0.000145	0.000275	0.0025	0.000249	0.00156	0.000249	0.00191	0.00194	0.000398	0.0023	0.00177	0.000713	0.00362		0.000012	<0.0000050
Calcium (Ca), total	mg/L			74.3	77.8	50.7	49.7	91.2	46.8	62.4	60.4	91.1	75.2	53.6	71.5	77.8	62.5	102		54.2	53.6
Chromium (Cr), total	mg/L			0.00014	<0.00010	0.0143	0.0281	0.254	0.0144	0.115	0.00894	0.111	0.0721	0.0178	0.11	0.0823	0.0456	0.0777		0.00015	<0.00010
Cobalt (Co), total	mg/L			0.00011	0.0000426	0.00394	0.00588	0.0655	0.00552	0.0438	0.00541	0.0367	0.0444	0.00913	0.0537	0.0427	0.021	0.0836		0.000292	0.00018
Copper (Cu), total	mg/L			0.00037	0.000087	0.0192	0.0335	0.353	0.028	0.187	0.0325	0.169	0.145	0.0364	0.21	0.158	0.0878	0.332		0.000497	0.000143
Iron (Fe), total	mg/L			0.0666	0.0011	10.4	12.4	134	8.23	85.1	7.41	67.2	52.1	13.4	83.5	48.4	30.9	58.7		0.433	0.856
Lead (Pb), total	mg/L			0.000268	<0.0000050	0.00647	0.0118	0.125	0.0128	0.0892	0.011	0.0725	0.0948	0.0175	0.121	0.0824	0.0382	0.161		0.000121	0.000054
Lithium (Li), total	mg/L			0.00175	0.00187	0.00464	0.00569	0.0426	0.0042	0.0301	0.00331	0.0295	0.0284	0.00747	0.047	0.0253	0.0144	0.0199		0.00623	0.00581
Magnesium (Mg), total	mg/L			11.7	12.4	6.14	8.47	36.5	7.86	21.2	6.57	22.3	19.5	8.01	26.1	16.7	12.7	16.5		14.6	15.8
Manganese (Mn), total	mg/L			0.00353	0.000107	0.281	0.309	2.27	0.49	1.54	0.283	1.98	1.53	0.327	1.76	1.93	0.941	4.96		0.0697	0.0809
Mercury (Hg), total	mg/L			<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000021		<0.0000020	<0.0000020
Molybdenum (Mo), total	mg/L			0.000771	0.000756	0.0115	0.00723	0.021	0.00887	0.0107	0.00205	0.00619	0.00172	0.00109	0.00244	0.00219	0.00204	0.0025		0.00439	0.00321
Nickel (Ni), total	mg/L			0.00094	0.00017	0.0214	0.0191	0.184	0.0145	0.118	0.014	0.117	0.109	0.0246	0.143	0.0966	0.0558	0.162		0.000974	0.000546
Phosphorus (P), total	mg/L			0.006	0.0033	0.231	0.418	4.08	0.217	2.09	0.364	3.72	2.72	0.902	3.98	2.3	1.09	9.71		0.0093	0.0079
Potassium (K), total	mg/L			2.33	2.46	2.28	2.85	9.16	2.8	6.34	1.42	6.71	7.1	2.54	9	5.8	4.17	3			

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-02	MW15-02	MW15-02	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03S	MW15-03D	MW15-03D
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L		2.27	2.21	8.82	8.9	58.4	6.28	37.1	5.97	32.7	31.2	11.4	52.1	27.4	20.8	22.4	4.04	4.91
Silver (Ag), total	mg/L		0.000016	<0.0000050	0.000176	0.000345	0.0235	0.00105	0.0272	0.000567	0.014	0.00166	0.00032	0.00125	0.00434	0.0072	0.0106	0.000009	<0.0000050
Sodium (Na), total	mg/L		0.74	0.786	14.3	1.96	3.42	4.49	2.91	0.96	1.99	<1.3	0.84	<1.3	<1.3	0.83	1.4	2.66	2.45
Strontium (Sr), total	mg/L		0.29	0.284	0.144	0.14	0.311	0.164	0.22	0.172	0.351	0.242	0.18	0.258	0.251	0.21	0.372	0.239	0.263
Sulphur (S), total	mg/L		21.2	20.1	<15	<15	<15	<15	<15	4	4.4	<15	<3.0	<15	<15	6.4	<15	10.2	8.3
Thallium (Tl), total	mg/L		<0.0000020	<0.0000020	0.000071	0.00009	0.000584	0.00007	0.000544	0.000046	0.000479	0.000398	0.000084	0.000262	0.000393	0.000266	0.000233	0.000003	<0.0000020
Tin (Sn), total	mg/L		0.00025	<0.00020	0.00035	0.00045	0.00265	0.00046	0.00164	<0.00020	0.00128	<0.0010	0.00036	0.0015	<0.0010	0.00095	<0.0010	<0.00020	<0.00020
Titanium (Ti), total	mg/L		<0.0020	<0.00050	0.114	0.171	1.58	0.0956	1.07	0.0753	1.2	1.12	0.387	1.78	0.663	0.566	0.274	0.00191	<0.00050
Uranium (U), total	mg/L		0.00311	0.00317	0.00107	0.00132	0.00557	0.0012	0.00325	0.00101	0.00326	0.00235	0.000964	0.00335	0.00248	0.00264	0.00386	0.00184	0.0027
Vanadium (V), total	mg/L		<0.00020	<0.00020	0.00865	0.013	0.152	0.00884	0.0952	0.0075	0.0853	0.0774	0.0215	0.122	0.06	0.0402	0.0721	<0.00020	<0.00020
Zinc (Zn), total	mg/L		0.0018	0.00018	0.0312	0.0439	0.464	0.0449	0.262	0.0281	0.252	0.267	0.0614	0.366	0.225	0.132	0.325	0.00221	0.0006
Zirconium (Zr), total	mg/L		0.00031	<0.00010	0.00096	0.00075	0.00901	0.00049	0.00611	0.00047	0.00211	0.00186	0.00138	0.00508	0.00744	0.00233	0.00221	0.00053	0.00062
Aluminum (Al), dissolved	mg/L		0.00106	0.00157	0.00324	0.0266	0.0114	0.00596	0.00623	0.00548	0.00298	0.00227	0.00219	0.00182	0.00219	0.00885	0.0104	0.00792	0.0144
Antimony (Sb), dissolved	mg/L	0.2	0.000022	0.000027	0.000046	0.00004	0.00005	0.000059	0.000028	<0.000020	0.000022	<0.000020	<0.000020	<0.000020	0.000042	0.000026	0.00008	0.00346	0.00193
Arsenic (As), dissolved	mg/L	0.05	0.000832	0.000706	0.000158	0.000207	0.000255	0.00027	0.000217	0.000143	0.000174	0.000137	0.000201	0.00016	0.000122	0.00015	0.000218	0.00208	0.00229
Barium (Ba), dissolved	mg/L	10	0.093	0.0808	0.0462	0.0459	0.0524	0.0475	0.0401	0.0438	0.0425	0.0406	0.0429	0.0461	0.0438	0.051	0.0382	0.0491	0.0501
Beryllium (Be), dissolved	mg/L	0.053	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000022	<0.000010
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*	0.000014	<0.0000050	0.000022	0.000033	0.000022	0.000029	0.000013	0.00001	0.000012	0.000013	0.000005	0.000012	0.000013	0.000012	0.000009	0.00001	<0.0000050
Calcium (Ca), dissolved	mg/L		68.3	67.7	42.9	45.6	49.9	45.1	41.1	52.9	46.9	46.2	48	46.3	54.7	52.2	31	56.4	57.6
Chromium (Cr), dissolved	mg/L	0.01	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00016	<0.00010	0.00012	<0.00010	<0.00010	0.00011	0.00049	<0.00010	<0.00010
Cobalt (Co), dissolved	mg/L	0.009	0.00004	0.000027	0.000536	0.000606	0.00037	0.000133	0.000095	0.000018	0.000081	0.00003	0.000013	0.000011	0.000087	0.000034	0.000019	0.000308	0.000134
Copper (Cu), dissolved	mg/L	*	0.000196	0.000096	0.000344	0.00038	0.00202	0.00078	0.000391	0.00031	0.000362	0.000207	0.000142	0.000229	0.000072	0.000346	0.000585	0.000206	0.000091
Iron (Fe), dissolved	mg/L		<0.0010	0.0016	0.0474	0.112	0.0472	<0.0010	0.0017	<0.0010	0.0031	<0.0010	<0.0010	<0.0010	0.0034	0.0107	0.0194	0.355	0.806
Lead (Pb), dissolved	mg/L	*	0.00002	0.000029	0.000007	0.000058	0.000055	0.000127	<0.0000050	<0.0000050	0.000007	<0.0000050	<0.0000050	<0.0000050	0.000005	0.000014	0.00026	0.000044	0.000014
Lithium (Li), dissolved	mg/L		0.00182	0.00181	0.00193	0.00087	0.00122	0.0007	0.00105	0.00116	0.00082	0.00079	0.00123	0.00109	0.00095	0.00131	0.00195	0.00675	0.0067
Magnesium (Mg), dissolved	mg/L		11.6	10.8	5.24	5.1	4.85	5.98	4.35	5.01	4.9	4.31	4.19	4.35	5.12	5.06	4.37	16.2	16.2
Manganese (Mn), dissolved	mg/L		0.00131	0.000125	0.161	0.135	0.107	0.078	0.0291	0.00436	0.0223	0.00622	0.00481	0.00164	0.0799	0.00471	0.00104	0.0717	0.0738
Mercury (Hg), dissolved	mg/L	0.001	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	10	0.000747	0.000692	0.0104	0.00746	0.00889	0.0133	0.00686	0.002	0.00294	0.00133	0.00112	0.00182	0.0057	0.000761	0.00266	0.0047	0.00372
Nickel (Ni), dissolved	mg/L	*	0.000187	0.000135	0.00215	0.0021	0.00166	0.00165	0.00133	0.00108	0.000838	0.000895	0.000515	0.000585	0.00234	0.000804	0.00048	0.00102	0.000455
Phosphorus (P), dissolved	mg/L		0.003	0.0028	0.0034	0.0105	0.0072	0.0053	0.0045	0.0039	0.0037	0.0047	<0.0020	0.0027	0.0028	0.0043	0.0063	0.0049	0.0041
Potassium (K), dissolved	mg/L		2.42	2.03	1.5	1.32	1.41	2.14	1.23	0.924	1.09	1.05	1	1.09	1.34	1.05	1.41	2.87	2.68
Selenium (Se), dissolved	mg/L	0.01	0.00174	0.00167	0.000209	0.000189	0.000297	0.000275	0.000219	0.000255	0.000257	0.000188	0.000267	0.000208	0.000322	0.000321	0.000173	0.000256	<0.000040
Silicon (Si), dissolved	mg/L		2.1	1.98	2.95	2.81	2.51	2.17	2.79	3.06	2.65	2.44	2.99	2.96	2.51	2.95	4.93	3.92	4.13
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000005	0.000007	<0.0000050	<0.0000050
Sodium (Na), dissolved	mg/L		0.774	0.694	16.1	2.61	2.23	4.1	3.07	0.782	1.39	0.709	0.773	0.716	0.968	0.61	2.1	2.89	2.71
Strontium (Sr), dissolved	mg/L		0.297	0.257	0.145	0.139	0.163	0.151	0.137	0.146	0.147	0.14	0.161	0.152	0.167	0.155	0.107	0.252	0.244
Sulphur (S), dissolved	mg/L		19.3	17.6	12.5	3.8	4.9	6.5	3.8	4	3.8	3.1	3.3	3.6	5.3	4.2	4.1	10	8.2
Thallium (Tl), dissolved	mg/L	0.003	<0.0000020	<0.0000020	0.000006	0.000008	0.000002	0.000013	0.000012	0.000006	0.000003	0.000005	<0.0000020	0.000003	0.000002	0.000006	0.000004	0.000007	<0.0000020
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00034	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	1	<0.00050	<0.00050	<0.00050	0.00116	0.00057	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00057	0.00062
Uranium (U), dissolved	mg/L	3	0.00339	0.003	0.000783	0.000884	0.000854	0.000724	0.000737	0.000701	0.000692	0.000637	0.000596	0.000731	0.000686	0.000844	0.000548	0.00205	0.00302
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*	0.00128	0.0013	0.00158	0.0009	0.0106	0.00086	0.00018	0.00027	0.00046	0.00021	<0.00010	0.00014	0.00022	0.00037	0.00126	0.00238	0.00048
Zirconium (Zr), dissolved	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00023	0.00043

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depth to Water (mbTOC)	m			3.87	2.45	3.125	3.053	2.079	2.215	3.417	4.213	3.243	3.824	4.379				10.84	9.846	9.057	8.442
Well Depth	mbTOC			16.97	16.96	16.965	17.010	16.708	16.652	15.676	16.721	16.681	16.557	16.479				15.08	14.055	15.05	15.060
Total Suspended Solids	mg/L		61.7	22.3	4	2.6	11.7	14.7	3.1	2.3	2.6	32.6	12.2	3.5	2590	1620	3500	25700	1140	481	2100
pH (field)	pH units		7.32	7.66	7.2	7.51	7.64	6.66	7.67	7.27	6.99	7.69	7.87	9.23	7.78	7.84	7.86	7.85	7.6	7.92	7.76
pH (lab)	pH units		8.02	8.08	8.37	8.23	7.99	8.12	7.94	7.98	8.12	8.36	8.33	8.11	8.12	8.22	7.99	8.15	8.22	8.17	8.05
Specific Conductance (field)	µS/cm		394	338.6	395.1	406	401.4	347.9	328.9	393.9	395.8	379.2	360.7	374	251	242.5	235	204.2	242.8	249.8	239.3
Specific Conductance (lab)	µS/cm		394	386	386	393	389	391	395	389	394	386	388	394	239	242	239	237	242	245	236
Temperature (field)	C		1.41	3.2	2.5	3.3	3.2	2.5	1.8	1.6	1.6	6.2	2	0.6	0.3		1.38	3.5	2.3	4.2	2.9
Dissolved Oxygen (field)	mg/L		3	2.48	2.1	1.6	2.8	0.6	0.9	1.38	3.76	2.03	2.3	2.6	8.72		10.6	9.16	8.1	8.8	8.0
Dissolved Oxygen (field)	%			22.9	24	14	26	6	8	11.9	34.1	21.1	20	21				82.4	71	81	90
ORP (field)	mV		-73	-85	-74.4	-79.1	-66.9	-62.6	-61.4	111.2	65	92.6	-68.7	-61.7			62	79.7	69.2	85.4	65.2
Hardness (from total)	mg/L		199	215	204	208	210	206	198	210	210	192	202	216	313	802	308	768	222	143	221
Hardness (from dissolved)	mg/L		201	206	211	220	216	201	203	200	204	198	200	196	127	121	119	135	129	134	126
Total Acidity	mg/L		<0.50	2.5	<0.50	1.98	1.38	<0.50	<0.50	2.54	1.34	4.07	<1.0	2.4	0.84	0.88	<0.50	<0.50	<0.50	<0.50	<0.50
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, total	mg/L		194	196	194	194	187	189	191	193	189	188	194	196	117	116	117	122	121	120	113
Alkalinity, bicarbonate HCO3	mg/L		237	239	231	236	228	231	233	236	231	222	232	239	142	142	143	148	148	147	138
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	3.3	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.53	2.62	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	2.75	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.94	2.18	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloride	mg/L		<0.50	0.64	0.97	0.82	1	0.71	0.89	<0.50	<0.50	<0.50	<0.50	0.59	0.96	0.68	<0.50	0.86	0.82	1.1	1.1
Fluoride	mg/L	*	0.15	0.16	0.16	0.16	0.16	0.15	0.15	0.16	0.15	0.15	0.16	0.14	0.1	0.082	0.078	0.089	0.086	0.088	0.084
Sulphate, dissolved	mg/L	1000	21.3	22.7	22.6	23.9	22.4	22.1	21.1	21.7	23.1	21.2	23.7	23.8	10.1	10.3	10	10.1	10	10.5	9.55
Ammonia (N)	mg/L	*	0.088	0.076	0.087	0.1	0.072	0.072	0.24	0.077	0.078	0.066	0.04	0.046	0.088	0.047	0.09	0.07	0.056	0.024	0.021
Nitrite (N)	mg/L	*	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0072	0.013	0.0057	<0.0020	<0.0020
Nitrate (N)	mg/L	400	<0.0020	<0.0020	<0.0020	0.0026	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0033	<0.0020	0.0028	0.155	0.204	0.202	0.196	0.179	0.21	0.216
Nitrite & Nitrate, as N	mg/L	400	<0.0020	<0.0020	<0.0020	0.0026	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0033	<0.0020	0.0028	0.155	0.204	0.209	0.209	0.184	0.21	0.216
Phosphorus, total-colourimetric	mg/L		0.0123	0.0027	0.0039	0.0041	0.0058	0.0062	0.0034	0.003	0.0046	0.0151	0.0057	0.0037	2.31	2.5	2.66	0.0192	0.0188	0.498	0.0926
Phosphorus, Total Dissolved	mg/L			0.0021	0.0033	0.0046	0.0054	0.0091	0.0035	0.003	0.0039	0.0101	0.0061	0.0036	0.0026	0.0023		0.0193	0.0038	0.0349	0.0838
Dissolved Organic Carbon	mg/L		1.96	0.64	0.56	<0.50	0.79	<0.50	<0.50	0.63	1.1	1.71	<0.50	<0.50			1.5	1.34	0.86	<0.50	0.77
Aluminum (Al), total	mg/L		0.0285	0.0475	0.018	0.00959	0.04	0.0511	0.0448	0.0655	0.00928	0.204	0.0722	0.012	38	68.5	43.5	36.5	19.3	2.59	23.8
Antimony (Sb), total	mg/L		0.000265	0.000131	0.000064	0.000058	0.000075	0.000084	0.000058	0.0003	0.00004	0.000127	0.000074	0.000036	0.00026	0.000323	0.00031	<0.000050	0.00023	0.000047	0.000173
Arsenic (As), total	mg/L		0.00181	0.00254	0.00171	0.002	0.00218	0.00211	0.00275	0.0051	0.00246	0.0022	0.00344	0.00343	0.0402	0.0557	0.0315	0.0273	0.0201	0.0022	0.0244
Barium (Ba), total	mg/L		0.0479	0.0492	0.0448	0.0481	0.0457	0.0481	0.0485	0.0596	0.0451	0.0484	0.048	0.0487	0.674	1.79	0.8	1.74	0.478	0.152	0.475
Beryllium (Be), total	mg/L		0.000011	0.000015	<0.000010	0.000012	<0.000010	0.000011	<0.000010	0.000021	<0.000010	0.00004	0.000014	<0.000010	0.00109	0.00248	0.00173	0.00211	0.000559	0.000101	0.00059
Bismuth (Bi), total	mg/L		<0.000020	<0.000050	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000050	<0.000050	<0.000010	<0.000050	<0.000050	0.00111	0.00207	0.0011	0.00206	0.000361	0.000032	0.000581
Boron (B), total	mg/L		<0.050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.25	<0.050	<0.050	<0.050	<0.050	<0.010	<0.010
Cadmium (Cd), total	mg/L		0.000009	0.000019	<0.000050	0.000008	<0.000050	<0.000050	<0.000050	0.00013	<0.000050	0.000011	0.00001	<0.000050	0.00162	0.00397	0.00194	0.00504	0.000902	0.000116	0.000886
Calcium (Ca), total	mg/L		54.4	58.6	55.4	57.4	56.3	55.5	54	57.3	57.8	52.3	53.1	57.8	78.3	248	75.6	261	66	48.7	56.4
Chromium (Cr), total	mg/L		0.00156	0.00025	<0.00010	<0.00010	0.00027	0.00039	0.0003	0.0014	<0.00010	0.00043	0.00022	<0.00010	0.105	0.215	0.128	0.0904	0.0472	0.00493	0.0623
Cobalt (Co), total	mg/L		0.000165	0.000109	0.000073	0.000051	0.000084	0.000106	0.000069	0.000123	0.000053	0.000256	0.000124	0.000143	0.0547	0.12	0.0603	0.103	0.0314	0.00301	0.0348
Copper (Cu), total	mg/L		0.0007	0.000732	0.000676	0.000138	0.000281	0.00062	0.0013	0.00221	<0.000050	0.00087	0.000469	0.000605	0.182	0.502	0.343	0.443	0.134	0.0169	0.108
Iron (Fe), total	mg/L		1.14	1.72	0.887	0.815	0.918	0.927	1.59	3.32	0.687	1.1	0.744	0.697	81.8	130	94.9	54.7	44.6	4.72	51.8
Lead (Pb), total	mg/L		0.000229	0.0002	0.000093	0.000172	0.000094	0.000166	0.00013	0.00123	0.000021	0.000383	0.000359	0.0000826	0.0867	0.23	0.0923	0.424	0.0399	0.00431	0.0488
Lithium (Li), total	mg/L		0.00591	0.00627	0.0054	0.00633	0.00608	0.00572	0.00654	0.00686	0.00625	0.00646	0.00673	0.00656	0.0259	0.0494	0.03	0.0316	0.0132	0.00207	0.0155
Magnesium (Mg), total	mg/L		15.4	16.5	16	15.7	16.8	16.3	15.2	16.1	15.8	15	16.8	17.4	28.6	44.8	28.9	28.4	13.8	5.3	19.5
Manganese (Mn), total	mg/L		0.0678	0.0607	0.0586	0.0578	0.0594	0.0602	0.0582	0.0732	0.0549	0.0572	0.0551	0.0588	2.01	4.82	2.16	5.28	1.5	0.124	1.37
Mercury (Hg), total	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000022
Molybdenum (Mo), total	mg/L		0.00412	0.00322	0.00322	0.00334	0.00319	0.00324	0.00321	0.00361	0.										

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-03D	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L		4.51	5.27	4.34	4.99	4.43	4.58	4.6	4.98	4.8	5.03	4.81	4.65	42.1	74.9	59.3	44.9	26.3	6.44	34
Silver (Ag), total	mg/L		0.000038	0.000007	0.00001	0.000005	0.000016	0.000012	0.000008	0.000025	<0.000050	0.000022	0.000013	<0.000050	0.00664	0.0174	0.00643	0.0135	0.00385	0.000296	0.0041
Sodium (Na), total	mg/L		2.43	2.14	2	1.87	1.83	1.89	1.83	1.77	1.54	1.51	1.5	1.51	2	2.45	2.73	1.24	1.08	1.13	1.06
Strontium (Sr), total	mg/L		0.235	0.258	0.243	0.257	0.241	0.238	0.257	0.258	0.278	0.245	0.258	0.252	0.354	1.1	0.336	1.01	0.25	0.165	0.228
Sulphur (S), total	mg/L		<15	7.2	7	7.7	7.7	7.5	6.9	7.7	8.9	7.3	8.4	8.4	<75	<15	<15	<15	<15	3.3	<3.0
Thallium (Tl), total	mg/L		0.000008	<0.000020	<0.000020	<0.000020	<0.000020	0.000004	0.000002	<0.000020	<0.000020	0.000003	0.000002	<0.000020	0.000834	0.00134	0.00073	0.000396	0.000288	0.000039	0.000469
Tin (Sn), total	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00046	<0.00020	<0.00020	<0.00020	<0.00020	0.0016	0.0018	0.00176	0.0005	0.00055	<0.00020	0.00046
Titanium (Ti), total	mg/L		<0.0050	0.00272	0.00167	<0.00050	0.00189	0.0021	0.00234	0.00914	0.00066	0.0174	0.00296	<0.00050	1.47	2.16	1.18	0.217	0.59	0.0891	1.17
Uranium (U), total	mg/L		0.00193	0.0024	0.0023	0.0027	0.00254	0.00268	0.00251	0.00306	0.00257	0.00259	0.00278	0.00284	0.00329	0.00825	0.00418	0.00537	0.00191	0.000788	0.00171
Vanadium (V), total	mg/L		<0.00050	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0007	0.00021	<0.00020	0.121	0.18	0.147	0.0641	0.0754	0.00942	0.094
Zinc (Zn), total	mg/L		0.0013	0.00166	0.00097	0.00121	0.00134	0.0013	0.0014	0.0123	0.00035	0.0034	0.00171	0.0005	0.32	0.704	0.414	0.494	0.156	0.0225	0.182
Zirconium (Zr), total	mg/L		0.00094	0.00143	0.00099	0.00089	0.00096	0.00093	0.0016	0.00237	0.00086	0.0019	0.001	0.00055	0.00841	0.0143	0.00411	0.00109	0.00562	0.00066	0.00676
Aluminum (Al), dissolved	mg/L		0.00276	0.00111	0.00132	0.00151	0.0037	0.00099	0.00057	0.00089	0.00129	0.0098	0.00382	0.00105	0.00455	0.00565	0.00365	0.00702	0.0057	0.00377	0.00377
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.000228	0.000103	0.000053	0.00005	0.000061	0.000066	0.000037	0.000051	0.000031	0.000064	0.000049	0.000032	0.000021	0.000025	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.00182	0.00124	0.00106	0.00121	0.00217	0.0011	0.00137	0.00131	0.00236	0.0021	0.00327	0.00264	0.00025	0.00027	0.000206	0.000285	0.000339	0.000199	0.000183
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0471	0.0449	0.0465	0.0454	0.0477	0.0459	0.0477	0.0483	0.043	0.0436	0.0457	0.0429	0.0695	0.0737	0.0768	0.0884	0.0811	0.0787	0.0712
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000009	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000015	0.000014	0.000011	0.000007	<0.0000050	<0.0000050	<0.0000050
Calcium (Ca), dissolved	mg/L		54.8	56.4	58.7	58.9	58.3	53.9	55.8	53.4	55.3	52.8	54.1	54	44.6	42.2	42.1	47.9	46	47.1	44.5
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00013	0.00016	0.0002	0.00026	0.00029	0.00024	0.00028
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.00009	0.000052	0.000041	0.000036	0.000054	0.000045	0.000037	0.000042	0.000047	0.000038	0.000072	0.000099	0.000194	0.000114	0.000032	0.00001	0.000006	0.000007	0.000006
Copper (Cu), dissolved	mg/L	*	<0.000050	0.00005	<0.000050	0.000177	0.00162	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000067	<0.000050	0.000693	0.00117	0.0005	0.000517	0.000313	0.000302	0.000249
Iron (Fe), dissolved	mg/L		0.911	0.0028	0.0037	0.0038	0.773	0.0034	0.0025	0.0013	0.469	0.594	0.543	0.161	0.0011	0.0051	0.0062	0.001	<0.0010	<0.0010	0.0012
Lead (Pb), dissolved	mg/L	*	<0.0000050	<0.0000050	0.000005	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000015	0.000019	<0.0000050	<0.0000050	0.00001	0.000005	0.000007	<0.0000050	<0.0000050	<0.0000050
Lithium (Li), dissolved	mg/L		0.00654	0.00613	0.00637	0.00728	0.00612	0.00665	0.0067	0.00675	0.00615	0.0063	0.00651	0.00641	0.00079	<0.00050	0.0007	0.00051	<0.00050	0.00056	<0.00050
Magnesium (Mg), dissolved	mg/L		15.6	15.9	15.7	17.8	17.1	16.2	15.5	16.2	15.9	16.1	15.9	14.8	3.81	3.66	3.5	3.66	3.34	3.94	3.63
Manganese (Mn), dissolved	mg/L		0.0662	0.0561	0.0589	0.0568	0.058	0.056	0.0544	0.0613	0.0525	0.0516	0.0508	0.051	0.0383	0.0255	0.00902	0.0026	0.00129	0.00112	0.000546
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.000028	<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00396	0.0031	0.00328	0.00319	0.00325	0.0032	0.00328	0.00321	0.00285	0.00275	0.00274	0.0025	0.00329	0.00206	0.00155	0.00137	0.0012	0.0012	0.00121
Nickel (Ni), dissolved	mg/L	*	0.000248	0.000224	0.000203	0.000195	0.000768	0.000168	0.000142	0.000159	0.000149	0.000132	0.000251	0.00022	0.00353	0.00219	0.000456	0.000336	0.000196	0.000119	0.0001
Phosphorus (P), dissolved	mg/L		0.0076	0.0053	0.0038	<0.0020	0.0051	<0.0020	<0.0020	0.0035	0.0062	0.0069	0.0039	0.0031	0.0042	<0.0020	0.0043	0.0077	0.0039	<0.0020	0.0037
Potassium (K), dissolved	mg/L		2.64	2.53	2.52	2.25	2.44	2.44	2.48	2.61	2.42	2.52	2.47	2.16	1.74	1.48	1.39	1.48	1.33	1.16	1.24
Selenium (Se), dissolved	mg/L	<b>0.01</b>	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	0.000741	0.000773	0.000755	0.000769	0.000703	0.000825	0.000777
Silicon (Si), dissolved	mg/L		4.91	4.76	4.43	5.23	4.42	4.15	4.95	4.33	4.49	4.38	4.76	4.42	3.08	2.79	3.27	3.49	3.1	3.71	2.89
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000005	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Sodium (Na), dissolved	mg/L		2.72	2.01	2.05	1.94	1.92	1.89	1.84	1.77	1.63	1.59	1.41	1.36	1.83	2.02	2.16	1.12	1.02	1.02	1.02
Strontium (Sr), dissolved	mg/L		0.269	0.25	0.268	0.236	0.25	0.238	0.27	0.255	0.238	0.238	0.26	0.223	0.173	0.159	0.165	0.162	0.167	0.152	0.153
Sulphur (S), dissolved	mg/L		7.9	7.4	6.6	7.6	7.6	7	8.2	7.6	7.6	6.9	7.5	7.2	3.5	3.5	4	3.5	3.2	3.4	3.2
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	<0.0000020	<0.0000020	0.000002	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.000002	0.000002	<0.0000020	<0.0000020	0.000003	<0.0000020	<0.0000020
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050																

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D		
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		
Depth to Water (mbTOC)	m		6.768	6.3	8.612	10.595	10.679	6.849	8.681				10.65	9.45	8.917	8.283	6.667	6.336	8.157	10.41	10.881	
Well Depth	mbTOC		15.056	15.041	15.066	15.606	15.057	15.059	15.049				32.58	32.54	32.37	32.550	32.374	32.2	32.284	32.331	32.556	
Total Suspended Solids	mg/L		2400	476	965	1020	5130	697	988	5030	5570	253	70.9	22.9	456	707	602	147	542	16.8	336	
pH (field)	pH units		7.49	7.88	7.7	7.55	7.89		8.55	7.7	7.92	7.74	7.74	7.64	7.67	7.52	7.41	7.75	7.55	7.4	7.79	
pH (lab)	pH units		8.05	8	7.99	8.15	8.2	8.11	8.03	7.96	8.23	8.05	8.13	8.25	8.19	8	8.06	7.97	7.96	8.11	8.21	
Specific Conductance (field)	µS/cm		209.6	192.8	234.2	242.2	253.8		222.2	307.3	396	291	248.5	290.2	306.5	300.9	262.7	244.6	292.4	295.7	288.4	
Specific Conductance (lab)	µS/cm		233	231	234	240	244	231	238	291	344	292	287	293	295	295	292	291	288	296	280	
Temperature (field)	C		3.6	1.8	1.3	1.5	5.9		1.2	0.9		1.73	2.9	2.8	3.8	3.1	2.4	1.8	1.6	1.8	4.6	
Dissolved Oxygen (field)	mg/L		11	9.6	7.12	8.36	7.63		8.5	2.1	280	3.3	2.38	3.2	2.3	2.0	1.4	1.6	1.12	3.14	1.26	
Dissolved Oxygen (field)	%		101	81	61.4	71.5	61		71				21.3	30	21	18	12	14	9.6	28.7	9.9	
ORP (field)	mV		89.1	96.3	278.7	134.7	348.8		28.7			-33	-35.7	-50.2	-48.7	-56.9	-39.6	-35.4	226.7	118.9	82.3	
Hardness (from total)	mg/L		290	152	264	145	480	159	144	646	2530	147	145	145	204	230	271	185	154	155	170	
Hardness (from dissolved)	mg/L		115	118	119	128	124	127	110	147	78.9	143	166	155	162	151	143	147	154	155	143	
Total Acidity	mg/L		<0.50	<0.50	<0.50	<0.50	0.71	<1.0	<1.0	1.86	1.83	<0.50	0.83	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	1.02	0.7	0.94
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, total	mg/L		114	113	116	118	117	118	120	132	140	137	136	139	137	133	137	135	135	135	129	
Alkalinity, bicarbonate HCO3	mg/L		139	137	141	144	143	144	146	161	171	167	166	170	168	162	167	165	164	165	157	
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Chloride	mg/L		0.5	0.69	<0.50	0.58	<0.50	0.62	0.6	0.97	2.6	<0.50	0.66	0.93	1.1	1.2	0.57	0.71	0.56	<0.50	<0.50	
Fluoride	mg/L	*	0.078	0.081	0.083	0.087	0.086	0.086	0.078	0.23	0.24	0.2	0.21	0.21	0.21	0.21	0.21	0.22	0.21	0.22	0.21	
Sulphate, dissolved	mg/L	1000	10.1	8.94	8.81	9.92	9.57	8.47	8.99	19.9	34.8	18.8	20.4	20	20.5	19.3	18.8	19.9	17.8	19.9	18.6	
Ammonia (N)	mg/L	*	0.033	0.057	0.022	0.045	0.062	0.011	0.013	0.11	0.047	0.048	0.033	0.046	0.04	0.03	0.026	0.038	0.026	0.033	0.034	
Nitrite (N)	mg/L	*	<0.0020	<0.0020	<0.0020	<0.0020	0.0088	0.0092	<0.0020	0.0027	0.0022	<0.0020	<0.0020	<0.0020	<0.0020	0.0037	<0.0020	<0.0020	<0.0020	<0.0020	0.0049	
Nitrate (N)	mg/L	400	0.226	0.236	0.232	0.218	0.173	0.212	0.216	<0.0020	0.0036	0.0061	0.0067	0.0087	0.0256	0.0042	0.0133	0.0115	0.015	0.0067	<0.0020	
Nitrite & Nitrate, as N	mg/L	400	0.226	0.236	0.232	0.218	0.181	0.221	0.216	0.0045	0.0058	0.0061	0.0067	0.0087	0.0256	0.0079	0.0133	0.0115	0.015	0.0067	0.0044	
Phosphorus, total-colourimetric	mg/L		0.249	0.529	0.958	0.642	1.26	0.86	0.831	8.24	9.09	0.162	0.0059	0.0066	0.337	0.0881	0.155	0.113	0.0231	0.0081	0.258	
Phosphorus, Total Dissolved	mg/L		0.0138	0.0859	0.138	0.601	0.072	0.759	0.203	0.0026	0.0033		0.0075	0.0063	0.0495	0.0848	0.0102	0.0198	0.0095	0.0042	0.0227	
Dissolved Organic Carbon	mg/L		<0.50	<0.50	0.74	<0.50	0.66	0.52	<0.50			<0.50	<0.50	0.6	<0.50	0.86	<0.50	<0.50	<0.50	1.13	<0.50	
Aluminum (Al), total	mg/L		30	8.42	20.7	6.88	48.8	11.7	2.76	54	86.5	0.938	0.521	0.262	3.39	3.49	6.75	1.05	0.00131	0.0719	3.52	
Antimony (Sb), total	mg/L		0.00011	0.000073	0.00014	0.000042	0.00015	0.000121	0.000032	<0.00025	0.000285	<0.000050	<0.000050	<0.000050	0.000067	0.000053	<0.00010	0.000069	<0.000020	<0.000020	0.00004	
Arsenic (As), total	mg/L		0.0136	0.0047	0.0176	0.00451	0.0319	0.01	0.00308	0.12	0.184	0.00589	0.00301	0.00254	0.00651	0.0123	0.0198	0.00549	0.00115	0.00158	0.00825	
Barium (Ba), total	mg/L		0.818	0.216	0.377	0.216	1.11	0.294	0.22	5.28	4.52	0.0877	0.0724	0.0653	0.35	0.134	0.542	0.121	0.0548	0.0585	0.235	
Beryllium (Be), total	mg/L		0.000902	0.000179	0.000439	0.000215	0.00154	0.000301	0.000157	0.00141	0.00418	0.000094	0.000041	0.000018	0.00034	0.000344	0.000371	0.000061	<0.000010	0.000014	0.000282	
Bismuth (Bi), total	mg/L		0.00042	0.000086	0.00026	0.000087	0.000785	0.000124	0.000058	0.00079	0.00131	0.00003	<0.000020	<0.000020	0.000088	0.000098	0.000106	0.00003	<0.000050	<0.000010	0.000067	
Boron (B), total	mg/L		<0.050	<0.010	<0.050	<0.010	<0.050	<0.010	<0.010	<0.25	<0.050	<0.050	<0.050	<0.050	0.011	<0.010	<0.050	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd), total	mg/L		0.0016	0.000346	0.000708	0.000249	0.00297	0.000532	0.000289	0.00346	0.01	0.000074	0.000075	0.00003	0.000475	0.000358	0.000727	0.000191	0.000027	0.000061	0.000736	
Calcium (Ca), total	mg/L		82.9	47.7	78.8	46.9	140	47.8	49.9	198	910	50.1	49	49.7	68.6	79.9	92.9	64.2	53.2	53.6	57.7	
Chromium (Cr), total	mg/L		0.0661	0.0172	0.0472	0.015	0.1	0.0255	0.00584	0.313	0.978	0.00449	0.00228	0.00139	0.0195	0.0144	0.0623	0.0105	<0.00010	0.00034	0.0278	
Cobalt (Co), total	mg/L		0.0453	0.0101	0.027	0.00802	0.0904	0.0167	0.00802	0.295	0.356	0.00316	0.00146	0.000868	0.0125	0.00976	0.0301	0.00358	0.000233	0.000275	0.0127	
Copper (Cu), total	mg/L		0.166	0.0331	0.0888	0.026	0.207	0.057	0.0257	0.419	0.944	0.00602	0.00437	0.00212	0.0327	0.0204	0.0595	0.00735	0.000144	0.00072	0.0337	
Iron (Fe), total	mg/L		52.2	16.5	63.7	11.2	74.5	22.6	3.94	190	264	2.79	1.24	1.25	8.42	8.3	16.5	3.27	<0.0010	0.339	6.86	
Lead (Pb), total	mg/L		0.0636	0.0101	0.0263	0.013	0.152	0.0196	0.0142	0.0938	0.338	0.00202	0.00175	0.000559	0.0085	0.00842	0.0255	0.00454	<0.000050	0.000329	0.00894	
Lithium (Li), total	mg/L		0.0204	0.00531	0.0142	0.00478	0.0322	0.00797	0.00207	0.041	0.0938	0.00143	0.00098	0.00111	0.00358	0.00356	0.0063	0.00176	0.00102	0.00102	0.00325	
Magnesium (Mg), total	mg/L		20.2	7.89	16.3	6.68	31.4	9.66	4.84	36.8	61.2	5.24	5.55	5.15	7.91	7.5	9.4	5.88	5.12	5.01	6.39	
Manganese (Mn), total	mg/L		2.36	0.493	1.18	0.315	4.35	0.771	0.405	3.73	10.8	0.245	0.202	0.193	0.396	0.483	0.765	0.328	0.155	0.162	0.334	
Mercury (Hg), total	mg/L		<0.000020	0.000023	0.000039	0.000002	<0.000020	<0.000020	0.000023	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	
Molybdenum (Mo), total	mg/L		0.00081	0.00107	0.00111	0.000409	0.00077	0.00113	0.000795	0.00591	0.0343	0.00242	0.00244	0.00162	0.000782	0.00148	0.00139	0.0015	0.00225	0.00254		

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04S	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	MW15-04D	
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Silicon (Si), total	mg/L		36.9	14.3	28.1	11.7	59.2	17.7	5.93	49.2	92.3	4.06	3.95	3.17	7.3	8.13	11.7	4.28	3.17	3.22	7.18
Silver (Ag), total	mg/L		0.00255	0.000316	0.000286	0.000585	0.0195	0.00874	0.00111	0.0068	0.0129	0.000161	0.000133	0.000044	0.000271	0.000145	0.000139	0.000113	<0.000050	<0.000010	0.000349
Sodium (Na), total	mg/L		<1.3	0.92	<1.3	0.97	<1.3	0.92	0.95	2.8	8.8	1.62	1.88	1.26	1.89	2.21	1.5	1.46	1.51	1.41	1.38
Strontium (Sr), total	mg/L		0.317	0.188	0.221	0.181	0.55	0.194	0.18	0.932	3.72	0.205	0.206	0.192	0.248	0.319	0.363	0.27	0.201	0.209	0.25
Sulphur (S), total	mg/L		<15	<3.0	<15	<3.0	<15	<3.0	<3.0	<75	19	<15	<15	<15	6.9	7	<15	6.5	6	6.4	6.2
Thallium (Tl), total	mg/L		0.00044	0.000057	0.000085	0.000142	0.000774	0.000153	0.0000144	0.000976	0.00161	0.000018	0.000015	0.000005	0.000065	0.00005	0.000063	0.000023	<0.000020	0.000004	0.000067
Tin (Sn), total	mg/L		<0.0010	0.00024	<0.0010	<0.00020	<0.0010	0.0003	<0.00020	0.0015	0.00311	0.00021	0.00033	<0.00020	<0.00020	0.00027	<0.0010	0.00045	<0.00020	<0.00020	0.00027
Titanium (Ti), total	mg/L		0.846	0.417	0.998	0.282	1.66	0.412	0.049	0.323	1.03	0.0194	0.0192	0.0091	0.026	0.0541	0.082	0.0387	<0.00050	0.002	0.031
Uranium (U), total	mg/L		0.00229	0.000966	0.00134	0.000889	0.00309	0.00115	0.000872	0.00946	0.0205	0.00109	0.00119	0.000727	0.00245	0.0019	0.00368	0.00112	0.000885	0.00106	0.00256
Vanadium (V), total	mg/L		0.104	0.0357	0.0893	0.0222	0.152	0.0438	0.0107	0.078	0.15	0.00143	0.00131	0.00058	0.00551	0.00589	0.0112	0.00215	<0.00020	<0.00020	0.00617
Zinc (Zn), total	mg/L		0.236	0.0512	0.147	0.0448	0.325	0.0753	0.0283	0.514	1.14	0.0084	0.0057	0.0031	0.0304	0.0329	0.0775	0.011	0.00148	0.0021	0.0383
Zirconium (Zr), total	mg/L		0.00286	0.00174	0.00518	0.00171	0.00728	0.00228	0.00037	0.0164	0.00668	0.00114	0.00029	0.00096	0.00149	0.00085	0.00202	0.00121	<0.00010	0.00017	0.00112
Aluminum (Al), dissolved	mg/L		0.00263	0.00218	0.00199	0.0016	0.00456	2.24	0.00173	0.00348	0.00299	0.00369	0.00148	0.00175	0.00236	0.00246	0.00115	0.00162	0.00091	0.00078	0.00216
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.000021	<0.000020	<0.000020	<0.000020	0.000021	<0.000020	0.000026	0.000023	0.000033	<0.000020	<0.000020	<0.000020	0.000026	0.000026	0.000025	<0.000020	<0.000020	<0.000020	<0.000020
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.000195	0.000155	0.000166	0.000203	0.00021	0.0026	0.000164	0.00184	0.00174	0.00163	0.00116	0.00121	0.00157	0.00171	0.00164	0.00167	0.00118	0.00131	0.00141
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0755	0.0739	0.0787	0.0732	0.074	0.187	0.0655	0.0646	0.0227	0.0535	0.0527	0.0552	0.0667	0.0477	0.0613	0.0581	0.0586	0.0482	0.0477
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000115	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000013	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.023	0.023	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	0.000008	0.000009	0.000214	<0.0000050	0.00004	0.000028	<0.0000050	0.000011	0.000005	0.000022	0.000007	0.000019	0.00001	0.000027	<0.0000050	0.000012
Calcium (Ca), dissolved	mg/L		40.6	42.2	42.3	45.3	43.7	43.6	38.7	49.2	28.3	49.1	57.7	53.2	55	50.7	48.6	50.5	53.4	53.4	48.9
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	0.00032	0.00026	0.00019	0.00031	0.00027	0.00325	0.00024	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000008	<0.0000050	0.000006	0.000005	0.000005	0.00489	<0.0000050	0.000699	0.000343	0.000193	0.000219	0.000196	0.000292	0.000267	0.000399	0.000246	0.000254	0.000223	0.000222
Copper (Cu), dissolved	mg/L	*	0.000354	<0.000050	0.000093	0.000226	0.000842	0.0142	0.000112	0.000376	0.000885	<0.000050	0.000125	<0.000050	0.000097	0.000083	0.000075	<0.000050	0.000124	<0.000050	<0.000050
Iron (Fe), dissolved	mg/L		<0.0010	<0.0010	<0.0010	<0.0010	0.0019	2.59	<0.0010	0.0625	0.0716	0.258	<0.0010	<0.0010	<0.0010	0.213	<0.0010	<0.0010	<0.0010	0.126	0.222
Lead (Pb), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	0.000006	0.000015	0.00736	<0.0000050	0.000035	0.000096	0.000009	0.000007	<0.0000050	0.000009	0.000012	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000009
Lithium (Li), dissolved	mg/L		0.0007	<0.00050	0.00071	<0.00050	<0.00050	0.00207	<0.00050	0.00128	0.00293	0.00111	0.00061	0.00094	0.0012	0.00056	0.00124	0.00075	0.00133	0.00084	0.00077
Magnesium (Mg), dissolved	mg/L		3.3	3.18	3.33	3.62	3.6	4.46	3.3	5.77	3.05	5.01	5.39	5.34	5.95	5.97	5.21	5.05	5.13	5.3	5.17
Manganese (Mn), dissolved	mg/L		0.000927	0.000364	0.000683	0.000319	0.00121	0.285	0.000114	0.201	0.102	0.212	0.164	0.19	0.171	0.19	0.175	0.169	0.163	0.16	0.138
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000032	<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00124	0.00121	0.00129	0.00126	0.00106	0.000489	0.00102	0.00432	0.00519	0.00245	0.00353	0.00168	0.00364	0.0017	0.0028	0.00209	0.00232	0.00253	0.00387
Nickel (Ni), dissolved	mg/L	*	0.000157	0.000065	0.000083	0.000085	0.000074	0.00559	0.000046	0.00204	0.00107	0.00018	0.000519	0.000255	0.00117	0.000347	0.00142	0.00074	0.000948	0.00032	0.000454
Phosphorus (P), dissolved	mg/L		<0.0020	<0.0020	<0.0020	0.0044	0.0046	0.979	0.0036	0.0046	0.0094	0.0101	0.0073	0.0025	<0.0020	0.0058	0.0025	<0.0020	0.0028	0.0054	0.0099
Potassium (K), dissolved	mg/L		1.26	1.27	1.31	1.31	1.24	1.51	1.09	2.72	2.69	2.4	2.53	2.29	2.17	2.22	2.24	2.25	2.35	2.33	2.48
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.000752	0.000848	0.000773	0.000767	0.000796	0.000701	0.000745	<0.000040	0.000089	<0.000040	0.000057	<0.000040	0.000078	<0.000040	0.000101	0.000078	0.000132	0.000075	0.000047
Silicon (Si), dissolved	mg/L		2.79	3.37	3.23	3.24	3.12	4.93	3.05	2.73	2.57	2.9	2.98	2.79	3.3	2.58	2.49	3.05	2.74	2.96	2.66
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.00035	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Sodium (Na), dissolved	mg/L		0.899	0.884	0.951	1.07	1.06	0.925	0.89	3.14	55.8	1.62	2.04	1.36	1.78	1.87	1.37	1.42	1.54	1.52	1.57
Strontium (Sr), dissolved	mg/L		0.143	0.161	0.158	0.164	0.151	0.182	0.139	0.206	0.203	0.208	0.207	0.213	0.2	0.201	0.188	0.214	0.199	0.2	0.186
Sulphur (S), dissolved	mg/L		<3.0	3.1	<3.0	3.5	3.2	<3.0	<3.0	7.4	17.3	6.8	6.8	5.8	6.7	6.9	5.4	6.3	5.9	6.8	5.9
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.000009	<0.0000020	0.000005	0.000004	<0.0000020	0.000002	0.000003	0.000005	<0.0000020	0.000003	<0.0000020	0.000002	<0.0000020	<0.0000020
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.0304	<0.00050	<0.00050	0.										

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-04D	MW15-04D	MW15-05S	MW15-05S	MW15-05S	MW15-05S	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-06	
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m		7.026	8.669									12.58	12.673	12.731	12.256	10.477	11.633	12.438	12.86	
Well Depth	mbTOC		32.302	32.281	8.11	8.1	8.104	8.107	8.114				28.58	28.68	28.5	27.561	27.75	28.575	28.588	28.59	
Total Suspended Solids	mg/L		712	496						1970	156	497	107	496	498	83.3	3000	728	924	37.3	134
pH (field)	pH units			8.85						7.56	7.66	7.57	7.63	7.63	7.79	7.46	7.35	7.73	7.49	7.4	7.36
pH (lab)	pH units		8.17	7.95						8.19	8.14	7.55	8.13	8.02	8.07	7.92	8.04	7.88	7.94	8.11	8.07
Specific Conductance (field)	µS/cm			274.1						468.6	344	380	328.7	380.1	403.8	393.3	351.9	323.6	394.7	381.1	413.4
Specific Conductance (lab)	µS/cm		289	293						437	397	384	378	377	377	389	386	388	387	380	366
Temperature (field)	C			1.3							0.1	0.12	4.6	2.1	2.1	3.4	2.1	1.1	0.4	0	
Dissolved Oxygen (field)	mg/L			3.3						7.89	5.7	8.3	9.32	5.8	8.3	5.7	8.5	8	4.29	7.88	8.86
Dissolved Oxygen (field)	%			27									92.8	50	72	50	77	69	36	64.8	
ORP (field)	mV			9.3								67	99.5	47.4	107.2	116.4	96.9	112.6	335.4	188.5	
Hardness (from total)	mg/L		456	188						338	247	222	160	228	242	219	430	233	239	201	196
Hardness (from dissolved)	mg/L		129	128						154	206	193	228	197	217	209	175	199	204	208	212
Total Acidity	mg/L		<1.0	1.2						<0.50	3.25	<0.50	1.87	1.67	1.61	1.75	0.77	<0.50	2.38	<0.50	<0.50
Acidity (pH 4.5)	mg/L		<1.0	<1.0						<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, total	mg/L		139	139						183	160	185	181	177	174	172	177	183	182	173	171
Alkalinity, bicarbonate HCO3	mg/L		170	170						223	195	225	220	217	212	210	216	223	222	211	209
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50						<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50						<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50						<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloride	mg/L		0.65	0.78						1.8	<0.50	<0.50	0.89	<0.50	1.2	1.1	0.79	0.77	<0.50	0.61	0.8
Fluoride	mg/L	*	0.22	0.2						0.18	0.12	0.11	0.13	0.13	0.13	0.12	0.14	0.13	0.13	0.12	0.11
Sulphate, dissolved	mg/L	1000	19.5	19.9						42.2	32.8	29.2	30.5	31.4	32.6	29.4	30.4	29.1	29	29.7	21.8
Ammonia (N)	mg/L	*	0.02	0.015						0.036	<0.0050	0.026	0.056	0.026	0.024	0.013	0.019	0.037	0.032	0.021	0.031
Nitrite (N)	mg/L	*	0.005	<0.0020						0.0161	0.003	0.002	0.0024	0.0034	0.0034	<0.0020	0.0026	<0.0020	<0.0020	<0.0020	0.0072
Nitrate (N)	mg/L	400	0.0072	0.009						0.122	0.207	0.217	0.256	0.202	0.243	0.236	0.217	0.242	0.245	0.259	0.313
Nitrite & Nitrate, as N	mg/L	400	0.0122	0.009						0.138	0.21	0.219	0.259	0.205	0.246	0.236	0.219	0.242	0.245	0.259	0.32
Phosphorus, total-colourimetric	mg/L		0.482	0.0974						0.274	0.0431	0.139	0.0054	0.0032	0.132	0.0247	0.327	0.132	0.109	0.0086	0.0672
Phosphorus, Total Dissolved	mg/L		0.513	0.0126						<0.0020	<0.0020		0.0044	0.0054	0.0081	0.0218	0.0353	0.0245	0.0185	0.0077	0.0029
Dissolved Organic Carbon	mg/L		1.44	0.51								3.13	2	<0.50	0.6	1.06	1.64	0.98	0.54	1.08	
Aluminum (Al), total	mg/L		28.6	2.42						31.3	1.63	3.27	0.59	4.09	3.09	0.782	15.1	3.12	2.98	0.543	0.835
Antimony (Sb), total	mg/L		0.000078	0.000076						0.000082	<0.000050	0.000054	0.000118	0.000084	0.000041	0.000026	<0.00010	0.000048	0.000041	<0.000020	<0.000050
Arsenic (As), total	mg/L		0.0298	0.00409						0.00749	0.00101	0.00143	0.000374	0.00465	0.00115	0.000716	0.00409	0.000692	0.000653	0.000142	0.000546
Barium (Ba), total	mg/L		0.541	0.122						0.231	0.0793	0.112	0.0423	0.137	0.105	0.0539	0.616	0.203	0.591	0.0551	0.0868
Beryllium (Be), total	mg/L		0.0049	0.000405						0.00796	0.000502	0.000858	0.000122	0.000507	0.000776	0.000117	0.00626	0.000964	0.000675	0.000059	0.000034
Bismuth (Bi), total	mg/L		0.00157	0.000127						0.00192	0.000154	0.000213	0.00003	0.000171	0.000185	0.000031	0.00151	0.000233	0.000162	0.000012	0.000021
Boron (B), total	mg/L		0.022	<0.010						<0.050	<0.050	<0.050	<0.050	<0.050	<0.010	<0.010	<0.050	<0.010	<0.010	<0.010	<0.050
Cadmium (Cd), total	mg/L		0.00207	0.00024						0.000532	0.000151	0.000594	0.00039	0.00058	0.000536	0.000139	0.0039	0.00117	0.00354	0.000118	0.000292
Calcium (Ca), total	mg/L		153	64.8						109	82.6	75.6	54.6	77.8	82.3	74.7	145	79.7	81.6	68.9	68
Chromium (Cr), total	mg/L		0.0664	0.0071						0.00976	0.00095	0.00259	0.00056	0.00473	0.00211	0.00074	0.00979	0.00165	0.00301	0.0003	0.00229
Cobalt (Co), total	mg/L		0.0313	0.00311						0.00876	0.000962	0.00335	0.000706	0.00554	0.00284	0.000578	0.0216	0.00579	0.0125	0.000376	0.00102
Copper (Cu), total	mg/L		0.111	0.0256						0.0564	0.0081	0.0139	0.00426	0.0315	0.0122	0.00342	0.0961	0.0147	0.0225	0.00087	0.00629
Iron (Fe), total	mg/L		31.1	3.57						16.5	1.54	3.55	0.451	9.71	4.05	1	16.2	3.71	10.7	0.369	1.63
Lead (Pb), total	mg/L		0.0741	0.00703						0.0986	0.0177	0.0428	0.0046	0.0353	0.0418	0.00664	0.384	0.036	0.0527	0.0025	0.00222
Lithium (Li), total	mg/L		0.0173	0.0024						0.0167	0.00238	0.00313	0.00165	0.00326	0.00345	0.00195	0.0099	0.00272	0.00264	0.0018	0.00238
Magnesium (Mg), total	mg/L		17.9	6.4						16.2	9.9	8.14	5.77	8.24	8.88	7.78	16.6	8.37	8.62	7.02	6.48
Manganese (Mn), total	mg/L		1.21	0.266						0.427	0.0694	0.264	0.0571	0.408	0.228	0.0394	1.79	0.571	1.36	0.0372	0.0214
Mercury (Hg), total	mg/L		<0.000020	<0.000020						<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Molybdenum (Mo), total	mg/L		0.00234	0.00221						0.00146	0.000997	0.00032	0.00049	0.0015	0.000505	0.000754	0.00058	0.000459	0.000445	0.000597	0.00314
Nickel (Ni), total	mg/L		0.0743	0.00726						0.0134	0.00189	0.00322	0.00079	0.00728	0.00338	0.00087	0.0281	0.00806	0.0218	0.00075	0.0043
Phosphorus (P), total	mg/L		1.65	0.336						0.288	0.055	0.1	<0.010	0.222	0.091	0.0144	0.53	0.0845	0.192	0.008	0.047
Potassium (K), total	mg/L		6.8	2.82						6.83	2.42	2.1	1.52	2.2	1.97	1.64	4.3	2.27	2.5	1.67	2
Selenium (Se), total	mg/L		0.00108	0.000308						0.00294	0.00219	0.00141	0.0013	0.00217	0.00171	0.00184	0.0025	0.00133	0.00103	0.00155	0.00214

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	MW15-04D	MW15-04D	MW15-05S	MW15-05S	MW15-05S	MW15-05S	MW15-05S	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-05D	MW15-06	
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Silicon (Si), total	mg/L		46.5	6.67						69.5	5.06	7.12	3.44	8.27	6.74	3.67	24.8	6.73	6.39	4.17	4.39
Silver (Ag), total	mg/L		0.00168	0.000104						0.000552	0.000123	0.000796	0.000061	0.0036	0.000974	0.000079	0.00329	0.000445	0.000589	0.00002	0.000032
Sodium (Na), total	mg/L		15.3	2.35						39.5	5.02	3.11	1.96	1.89	2.92	1.37	13.3	1.56	1.32	1.46	1.26
Strontium (Sr), total	mg/L		1.01	0.267						0.69	0.32	0.319	0.216	0.286	0.292	0.268	0.907	0.317	0.313	0.293	0.217
Sulphur (S), total	mg/L		7	6.8						<15	<15	<15	<15	<15	10	10.1	<15	9.9	9.6	9.6	<15
Thallium (Tl), total	mg/L		0.000585	0.000051						0.000523	0.0001	0.000045	0.000008	0.000058	0.000057	0.00001	0.000261	0.000062	0.000069	0.000007	0.00002
Tin (Sn), total	mg/L		0.00057	0.00035						0.00081	0.00022	<0.00020	0.00045	0.00051	0.00022	<0.00020	<0.0010	0.00062	0.00022	<0.00020	<0.00020
Titanium (Ti), total	mg/L		0.0324	0.0296						0.0287	0.0138	<0.0050	0.0112	0.0311	0.0089	0.0182	0.078	0.008	0.0078	0.009	0.044
Uranium (U), total	mg/L		0.0174	0.00227						0.0165	0.0039	0.00344	0.00178	0.003	0.0032	0.00211	0.0122	0.00388	0.00434	0.00202	0.00284
Vanadium (V), total	mg/L		0.0291	0.0032						0.018	0.00101	0.00329	0.00051	0.00533	0.00333	0.00082	0.012	0.00246	0.00335	0.00048	0.00341
Zinc (Zn), total	mg/L		0.148	0.0191						0.116	0.0178	0.0464	0.0222	0.0615	0.049	0.0101	0.337	0.107	0.333	0.0093	0.0185
Zirconium (Zr), total	mg/L		0.00069	0.00076						0.00029	0.0004	0.00018	0.00058	0.00296	0.00037	0.00058	0.00132	0.0005	0.00097	0.00092	0.00015
Aluminum (Al), dissolved	mg/L		0.0199	0.0009						0.00546	0.00615	0.00211	0.00215	0.0075	0.0032	0.00197	0.00105	0.00122	0.00082	0.00053	0.00195
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.000067	<0.000020						0.000023	0.000022	<0.000020	0.000046	0.000027	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.00135	0.000804						0.00019	0.00011	0.000065	0.000103	0.000185	0.000173	0.000057	0.00022	0.000104	0.00004	0.000049	0.00006
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0525	0.0543						0.0224	0.0408	0.0434	0.0455	0.0493	0.0465	0.0417	0.0449	0.0475	0.044	0.0398	0.0686
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010						<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050						<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Boron (B), dissolved	mg/L		<0.010	<0.010						<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*	0.000022	0.000015						0.000027	0.000057	0.000065	0.000197	0.000048	0.000074	0.000054	0.000081	0.000028	0.000047	0.000037	0.000175
Calcium (Ca), dissolved	mg/L		44.2	43.6						52.4	70.3	66.4	79.9	67.6	74.3	70.9	60.2	68.7	69.5	71.1	74.6
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.00010	<0.00010						<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000307	0.000266						0.000148	0.00018	0.000081	0.000038	0.000008	0.000031	0.000034	0.000127	0.000018	0.00001	0.000023	0.000034
Copper (Cu), dissolved	mg/L	*	0.000483	<0.000050						0.000611	0.000396	0.000154	0.00166	0.000568	0.000236	0.000132	0.000264	0.000079	0.000117	0.000094	0.000386
Iron (Fe), dissolved	mg/L		0.0862	0.0016						0.0054	0.0106	0.0067	<0.0010	<0.0010	<0.0010	0.0044	<0.0010	<0.0010	<0.0010	<0.0010	0.0023
Lead (Pb), dissolved	mg/L	*	0.000271	<0.0000050						0.000084	0.000095	0.000097	0.000208	0.000054	0.000206	0.000061	0.000215	0.000008	0.000013	0.000029	0.000011
Lithium (Li), dissolved	mg/L		0.00114	0.00094						0.00446	0.00121	0.00169	0.00146	0.00153	0.00186	0.00166	0.00257	0.00147	0.00202	0.00138	0.00152
Magnesium (Mg), dissolved	mg/L		4.63	4.56						5.51	7.49	6.63	6.92	6.76	7.6	7.79	5.97	6.57	7.3	7.39	6.23
Manganese (Mn), dissolved	mg/L		0.116	0.0975						0.0163	0.0217	0.0135	0.00469	0.00139	0.00477	0.00543	0.0221	0.00285	0.00164	0.00326	0.00122
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020						<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00296	0.00235						0.00181	0.000983	0.000912	0.000923	0.000893	0.000959	0.000846	0.00125	0.000966	0.000892	0.000888	0.00329
Nickel (Ni), dissolved	mg/L	*	0.00122	0.000631						0.000494	0.000487	0.000215	0.000395	0.000385	0.000251	0.000196	0.000511	0.000263	0.000177	0.000156	0.00124
Phosphorus (P), dissolved	mg/L		0.0075	0.0042						0.0055	<0.0020	0.0049	<0.0020	0.0035	<0.0020	0.0038	<0.0020	<0.0020	0.0032	0.0026	0.0056
Potassium (K), dissolved	mg/L		2.33	1.96						2.24	1.71	1.65	1.89	1.56	1.49	1.55	1.79	1.54	1.56	1.66	1.87
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.000404	0.000165						0.00162	0.00177	0.00149	0.00169	0.00154	0.00182	0.00167	0.00169	0.00181	0.00163	0.0016	0.00249
Silicon (Si), dissolved	mg/L		2.81	2.44						2.68	2.26	2.62	2.77	2.42	2.95	2.33	2.26	2.71	2.59	2.5	3.22
Silver (Ag), dissolved	mg/L	*	0.000006	<0.0000050						<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000006	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Sodium (Na), dissolved	mg/L		7.41	2.2						36.2	3.67	2.9	2.46	1.94	2.88	1.42	12.7	1.44	1.28	1.66	1.34
Strontium (Sr), dissolved	mg/L		0.298	0.196						0.3	0.274	0.298	0.273	0.266	0.273	0.257	0.538	0.288	0.26	0.29	0.216
Sulphur (S), dissolved	mg/L		6.1	5.7						14.8	10.8	9.9	9.4	8.8	10.3	9.9	9.6	9.8	9.9	9.9	7.9
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	<0.0000020	0.000002						0.000003	0.000002	<0.0000020	0.000002	0.000002	0.000002	<0.0000020	0.000002	<0.0000020	<0.0000020	<0.0000020	0.000003
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020						<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	<b>1</b>	0.00128	<0.00050						0.00068	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Uranium (U), dissolved	mg/L	<b>3</b>	0.00115	0.000971						0.00415	0.00262	0.00186	0.0019	0.00209	0.00214	0.00191	0.00265	0.00205	0.00197	0.00187	0.00284
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020						<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*	0.00278	0.00324						0.00258	0.00346	0.00404	0.0112	0.00194	0.0027	0.00296	0.00191	0.00053	0.00164	0.00171	0.00403
Zirconium (Zr), dissolved	mg/L		<0.00010	<0.00010						<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-06	MW15-06	MW15-06	MW15-06	MW15-06	MW15-06	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07D		
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		
Depth to Water (mbTOC)	m		1.906	2.358	1.778	0	0				2.36	1.235	1.851	1.962	1.572	1.584		2.311	2.101		
Well Depth	mbTOC		10.123	10.09	10.088	10.078	10.078	0			10.88	11.1	10.682	10.687	10.688	10.687	0	10.754	10.743		
Total Suspended Solids	mg/L		8760	62.5	1260	142	<1.0		3840	6590	2940	7230	154	5.2	4	25.7	17.3		90.3	7.9	1.8
pH (field)	pH units		7.63	7.38	7.28	7.34	7.58		7.23	7.68	7.62	7.6	7.57	7.53	7.54	7.38	7.66		7.81	7.93	7.5
pH (lab)	pH units		8.22	8.12	7.93	7.94	8		7.9	8.1	8.01	8.07	8.11	8.19	7.98	8.08	7.86		8.09	8.21	8.03
Specific Conductance (field)	µS/cm		368.7	389.5	384.9	360.2	299.3		425.6	360	400	332.1	388.2	402.3	396.1	347.4	321.3		383.7	352.1	449
Specific Conductance (lab)	µS/cm		366	367	378	378	382		385	393	389	383	376	391	387	388	382		373	377	415
Temperature (field)	C		2.6	2.2	1.7	1.3	0.7		0	0.42	5.9	2.3	3.7	3.4	1.9	2		3.7	2.7	0.5	
Dissolved Oxygen (field)	mg/L		8.2	8.7	8.6	7.2	8.8		0.48	1.5	3	2	3.7	10.7	9.4	1.2	1.2		8.11	9	3
Dissolved Oxygen (field)	%		75	74	72	62	73					19.7	32	95	83	10	10		61.8	78	
ORP (field)	mV		78.3	117.2	84.2	88.1	85.6				-17	-29.3	-66.8	-49.2	-43.8	-37.1	-32.9		161.1	-33.8	
Hardness (from total)	mg/L		306	205	262	210	205		480	453	419	547	211	204	206	206	147		197	182	213
Hardness (from dissolved)	mg/L		209	206	210	186	218		205	191	192	209	209	209	215	190	199		198	191	215
Total Acidity	mg/L		<0.50	2.17	2.25	0.92	2.07		3.66	2.99	<0.50	2.46	0.5	0.67	1.09	<0.50	<0.50		4.15	<1.0	4.79
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<1.0	<0.50
Alkalinity, total	mg/L		180	168	174	177	180		168	173	177	179	174	166	170	172	176		164	177	191
Alkalinity, bicarbonate HCO3	mg/L		220	204	212	216	219		205	211	216	218	212	203	208	210	215		201	216	233
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50
Chloride	mg/L		0.81	1.2	0.67	1.3	1		0.84	0.94	<0.50	0.8	0.82	0.62	1	0.63	0.63		<0.50	<0.50	<0.50
Fluoride	mg/L	*	0.12	0.12	0.11	0.11	0.12		0.3	0.3	0.28	0.3	0.29	0.31	0.29	0.28	0.3		0.29	0.31	0.34
Sulphate, dissolved	mg/L	1000	23.1	23	22.3	22.7	23		32.6	33.2	32.5	32.6	33.1	31.2	32.7	31	32.6		30.4	33.7	27.3
Ammonia (N)	mg/L	*	0.075	0.1	0.031	0.019	0.0051		0.062	0.053	0.066	0.13	0.026	0.051	0.039	0.032	0.026		0.034	0.02	0.043
Nitrite (N)	mg/L	*	0.0062	<0.0020	<0.0020	<0.0020	<0.0020		<0.0020	<0.0020	<0.0020	0.0064	<0.0020	<0.0020	<0.0020	<0.0020	0.002		0.0033	0.0035	<0.0020
Nitrate (N)	mg/L	400	0.307	0.331	0.338	0.355	0.356		<0.0020	0.0048	<0.0020	<0.0020	<0.0020	<0.0020	0.002	0.0021	<0.0020		0.0023	<0.0020	<0.0020
Nitrite & Nitrate, as N	mg/L	400	0.313	0.331	0.338	0.355	0.356		<0.0020	0.0048	<0.0020	0.0069	<0.0020	<0.0020	0.002	0.0021	<0.0020		0.0056	0.002	<0.0020
Phosphorus, total-colourimetric	mg/L		0.0271	0.103	0.0386	0.173	0.0049		2.5	1.03	1.97	0.0157	0.0103	0.0053	0.0028	0.0276	0.015		0.0615	0.0097	0.0024
Phosphorus, Total Dissolved	mg/L		0.0115	0.105	0.0423	0.0189	0.0025		0.002	0.0031		0.0173	0.0071	0.0033	0.0035	0.0326	0.0131		0.0442	0.0112	0.0028
Dissolved Organic Carbon	mg/L		1.06	0.54	0.68	0.64	0.67				2.45	<0.50	<0.50	0.53	0.78	0.8	<0.50		<0.50	0.64	
Aluminum (Al), total	mg/L		30.4	0.973	15.7	1.73	0.00098		26.8	5.14	10.8	20.3	3.94	0.042	0.0134	0.156	0.0809		1.09	0.157	0.00677
Antimony (Sb), total	mg/L		0.00059	0.000063	0.000162	0.000043	<0.000020		0.000102	0.000052	<0.000050	0.000117	<0.000050	<0.000020	<0.000020	0.000022	<0.000020		0.000027	<0.000020	<0.000020
Arsenic (As), total	mg/L		0.0163	0.000496	0.00449	0.000655	0.000034		0.0294	0.00936	0.0121	0.0448	0.00565	0.00165	0.00164	0.00171	0.0012		0.0038	0.00191	0.000255
Barium (Ba), total	mg/L		0.741	0.0912	0.419	0.11	0.0672		0.416	0.308	0.264	0.579	0.0727	0.0324	0.0318	0.0364	0.0247		0.0441	0.033	0.037
Beryllium (Be), total	mg/L		0.0012	0.000048	0.000628	0.000081	<0.000010		0.00165	0.00095	0.000733	0.00148	0.000119	<0.000010	<0.000010	0.000013	<0.000010		0.000055	0.000011	<0.000010
Bismuth (Bi), total	mg/L		0.000838	0.000026	0.000365	0.000044	<0.000050		0.000483	0.000093	0.000035	0.000293	0.000023	<0.000010	<0.000050	<0.000010	<0.000010		0.000012	<0.000050	<0.000050
Boron (B), total	mg/L		<0.050	<0.010	<0.010	<0.010	<0.010		<0.050	<0.010	<0.050	<0.050	<0.050	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010
Cadmium (Cd), total	mg/L		0.006	0.000295	0.00271	0.000574	0.000156		0.000624	0.00051	0.000486	0.00148	0.000079	<0.000050	<0.000050	0.00001	0.000005		0.000101	0.000007	<0.000050
Calcium (Ca), total	mg/L		85.5	71	80	72.5	72		144	154	133	173	65.9	64.9	64.4	64.3	46.1		61.1	56.4	62.9
Chromium (Cr), total	mg/L		0.0806	0.00213	0.0418	0.00421	<0.00010		0.118	0.0284	0.0528	0.0928	0.0167	0.00019	0.00017	0.00071	0.00035		0.00442	0.0006	<0.00010
Cobalt (Co), total	mg/L		0.0389	0.000998	0.0199	0.00226	0.000009		0.0446	0.0123	0.0274	0.13	0.00635	0.000131	0.000077	0.000429	0.000183		0.00187	0.000304	0.000023
Copper (Cu), total	mg/L		0.259	0.00863	0.108	0.013	0.000381		0.239	0.168	0.139	0.566	0.0254	0.00046	0.00542	0.00326	0.00123		0.00811	0.00121	<0.000050
Iron (Fe), total	mg/L		69.1	1.58	29.2	3	<0.0010		71.5	26.2	30.9	56.8	9.43	0.624	0.557	0.866	0.476		3.4	0.63	0.461
Lead (Pb), total	mg/L		0.106	0.00251	0.0462	0.00526	0.000005		0.0298	0.0248	0.0191	0.0539	0.00318	0.000054	0.000267	0.000361	0.000117		0.00118	0.00019	0.000021
Lithium (Li), total	mg/L		0.0326	0.00202	0.0181	0.0033	0.0015		0.0265	0.0114	0.0166	0.0314	0.0095	0.00661	0.0065	0.00687	0.00559		0.00864	0.0074	0.012
Magnesium (Mg), total	mg/L		22.6	6.74	15	7.09	6.14		29.3	16.8	21.1	28.2	11.2	10.2	11.1	11	7.69		10.7	10.1	13.5
Manganese (Mn), total	mg/L		1.03	0.0228	0.51	0.069	<0.000050		1.79	1.72	1.33	2.4	0.272	0.153	0.15	0.163	0.114		0.18	0.148	0.058
Mercury (Hg), total	mg/L		<0.000020	<0.000020	0.000002	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020
Molybdenum (Mo), total	mg/L		0.00637	0.00271	0.00151	0.00195	0.00285		0.0021	0.00161	0.000396	0.000756	0.000446	0.000222	0.000213	0.000246	0.000166		0.000207	0.000235	0.000081
Nickel (Ni), total	mg/L		0.125	0.00385	0.0575	0.007	0.000407		0.119	0.0264	0.063	0.297	0.0162	0.00029	0.000185	0.00096	0.00041		0.00463	0.00072	0.000031
Phosphorus (P), total	mg/L		3.76	0.0731	2.02	0.483	0.007		2.36	3.09	2.2	2.39	0.152	0.0102	0.0046	0.0187	0.0058		0.0653	0.0102	0.0038
Potassium (K), total	mg/L		7.69	1.88	5.3	2.22	1.7		5.08												

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-06	MW15-06	MW15-06	MW15-06	MW15-06	MW15-06	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07S	MW15-07D		
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		
Silicon (Si), total	mg/L		39.6	4.37	25	5.2	3.04		37.2	12.5	20.5	30.8	11.7	6.71	6.15	6.83	5.35		9.21	6.54	8.36	
Silver (Ag), total	mg/L		0.00208	0.000063	0.000636	0.000039	<0.0000050		0.00319	0.000646	0.000771	0.00408	0.000321	0.000018	<0.0000050	0.00002	<0.000010		0.00011	0.000026	<0.0000050	
Sodium (Na), total	mg/L		1.73	1.45	1.29	1.21	1.22		3.86	3.53	3.96	3.92	3.29	3.52	3.68	3.42	2.66		3.33	3.33	4.2	
Strontium (Sr), total	mg/L		0.317	0.207	0.289	0.231	0.226		0.452	0.487	0.433	0.537	0.268	0.264	0.258	0.255	0.206		0.273	0.27	0.321	
Sulphur (S), total	mg/L		<15	7.4	7.2	7.1	7.1		<15	11	<15	<15	<15	<15	11.3	11.8	10.7		8.6	11.4	12.1	9.9
Thallium (Tl), total	mg/L		0.000601	0.000026	0.000326	0.000025	<0.0000020		0.000306	0.000098	0.000098	0.000223	0.00003	<0.0000020	<0.0000020	0.000003	0.000003		0.000013	0.000002	<0.0000020	
Tin (Sn), total	mg/L		0.00157	<0.00020	0.00035	<0.00020	<0.00020		0.00086	<0.00020	<0.00020	<0.00020	0.00024	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	
Titanium (Ti), total	mg/L		1.08	0.0488	0.828	0.103	<0.00050		0.193	0.159	0.06	0.103	0.072	<0.0020	0.00109	0.003	<0.0020		0.0172	0.00465	<0.00050	
Uranium (U), total	mg/L		0.00752	0.00313	0.00411	0.00329	0.00278		0.00695	0.00986	0.00595	0.0109	0.002	0.00174	0.00173	0.00187	0.00124		0.00185	0.00172	0.00108	
Vanadium (V), total	mg/L		0.113	0.00312	0.0614	0.00675	<0.00020		0.101	0.0261	0.0425	0.0732	0.0147	0.00021	<0.00020	0.00059	0.00024		0.00363	0.00045	<0.00020	
Zinc (Zn), total	mg/L		0.676	0.0226	0.279	0.037	0.00328		0.223	0.0765	0.116	0.363	0.0291	<0.0010	0.00401	0.0032	0.0018		0.0102	0.00146	0.00098	
Zirconium (Zr), total	mg/L		0.00752	0.00023	0.00098	0.00024	<0.00010		0.0103	0.0067	0.0007	0.004	0.00542	0.00013	0.00014	0.00024	0.00012		0.00097	0.00046	<0.00010	
Aluminum (Al), dissolved	mg/L		0.00255	0.00205	0.00195	0.00129	0.00098		0.00302	0.0239	0.00194	0.00176	0.00258	0.00056	0.00168	0.00075	<0.00050		0.00997	0.00129	0.0124	
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.000046	0.000021	0.000024	<0.000020	<0.000020		<0.000020	0.000023	<0.000020	0.00012	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020	
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.000102	0.000069	0.000047	0.000038	0.000037		0.00264	0.00507	0.0025	0.00356	0.00174	0.00114	0.0016	0.00113	0.00133		0.00167	0.00153	0.000245	
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0895	0.075	0.0736	0.0716	0.0725		0.0355	0.0341	0.033	0.0409	0.0356	0.0308	0.0312	0.0317	0.0317		0.031	0.031	0.0402	
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	
Cadmium (Cd), dissolved	mg/L	*	0.000135	0.000146	0.00014	0.000153	0.000167		<0.0000050	0.000015	<0.0000050	0.000019	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050		0.00001	<0.0000050	<0.0000050	
Calcium (Ca), dissolved	mg/L		73.1	72.6	73.2	64.7	75.4		64.5	59.9	60.7	66.6	65.8	66.7	67.4	59.5	62.4		60.2	59.9	62.5	
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	0.00011	<0.00010	0.00012	<0.00010	0.0001		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000018	0.000008	0.000023	0.00001	0.000011		0.000128	0.000517	0.000177	0.00127	0.000885	0.000106	0.000049	0.000093	0.000055		0.000081	0.000054	0.000031	
Copper (Cu), dissolved	mg/L	*	0.000593	0.000493	0.000391	0.000341	0.00037		0.000107	0.000219	0.000093	0.000248	0.000191	<0.000050	0.000091	0.000053	<0.000050		0.000096	<0.000050	0.000089	
Iron (Fe), dissolved	mg/L		<0.0010	<0.0010	0.001	<0.0010	<0.0010		0.357	0.307	0.592	0.0012	<0.0010	0.0045	0.467	<0.0010	<0.0010		0.398	0.0818	0.498	
Lead (Pb), dissolved	mg/L	*	0.000017	0.000011	0.000013	0.00001	<0.0000050		0.000016	0.000057	0.00001	0.000005	<0.0000050	<0.0000050	0.000013	<0.0000050	<0.0000050		0.000033	<0.0000050	0.000081	
Lithium (Li), dissolved	mg/L		0.00237	0.00164	0.00157	0.00168	0.0014		0.00735	0.00624	0.0072	0.00706	0.00706	0.00698	0.00623	0.00717	0.00683		0.00653	0.0072	0.0129	
Magnesium (Mg), dissolved	mg/L		6.41	6.1	6.53	5.83	7.23		10.8	9.96	9.87	10.4	10.8	10.4	11.2	10.2	10.4		11.5	10.1	14.4	
Manganese (Mn), dissolved	mg/L		0.00168	0.000099	0.000459	0.000379	0.000152		0.172	0.155	0.161	0.118	0.156	0.148	0.151	0.145	0.144		0.16	0.144	0.0614	
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00336	0.00292	0.00289	0.0028	0.00305		0.000407	0.000837	0.000339	0.00213	0.000328	0.000215	0.00021	0.00023	0.000196		0.000238	0.000229	0.000058	
Nickel (Ni), dissolved	mg/L	*	0.000643	0.000507	0.000573	0.000463	0.000484		0.00029	0.00125	0.000631	0.00764	0.0029	0.000129	0.000084	0.000213	0.00008		0.000209	0.000133	0.000036	
Phosphorus (P), dissolved	mg/L		0.0061	<0.0020	0.0022	<0.0020	0.0033		0.0058	0.0069	0.0031	0.0045	0.004	<0.0020	<0.0020	<0.0020	<0.0020		0.0073	0.0025	0.0053	
Potassium (K), dissolved	mg/L		1.87	1.59	1.72	1.71	1.99		1.47	1.39	1.46	1.63	1.56	1.28	1.35	1.36	1.35		1.49	1.37	1.63	
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.00238	0.0026	0.0028	0.00261	0.00285		<0.000040	<0.000040	<0.000040	0.000845	0.000126	<0.000040	<0.000040	<0.000040	<0.000040		<0.000040	<0.000040	<0.000040	
Silicon (Si), dissolved	mg/L		3.16	3.5	3.18	2.76	3.25		6.64	6.46	6.89	6.61	6.55	7.6	6.12	5.87	6.56		6.37	6.71	7.86	
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000008	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	
Sodium (Na), dissolved	mg/L		1.89	1.33	1.27	1.14	1.45		4.05	3.56	3.41	3.57	3.96	3.59	3.92	3.33	3.62		3.98	3.4	4.41	
Strontium (Sr), dissolved	mg/L		0.235	0.214	0.239	0.199	0.27		0.272	0.264	0.277	0.271	0.307	0.264	0.257	0.251	0.263		0.269	0.275	0.325	
Sulphur (S), dissolved	mg/L		6.9	7.8	8.1	6.9	9.4		13	11.8	11.1	10.5	10.9	11.5	11.7	10.9	11.4		12	11.7	9.9	
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	0.000004	0.000003	0.000002	0.000004	<0.0000020		<0.0000020	<0.0000020	<0.0000020	0.000003	0.000002	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	
Uranium (U), dissolved	mg/L	<b>3</b>	0.003	0.00273	0.00276	0.00276	0.00296		0.00168	0.002	0.00149	0.00351	0.00177	0.00166	0.00171	0.00171	0.00178		0.00175	0.00172	0.00116	
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.									

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-08S	MW15-08S	MW15-08S	MW15-08S	MW15-08S	MW15-08S	MW15-08D	MW15-08D	MW15-08D	MW15-08D
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depth to Water (mbTOC)	m		0	0	0.000	0	0.091	0	0.091	0	1.596	0.242	0	0					0.465	
Well Depth	mbTOC		33.2	33.1	33.35	33.000	33	0	32.841	32.751		11.6	12.501	12.499	12.5	12.384	0			0.47
Total Suspended Solids	mg/L		173	5	4	3.8	109		25.5	910	<1.0	3300	244	8100	3100	12.4		43.4	242	
pH (field)	pH units		7.56	7.53	7.51	7.48	7.34		7.77	8.05	7.67	7.47	7.35	7.55	7.35	7.68		7.22	7.28	
pH (lab)	pH units		8.08	8.23	7.84	7.99	8.07		8.27	8.04	8.26	8.12	7.87	8.2	8.09	7.94		7.96	8.05	
Specific Conductance (field)	µS/cm		348.8	404.3	419.3	409.5	362		399.7	367	394.9	369.4	395.7	387.1	347.8	319.1		618	548	
Specific Conductance (lab)	µS/cm		399	404	404	399	401		391	383	372	382	366	380	385	384		540	539	
Temperature (field)	C		3.9	2.3	3.2	2.5	2.2		4.1	2.7	1.1	1.8	2.3	4.7	1.5	1.3		3.3		
Dissolved Oxygen (field)	mg/L		1.63	4.3	4.8	6.0	0.9		8.2	2.5	10.58	8.4	9.3	8.6	8.2	8.8		6.1	5.27	
Dissolved Oxygen (field)	%		15.3	40	42	50	7		63.1	21		72	79	78	70	73				
ORP (field)	mV		51.6	-59.4	-52.8	-36.5	-46.6		135.2	-51.7		57.3	137.4	147.2	63.9	132.1				
Hardness (from total)	mg/L		224	207	224	232	221		201	297	200	527	220	412	660	192		350	361	
Hardness (from dissolved)	mg/L		223	215	216	214	203		197	203	211	212	209	206	196	198		310	269	
Total Acidity	mg/L		2.64	<0.50	<0.50	1.93	<0.50		4.52	<1.0	<0.50	0.7	<0.50	1.96	0.96	<0.50		5.63	5.27	
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	
Alkalinity, total	mg/L		195	194	182	182	188		178	182	175	182	165	179	178	181		250	245	
Alkalinity, bicarbonate HCO3	mg/L		237	237	222	222	230		217	222	213	222	201	218	217	221		305	299	
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	
Chloride	mg/L		0.68	0.74	<0.50	1.1	0.76		<0.50	0.63	0.87	0.82	1.5	1.1	0.57	0.75		1.3	0.96	
Fluoride	mg/L	*	0.34	0.33	0.36	0.33	0.34		0.34	0.35	0.093	0.084	0.091	0.086	0.087	0.089		0.61	0.54	
Sulphate, dissolved	mg/L	1000	30.4	30.2	31.9	29.8	30.2		29.8	30.7	23.9	28.2	24.5	26.6	26.7	25		43.9	45	
Ammonia (N)	mg/L	*	0.048	0.059	0.072	0.053	0.046		0.048	0.05	0.011	0.08	0.41	0.097	0.08	0.023		0.13	0.12	
Nitrite (N)	mg/L	*	0.0029	<0.0020	<0.0020	<0.0020	<0.0020		<0.0020	0.0057	<0.0020	0.0048	<0.0020	<0.0020	0.0025	<0.0020		<0.0020	<0.0020	
Nitrate (N)	mg/L	400	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020		<0.0020	<0.0020	0.215	0.253	0.266	0.276	0.265	0.269		<0.0020	0.0047	
Nitrite & Nitrate, as N	mg/L	400	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020		<0.0020	0.0055	0.215	0.258	0.266	0.276	0.268	0.269		<0.0020	0.0047	
Phosphorus, total-colourimetric	mg/L		0.0022	0.0034	0.0041	0.0042	0.0886		0.0215	0.681	0.0026	0.0167	0.137	0.505	0.308	0.0118		0.0795	0.0048	
Phosphorus, Total Dissolved	mg/L		0.0036	0.0021	0.0045	0.0042	0.019		0.0253	0.72	<0.0020	0.0084	0.0344	0.518	0.101	0.0147		0.0796	0.005	
Dissolved Organic Carbon	mg/L		<0.50	1.13	<0.50	1.11	<0.50		<0.50	<0.50		1.58	0.71	0.97	0.72	0.89				
Aluminum (Al), total	mg/L		0.847	0.0489	0.0462	0.0178	0.833		0.339	12.1	0.025	61.1	3.72	34.4	22.5	0.0128		3.17	7.17	
Antimony (Sb), total	mg/L		<0.000050	<0.000020	<0.000020	<0.000020	0.000023		<0.000020	0.000054	<0.000020	0.000608	0.000099	0.000324	0.00015	<0.000020		0.000092	0.000178	
Arsenic (As), total	mg/L		0.000307	0.000024	0.000024	<0.000020	0.000241		0.000149	0.00549	0.000356	0.0513	0.00303	0.0229	0.0129	0.000399		0.0069	0.0124	
Barium (Ba), total	mg/L		0.0799	0.038	0.0395	0.0374	0.086		0.0447	0.545	0.0622	1.1	0.143	1.07	0.778	0.0579		0.0441	0.0758	
Beryllium (Be), total	mg/L		0.000019	<0.000010	<0.000010	<0.000010	0.000031		0.00001	0.000306	<0.000010	0.00146	0.000088	0.00107	0.000708	<0.000010		0.000117	0.000269	
Bismuth (Bi), total	mg/L		0.000053	<0.000050	<0.000050	<0.000050	0.000032		0.000013	0.000366	<0.000050	0.000873	0.000052	0.000718	0.000382	<0.000050		0.000012	0.000105	
Boron (B), total	mg/L		<0.050	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.050	<0.010	<0.010	<0.050	<0.010		<0.010	<0.050	
Cadmium (Cd), total	mg/L		0.000038	<0.000050	<0.000050	<0.000050	0.00003		0.000018	0.000417	0.000059	0.00489	0.00034	0.00446	0.00429	0.00002		0.000096	0.000212	
Calcium (Ca), total	mg/L		64.9	61.2	66	67.2	64.6		58.3	86.3	69.9	139	74.2	110	227	67.2		96.1	97.3	
Chromium (Cr), total	mg/L		0.00278	0.00015	0.00013	0.0001	0.00256		0.00106	0.0369	<0.00010	0.144	0.00808	0.0963	0.0477	<0.00010		0.0138	0.0305	
Cobalt (Co), total	mg/L		0.000691	0.00003	0.000036	0.000018	0.000595		0.000288	0.0127	0.000619	0.0786	0.00468	0.0635	0.0463	0.000058		0.00316	0.0058	
Copper (Cu), total	mg/L		0.00416	0.000101	0.000905	0.00276	0.00323		0.00131	0.0532	0.000701	0.33	0.0217	0.305	0.195	0.000337		0.00272	0.0062	
Iron (Fe), total	mg/L		2.59	0.559	0.587	0.546	3.02		1.31	39	0.0512	136	7.81	82.7	45.4	0.0272		7.05	11	
Lead (Pb), total	mg/L		0.00368	0.00009	0.000165	0.000179	0.00227		0.000829	0.0284	0.000017	0.275	0.0178	0.259	0.252	0.000164		0.00124	0.00657	
Lithium (Li), total	mg/L		0.014	0.0109	0.0127	0.0112	0.0127		0.0119	0.0192	0.00194	0.0492	0.00365	0.0307	0.0201	0.00199		0.041	0.0421	
Magnesium (Mg), total	mg/L		15.2	13.1	14.5	15.6	14.4		13.4	19.8	6.1	43.9	8.41	33.2	22.4	5.81		26.6	28.6	
Manganese (Mn), total	mg/L		0.11	0.0542	0.0579	0.0589	0.113		0.0683	0.871	0.0179	1.78	0.111	1.34	2.45	0.00173		0.323	0.43	
Mercury (Hg), total	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	
Molybdenum (Mo), total	mg/L		0.000077	<0.000050	<0.000050	0.000067	0.000087		0.000054	0.00055	0.0026	0.00441	0.00175	0.00124	0.0009	0.00186		0.000644	0.00546	
Nickel (Ni), total	mg/L		0.0014	0.000069	0.000095	0.000055	0.00117		0.000573	0.0254	0.00472	0.167	0.0112	0.128	0.0837	0.00025		0.00762	0.0195	
Phosphorus (P), total	mg/L		0.053	0.0057	0.0054	<0.0020	0.0639		0.0249	0.974	0.003	3.18	0.211	1.73	5.24	0.0105		0.088	0.157	
Potassium (K), total	mg/L		1.86	1.48	1.66	1.58	1.74		1.57	3.67	1.42	9.5	1.86	7.81	6	1.33		4.91	4.99	
Selenium (Se), total	mg/L		0.000066	<0.000040	<0.000040	<0.000040	0.000058		<0.000040	0.00122	0.00156	0.00468	0.00177	0.0024	0.00227	0.0019		<0.000040	0.000421	

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-07D	MW15-08S	MW15-08S	MW15-08S	MW15-08S	MW15-08S	MW15-08S	MW15-08D	MW15-08D	MW15-08D	MW15-08D
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L		10.1	7.23	8.46	7.74	8.53			7.84	20.4	3.64	68.6	7.82	44.7	28	3.3		16.9	23.4
Silver (Ag), total	mg/L		0.000143	0.000007	<0.0000050	<0.0000050	0.0001			0.00008	0.00127	<0.0000050	0.0085	0.000387	0.00576	0.000625	<0.0000050		0.000625	0.000543
Sodium (Na), total	mg/L		4.65	4.14	4.72	4.59	4.09			4.21	3.93	1.16	1.54	1.37	1.68	1.5	1.19		5.87	10.7
Strontium (Sr), total	mg/L		0.353	0.304	0.331	0.329	0.308			0.309	0.393	0.217	0.478	0.223	0.405	0.681	0.221		0.407	0.411
Sulphur (S), total	mg/L		<15	9.3	11.3	11.6	10.1			10.1	12.6	8.6	<15	8	8.3	<15	8		15.4	17
Thallium (Tl), total	mg/L		0.000009	<0.0000020	<0.0000020	<0.0000020	0.000005			0.000002	0.000083	0.000004	0.00071	0.000063	0.000567	0.000274	0.000002		0.000018	0.000035
Tin (Sn), total	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020			<0.00020	0.00079	<0.00020	0.00166	0.00022	0.00063	<0.0010	<0.00020		0.00033	0.00052
Titanium (Ti), total	mg/L		0.0221	0.00135	0.00118	0.00334	0.0215			0.0109	0.206	0.00152	2.27	0.153	1.47	0.931	0.00141		0.0903	0.198
Uranium (U), total	mg/L		0.00119	0.000913	0.00101	0.00111	0.00132			0.00117	0.00455	0.0022	0.00579	0.0027	0.00511	0.00467	0.00236		0.00141	0.00301
Vanadium (V), total	mg/L		0.00257	<0.00020	<0.00020	<0.00020	0.00252			0.00092	0.034	<0.00020	0.231	0.0138	0.158	0.0989	<0.00020		0.0164	0.0305
Zinc (Zn), total	mg/L		0.0109	0.00119	0.00225	0.00331	0.0095			0.00364	0.103	0.00406	1.14	0.0674	0.878	0.633	0.00097		0.00951	0.0231
Zirconium (Zr), total	mg/L		0.00129	0.0003	0.00023	0.00023	0.00136			0.00106	0.0141	<0.00010	0.00789	0.00086	0.00327	0.00652	<0.00010		0.00134	0.00223
Aluminum (Al), dissolved	mg/L		0.00178	0.00067	0.00076	0.00693	0.00149			0.00143	0.00282	0.00201	0.00408	0.00286	0.00394	0.00135	0.00059		0.00356	0.00361
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020			<0.000020	0.000071	<0.000020	0.000032	0.000031	0.000048	0.000025	<0.000020		0.000073	0.000135
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.000052	<0.000020	<0.000020	0.000023	0.000033			0.000028	0.000191	0.000357	0.000439	0.000354	0.000271	0.000252	0.000454		0.00262	0.00496
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0434	0.0378	0.037	0.0366	0.0414			0.0349	0.0366	0.0631	0.114	0.0848	0.0811	0.0847	0.0612		0.0344	0.0463
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			<0.0000050	<0.0000050	0.000059	0.000116	0.000084	0.000124	0.000103	0.000013		0.000018	0.000032
Calcium (Ca), dissolved	mg/L		67	64.3	63.2	62.1	58.5			57.9	59.7	74.5	73.9	73.7	71.4	68	69.7		84.8	76.5
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.00010	<0.00010	<0.00010	<0.00010	0.00014			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000018	<0.0000050	0.000005	0.000005	0.000013			<0.0000050	0.000028	0.000649	0.00013	0.00005	0.000158	0.000093	0.000029		0.000295	0.000709
Copper (Cu), dissolved	mg/L	*	<0.000050	<0.000050	0.000149	0.000128	<0.000050			<0.000050	<0.000050	0.000706	0.00091	0.000761	0.000639	0.000703	0.000106		<0.000050	0.000087
Iron (Fe), dissolved	mg/L		<0.0010	0.0058	0.0045	0.45	0.001			0.423	0.0901	0.0043	0.0011	<0.0010	0.0045	<0.0010	<0.0010		0.655	0.563
Lead (Pb), dissolved	mg/L	*	0.000009	<0.0000050	<0.0000050	0.000083	<0.0000050			0.000005	0.000014	0.000012	0.000096	0.000093	0.000117	0.00024	0.000007		0.000012	0.000019
Lithium (Li), dissolved	mg/L		0.0121	0.0114	0.012	0.0109	0.0118			0.0117	0.0121	0.00206	0.00204	0.00216	0.00151	0.00261	0.00223		0.0393	0.0282
Magnesium (Mg), dissolved	mg/L		13.6	13.2	14.1	14.4	13.7			12.8	13	5.97	6.72	6.02	6.69	6.26	5.85		23.8	18.9
Manganese (Mn), dissolved	mg/L		0.0519	0.0548	0.0532	0.0534	0.052			0.0515	0.0508	0.018	0.00258	0.000558	0.00164	0.00208	0.000511		0.181	0.191
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020			<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.000074	<0.000050	<0.000050	0.00005	0.000052			<0.000050	0.000161	0.00257	0.00219	0.00197	0.00207	0.00204	0.00194		0.000433	0.00664
Nickel (Ni), dissolved	mg/L	*	0.000072	<0.000020	<0.000020	0.000022	0.000103			<0.000020	0.000119	0.00489	0.00168	0.000862	0.00135	0.000664	0.000183		0.00128	0.00327
Phosphorus (P), dissolved	mg/L		0.0034	0.0038	<0.0020	0.0036	<0.0020			0.0034	<0.0020	0.0033	0.0029	<0.0020	<0.0020	0.0034	<0.0020		0.005	0.0037
Potassium (K), dissolved	mg/L		1.62	1.6	1.5	1.53	1.58			1.46	1.53	1.47	1.81	1.27	1.36	1.45	1.35		4.54	3.91
Selenium (Se), dissolved	mg/L	<b>0.01</b>	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040			<0.000040	<0.000040	0.00148	0.00162	0.00171	0.00175	0.00194	0.00217		<0.000040	0.000272
Silicon (Si), dissolved	mg/L		8.44	7.62	8.54	7.19	6.82			7.22	7.67	3.57	3.23	3.75	3.06	3.01	3.63		12.2	9.9
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			<0.0000050	<0.0000050	0.000012	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		0.000006	<0.0000050
Sodium (Na), dissolved	mg/L		4.26	4.3	4.45	4.49	3.98			4.12	3.97	1.21	1.39	1.23	1.36	1.25	1.19		5.69	11.8
Strontium (Sr), dissolved	mg/L		0.319	0.332	0.311	0.3	0.284			0.288	0.317	0.229	0.269	0.218	0.221	0.209	0.229		0.385	0.317
Sulphur (S), dissolved	mg/L		9.8	8.8	10.6	10.6	9.3			9.8	10.6	9	9	8.7	8.7	8.2	8.6		15.2	15.9
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	<0.0000020	0.000002	<0.0000020	<0.0000020	<0.0000020			<0.0000020	<0.0000020	0.000004	0.00001	0.000009	0.000005	0.000003	<0.0000020		0.000003	0.000002
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020			<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050
Uranium (U), dissolved	mg/L	<b>3</b>	0.00095	0.000966	0.000936	0.00106	0.00104			0.00113	0.00134	0.00221	0.00256	0.00235	0.0024	0.00275	0.00244		0.00103	0.00143
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020			<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*	0.00031	0.0002	<0.00010	0.00119	0.00043			0.00023	0.00104	0.00412	0.00174	0.00145	0.00307	0.00142	0.00029		0.00161	0.00309
Zirconium (Zr), dissolved	mg/L		<0.00010	<0.00010	<0.00010	0.0001	<0.00010			0.00015	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	MW15-08D	MW15-08D	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09D	MW15-09D	MW15-09D	MW15-09D	MW15-09D	MW15-09D	MW15-09D	
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m				2.29	2.292	2.17	1.502	0	0			1.993	0.765		1.96	1.916			0.024	
Well Depth	mbTOC		0.465	0		17.8	18.13	18.06	18.090	18.029	18.035	0	18.031	18.014		3.76		3.718	3.745	0	3.761
Total Suspended Solids	mg/L				102	678	920	69.4	338	55.1	20		5400	584	284						
pH (field)	pH units				7.37	7.45	7.74	7.54	7.28	7.42	7.54		7.66	8.04	5.68						7.74
pH (lab)	pH units				8.12	7.85	8.24	8.19	7.94	8	7.97		8.13	8.16	6.3						
Specific Conductance (field)	µS/cm				441.9	348.2	419.5	432.7	425.4	389.6	319.9		434.7	392.2	834						490.8
Specific Conductance (lab)	µS/cm				413	420	402	412	419	417	407		422	414	813						
Temperature (field)	C				-0.3	3.5	2.3	2.3	2.4	2.4	1.6		3.2	1.7	0.6						6.6
Dissolved Oxygen (field)	mg/L				0.4	2.16	2.1	2.2	1.8	0.6	0.8		2.89	4.2	4.23						5.53
Dissolved Oxygen (field)	%					19.3	18	18	15	6	7		21.7	35							45.2
ORP (field)	mV					-62.6	-89.6	-52.5	-69.2	-29.5	-38.9		199.5	-28.1							54.7
Hardness (from total)	mg/L				202	252	230	228	231	214	222		441	255	396						
Hardness (from dissolved)	mg/L				221	227	223	227	225	208	207		226	220	402						
Total Acidity	mg/L				4.94	7.88	<0.50	<0.50	3.68	<0.50	2.64		9.46	<1.0	299						
Acidity (pH 4.5)	mg/L				<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<1.0	<0.50						
Alkalinity, total	mg/L				204	214	214	196	199	205	201		211	217	421						
Alkalinity, bicarbonate HCO3	mg/L				249	261	260	240	243	250	245		257	265	513						
Alkalinity, hydroxide OH	mg/L				<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50						
Alkalinity, carbonate CO3	mg/L				<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50						
Alkalinity, PP carbonate CO3	mg/L				<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50						
Chloride	mg/L				1.1	0.69	1.2	0.59	0.63	0.75	0.76		0.63	0.55	1.1						
Fluoride	mg/L	*			0.25	0.24	0.22	0.25	0.23	0.24	0.29		0.22	0.23	0.73						
Sulphate, dissolved	mg/L	1000			20.9	18.2	18.8	17.2	17.6	18.7	18.4		17.3	19.7	15.3						
Ammonia (N)	mg/L	*			0.094	0.044	0.039	0.052	0.029	0.019	0.019		0.32	0.016	0.1						
Nitrite (N)	mg/L	*			0.006	0.0032	0.0072	0.002	0.0052	0.0057	0.0054		0.0047	0.0041	<0.0020						
Nitrate (N)	mg/L	400			0.036	0.0501	0.0447	0.0652	0.0571	0.0649	0.0873		0.128	0.138	0.0021						
Nitrite & Nitrate, as N	mg/L	400			0.042	0.0533	0.0519	0.0672	0.0623	0.0706	0.0927		0.133	0.142	0.0021						
Phosphorus, total-colourimetric	mg/L				0.0411	0.005	0.0063	0.181	0.0339	0.0099	0.0194		1.19	0.365	1.16						
Phosphorus, Total Dissolved	mg/L				0.0073	0.006	0.0064	0.142	0.0322	0.0097	0.0179		0.0103	0.0224	0.0054						
Dissolved Organic Carbon	mg/L					<0.50	0.97	0.72	<0.50	<0.50	1.38		<0.50	0.5							
Aluminum (Al), total	mg/L				0.862	4.21	4.86	1.04	3.32	0.544	0.113		51.4	7.3	6.83						
Antimony (Sb), total	mg/L				0.000258	0.0003	0.000285	0.00012	0.000322	0.000219	0.000101		0.00137	0.000346	0.000356						
Arsenic (As), total	mg/L				0.00173	0.00292	0.00355	0.00136	0.00269	0.00123	0.00159		0.0358	0.00761	0.00988						
Barium (Ba), total	mg/L				0.186	0.337	0.276	0.214	0.269	0.196	0.173		1.93	0.362	0.228						
Beryllium (Be), total	mg/L				0.000064	0.000728	0.000556	0.000121	0.000184	0.000066	0.000015		0.00287	0.000694	0.000247						
Bismuth (Bi), total	mg/L				0.000027	0.000336	0.000219	0.000036	0.000134	0.000032	0.000009		0.0026	0.000325	<0.000020						
Boron (B), total	mg/L				<0.050	<0.050	<0.050	<0.010	<0.010	<0.010	<0.010		<0.050	<0.010	<0.050						
Cadmium (Cd), total	mg/L				0.000129	0.00142	0.000572	0.000134	0.000523	0.000235	0.000111		0.0143	0.000996	0.000357						
Calcium (Ca), total	mg/L				63.7	77.9	72.9	72	72.9	68.1	71.8		113	78	126						
Chromium (Cr), total	mg/L				0.0047	0.0156	0.0128	0.0025	0.0124	0.00267	0.00038		0.188	0.0233	0.0316						
Cobalt (Co), total	mg/L				0.00179	0.00632	0.00439	0.000807	0.00437	0.000975	0.000551		0.0754	0.00676	0.00528						
Copper (Cu), total	mg/L				0.00543	0.0512	0.0262	0.00459	0.0234	0.00489	0.00169		0.487	0.0462	0.0169						
Iron (Fe), total	mg/L				2.92	7.74	8.8	3.72	6.85	1.7	2.11		179	22.8	27.9						
Lead (Pb), total	mg/L				0.0026	0.0406	0.0179	0.00213	0.0139	0.0035	0.00134		0.315	0.026	0.00452						
Lithium (Li), total	mg/L				0.00431	0.00835	0.00626	0.00382	0.00575	0.00339	0.00349		0.0487	0.00849	0.0426						
Magnesium (Mg), total	mg/L				10.4	13.8	11.7	11.8	12	10.6	10.5		38.3	14.7	19.9						
Manganese (Mn), total	mg/L				0.421	0.343	0.274	0.168	0.2	0.131	0.131		2.62	0.263	0.981						
Mercury (Hg), total	mg/L				<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020						
Molybdenum (Mo), total	mg/L				0.00718	0.00413	0.006	0.00532	0.00427	0.00408	0.00383		0.00425	0.00468	0.0171						
Nickel (Ni), total	mg/L				0.00286	0.0139	0.0102	0.00186	0.01	0.00223	0.0009		0.162	0.0331	0.00378						
Phosphorus (P), total	mg/L				0.068	0.295	0.256	0.0448	0.344	0.0889	0.0155		6.71	0.629	0.719						
Potassium (K), total	mg/L				1.92	3.03	2.53	1.96	2.5	1.99	2.11		11.2	3.12	5.51						
Selenium (Se), total	mg/L				0.000721	0.00105	0.000946	0.00105	0.000941	0.00111	0.00103		0.00763	0.00273	0.000986						

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	MW15-08D	MW15-08D	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09S	MW15-09D	MW15-09D	MW15-09D	MW15-09D	MW15-09D	MW15-09D	MW15-09D
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L				5.19	10.5	10.8	6.41	9.07	4.87	4.57		67	15.5	17.9					
Silver (Ag), total	mg/L				0.000292	0.00166	0.00207	0.000579	0.000311	0.000056	0.000008		0.0102	0.00204	0.00204					
Sodium (Na), total	mg/L				4.73	5.79	3.33	3.14	2.76	2.45	2.56		2.6	2.21	4.97					
Strontium (Sr), total	mg/L				0.237	0.356	0.31	0.247	0.273	0.241	0.253		0.431	0.302	0.501					
Sulphur (S), total	mg/L				<15	<15	<15	5.8	6.1	5.5	6		<15	6.3	<15					
Thallium (Tl), total	mg/L				0.000016	0.000098	0.000084	0.000018	0.000054	0.000013	0.000002		0.000901	0.000122	0.000049					
Tin (Sn), total	mg/L				<0.00020	<0.00020	0.00044	<0.00020	<0.00020	<0.00020	<0.00020		0.001	0.00046	0.00082					
Titanium (Ti), total	mg/L				0.036	0.052	0.118	0.03	0.139	0.0231	0.00445		1.01	0.132	0.309					
Uranium (U), total	mg/L				0.00243	0.00615	0.00472	0.0035	0.00432	0.00389	0.0033		0.0271	0.00691	0.00495					
Vanadium (V), total	mg/L				0.00323	0.0153	0.0132	0.00226	0.0126	0.00275	0.00102		0.205	0.0252	0.0281					
Zinc (Zn), total	mg/L				0.0096	0.0784	0.0486	0.0086	0.0548	0.0113	0.0049		1	0.0865	0.0458					
Zirconium (Zr), total	mg/L				0.00069	0.0003	0.00121	0.00047	0.0009	0.0002	0.00026		0.00939	0.00088	0.00146					
Aluminum (Al), dissolved	mg/L				0.0018	0.00059	1.51	0.00105	0.00226	<0.00050	<0.00050		0.00845	0.00089	0.17					
Antimony (Sb), dissolved	mg/L	<b>0.2</b>			0.000207	0.000153	0.00011	0.000088	0.000078	0.000107	0.000082		0.000192	0.000113	0.000303					
Arsenic (As), dissolved	mg/L	<b>0.05</b>			0.000537	0.000535	0.00177	0.000533	0.0008	0.000438	0.000465		0.000309	0.000126	0.00848					
Barium (Ba), dissolved	mg/L	<b>10</b>			0.181	0.188	0.265	0.186	0.188	0.182	0.153		0.191	0.192	0.09					
Beryllium (Be), dissolved	mg/L	<b>0.053</b>			<0.000010	<0.000010	0.000492	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	0.000111					
Bismuth (Bi), dissolved	mg/L				<0.0000050	<0.0000050	0.000114	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050					
Boron (B), dissolved	mg/L				0.017	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010					
Cadmium (Cd), dissolved	mg/L	*			0.000046	0.000012	0.000544	0.000029	<0.0000050	0.000057	0.000042		0.00004	0.000046	0.000008					
Calcium (Ca), dissolved	mg/L				69.6	73.1	72	73.4	71.8	66.1	66.3		72.5	69.6	133					
Chromium (Cr), dissolved	mg/L	<b>0.01</b>			<0.00010	<0.00010	0.00575	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	0.00304					
Cobalt (Co), dissolved	mg/L	<b>0.009</b>			0.000966	0.000204	0.00254	0.000141	0.000223	0.00025	0.000217		0.000141	0.00016	0.000389					
Copper (Cu), dissolved	mg/L	*			0.000106	0.000129	0.0207	0.000077	<0.000050	0.000115	<0.000050		0.000083	<0.000050	0.000416					
Iron (Fe), dissolved	mg/L				1.31	<0.0010	3.89	<0.0010	0.632	<0.0010	<0.0010		0.0136	0.0114	12.3					
Lead (Pb), dissolved	mg/L	*			0.000011	<0.0000050	0.0177	<0.0000050	0.00001	<0.0000050	<0.0000050		0.000022	0.000005	0.000121					
Lithium (Li), dissolved	mg/L				0.00381	0.00289	0.00421	0.00367	0.00284	0.00369	0.00276		0.00318	0.0033	0.0339					
Magnesium (Mg), dissolved	mg/L				11.4	10.9	10.5	10.7	11.2	10.5	10.1		10.9	11.2	17.1					
Manganese (Mn), dissolved	mg/L				0.493	0.164	0.251	0.126	0.143	0.116	0.101		0.0383	0.0667	0.805					
Mercury (Hg), dissolved	mg/L	<b>0.001</b>			<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020					
Molybdenum (Mo), dissolved	mg/L	<b>10</b>			0.00811	0.00739	0.00467	0.00536	0.00488	0.00456	0.00378		0.00461	0.00412	0.00925					
Nickel (Ni), dissolved	mg/L	*			0.000604	0.00048	0.00501	0.000399	0.00046	0.000588	0.000426		0.000659	0.000579	0.000659					
Phosphorus (P), dissolved	mg/L				0.0087	<0.0020	0.243	<0.0020	0.0056	0.0058	<0.0020		0.0021	0.0036	0.0084					
Potassium (K), dissolved	mg/L				1.89	2.1	2.07	1.85	1.84	2	1.96		1.75	1.82	4.26					
Selenium (Se), dissolved	mg/L	<b>0.01</b>			0.000721	0.000762	0.000625	0.000843	0.000852	0.000942	0.000971		0.00202	0.00156	0.000062					
Silicon (Si), dissolved	mg/L				4.02	4.47	5.87	5.15	4.04	3.89	4.33		4	4.32	10.3					
Silver (Ag), dissolved	mg/L	*			<0.0000050	<0.0000050	0.000595	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050					
Sodium (Na), dissolved	mg/L				6.03	4.87	3.13	3.08	2.88	2.51	2.5		2.18	2.15	5.03					
Strontium (Sr), dissolved	mg/L				0.262	0.312	0.323	0.295	0.27	0.235	0.228		0.257	0.279	0.488					
Sulphur (S), dissolved	mg/L				8.3	6	5.3	6.5	5.9	5.7	6.1		5.8	5.9	7.6					
Thallium (Tl), dissolved	mg/L	<b>0.003</b>			<0.0000020	<0.0000020	0.000035	0.000002	<0.0000020	0.000003	0.000002		<0.0000020	<0.0000020	<0.0000020					
Tin (Sn), dissolved	mg/L				<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020					
Titanium (Ti), dissolved	mg/L	<b>1</b>			<0.00050	<0.00050	0.0291	<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050					
Uranium (U), dissolved	mg/L	<b>3</b>			0.00209	0.00345	0.00453	0.00302	0.00296	0.00337	0.00312		0.00431	0.00394	0.00365					
Vanadium (V), dissolved	mg/L				<0.00020	<0.00020	0.00592	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	0.00045					
Zinc (Zn), dissolved	mg/L	*			0.00138	0.00035	0.0284	<0.00010	0.00169	0.00149	0.00097		0.00097	0.00086	0.00568					
Zirconium (Zr), dissolved	mg/L				<0.00010	<0.00010	0.00032	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010					

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depth to Water (mbTOC)	m			1	2.095	1.882	1.044	0		0.881				1.61		0	0	0	0	
Well Depth	mbTOC			10.33	10.41	10.46	10.470	10.47	0.15	14.161				32.2		32.3	32.300	32.3	32.3	0.3
Total Suspended Solids	mg/L		12000	12300	19900	2240	2700	19.7		10500	367	302	428	314	177	170	155	65.4	68.6	106
pH (field)	pH units		6.17	5.9	6.13	6.08	5.8	5.91		6.46	6.03	5.9	6.02	6.17	6.24	6.16	5.82	5.85	6.15	6.33
pH (lab)	pH units		6.73	6.37	6.62	6.81	6.53	6.67		6.34	6.79	6.77	5	6.82	6.87	6.83	6.75	6.78	6.88	6.84
Specific Conductance (field)	µS/cm		812	466.3	868.1	734.2	675.1	469.5		439.1	3186	2693	3127	2579	3032	3176	3114	2897	2406	3127
Specific Conductance (lab)	µS/cm		853	852	620	666	688	503		585	3000	2850	2970	2990	2780	2920	3090	3000	2970	2830
Temperature (field)	C		-0.1	3.7	3.4	3.4	3.4	2.8		4.8	1		2	2.3	1.6	1.8	1.9	1.6	1.5	1.6
Dissolved Oxygen (field)	mg/L		3.96	3	2.3	3.2	2.1	4.1		4	2.12	3.27	3	3.8	3.8	5.3	4.6	9.9	5.7	
Dissolved Oxygen (field)	%			26.4	20	29	19	36		37				26.6	32	45	39	86	49	24.5
ORP (field)	mV			75.3	59.3	83.3	72.3	114.4		148.7			126	-0.2	-7	13.4	11.3	27.9	40.8	121.7
Hardness (from total)	mg/L		757	538	577	464	405	205		647	1810	2120	1760	1900	1810	1890	1870	2110	2180	1800
Hardness (from dissolved)	mg/L		378	327	365	351	356	260		291	2180	2020	1910	2020	1710	1840	1800	1890	2130	1800
Total Acidity	mg/L		125	246	74	34	108	20.6		185	359	395	352	398	302	866	508	546	169	646
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, total	mg/L		418	444	313	320	360	239		294	1810	1840	997	1670	1730	2000	1680	1820	1610	1670
Alkalinity, bicarbonate HCO3	mg/L		510	542	381	391	439	292		359	2210	2240	1220	2040	2110	2430	2050	2220	1960	2040
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloride	mg/L		2.5	0.95	1	1.2	0.89	1		0.58	3.4	3.8	2.8	3.5	3.4	4	3.2	4	3.3	1.1
Fluoride	mg/L	*	0.19	0.22	0.2	0.22	0.18	0.16		0.17	1.3	1.3	1.3	1.3	1.2	1.4	1.3	1.3	1.3	1.2
Sulphate, dissolved	mg/L	1000	47.8	31.3	31.8	28.3	29.7	28.1		28.4	12	1.01	5.19	1.08	1.76	9.99	9.31	9.05	8.26	9.94
Ammonia (N)	mg/L	*	0.67	0.53	0.67	0.28	0.24	0.033		0.28	0.3	0.24	0.28	0.23	0.24	0.24	0.23	0.22	0.27	0.24
Nitrite (N)	mg/L	*	0.0076	0.009	0.0069	<0.0020	0.0142	0.005		0.0101	<0.0020	<0.0020	<0.0020	<0.0020	<0.020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Nitrate (N)	mg/L	400	0.0435	0.072	0.125	0.147	0.0768	0.184		0.0977	0.0075	0.0051	0.002	0.0045	<0.020	0.0035	<0.0020	<0.0020	0.0024	<0.0020
Nitrite & Nitrate, as N	mg/L	400	0.0511	0.081	0.132	0.147	0.091	0.189		0.108	0.0075	0.0051	0.002	0.0045	<0.020	0.0035	<0.0020	<0.0020	0.0024	<0.0020
Phosphorus, total-colourimetric	mg/L		13.4	0.0148	0.0208	0.118	0.0811	0.0564		3.89	0.483	0.253	0.252	0.0122	0.0141	0.0749	0.0508	0.064	0.0759	0.086
Phosphorus, Total Dissolved	mg/L		0.0145	0.0144	0.0054	0.0101	0.0839	0.016		0.974	0.0058	0.0085		0.0132	0.0128	0.0263	0.0512	0.0132	0.063	0.0183
Dissolved Organic Carbon	mg/L			1.35	0.64	1.15	<0.50	0.65		0.88			2.12	0.75	<0.50	0.56	<0.50	<0.50	0.95	<0.50
Aluminum (Al), total	mg/L		80.4	46.2	40.6	40.8	19.2	0.554		111	6.97	4.13	3.01	0.848	1.46	1.99	1.81	0.773	1.17	2.13
Antimony (Sb), total	mg/L		0.00038	0.000271	0.00046	0.00037	0.00032	0.000029		0.00044	0.000163	0.000083	0.000058	<0.000050	<0.000050	<0.00020	0.000032	<0.00010	<0.00010	<0.00010
Arsenic (As), total	mg/L		0.0508	0.0685	0.0653	0.0346	0.0296	0.00252		0.0665	0.00451	0.00302	0.00248	0.00105	0.00101	0.00111	0.00105	0.00095	0.00086	0.00123
Barium (Ba), total	mg/L		1.8	2.03	1.81	0.977	0.65	0.0769		2.16	0.458	0.469	0.423	0.406	0.378	0.409	0.393	0.439	0.441	0.384
Beryllium (Be), total	mg/L		0.0064	0.00409	0.00354	0.00179	0.00108	0.00003		0.00435	0.00109	0.00125	0.00111	0.00109	0.00108	0.00114	0.00106	0.00122	0.00118	0.0011
Bismuth (Bi), total	mg/L		0.00305	0.0016	0.00089	0.00112	0.000549	<0.000010		0.0024	0.00121	0.000741	0.00022	0.000185	0.000202	0.00021	0.000209	0.000059	0.000079	0.000243
Boron (B), total	mg/L		<0.25	<0.050	<0.25	<0.050	<0.010	0.012		<0.10	<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	0.013	<0.050	<0.050	<0.050
Cadmium (Cd), total	mg/L		0.00615	0.0131	0.0117	0.00665	0.00354	0.000125		0.0103	0.00257	0.00131	0.0043	0.000711	0.00108	0.0017	0.00059	0.000293	0.000683	0.00077
Calcium (Ca), total	mg/L		204	157	179	135	128	70.5		148	599	699	587	637	613	629	632	700	731	594
Chromium (Cr), total	mg/L		0.215	0.231	0.159	0.159	0.0768	0.00152		0.364	0.0215	0.0168	0.0134	0.00285	0.00398	0.0051	0.00435	0.00197	0.00224	0.00408
Cobalt (Co), total	mg/L		0.115	0.132	0.108	0.0595	0.0385	0.00146		0.112	0.00745	0.00488	0.00412	0.00141	0.0016	0.00188	0.00166	0.00104	0.0011	0.0026
Copper (Cu), total	mg/L		0.415	0.582	0.565	0.23	0.159	0.00378		0.562	0.026	0.0145	0.0171	0.00547	0.00715	0.0094	0.00774	0.00287	0.00386	0.00948
Iron (Fe), total	mg/L		170	115	126	84.3	51.2	1.65		213	38.5	39.2	28.2	27.1	28.5	29.7	28.5	31.2	32.1	29.4
Lead (Pb), total	mg/L		0.27	0.424	0.423	0.162	0.116	0.00115		0.415	0.0657	0.0338	0.0296	0.0146	0.0129	0.0157	0.0125	0.00598	0.00777	0.0157
Lithium (Li), total	mg/L		0.0773	0.0545	0.0399	0.0377	0.0218	0.00334		0.0997	0.207	0.266	0.216	0.242	0.237	0.23	0.227	0.251	0.258	0.224
Magnesium (Mg), total	mg/L		60.3	35.7	31.4	30.8	20.5	6.96		67.3	75.1	90.7	70.4	75	66.8	77.7	70	87.1	85	77.2
Manganese (Mn), total	mg/L		5.04	4.99	5.62	2.29	1.85	0.142		2.79	4.68	5.38	4.32	4.68	5	5.06	5.02	5.4	5.8	4.89
Mercury (Hg), total	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Molybdenum (Mo), total	mg/L		0.00436	0.00592	0.00828	0.003	0.00165	0.000486		0.0038	0.00393	0.00348	0.00257	0.000719	0.000933	0.00084	0.000714	0.00035	0.00037	0.00054
Nickel (Ni), total	mg/L		0.254	0.275	0.222	0.138	0.0814	0.00321		0.277	0.012	0.00777	0.00569	0.00186	0.00249	0.0031	0.00274	0.00167	0.00185	0.00351
Phosphorus (P), total	mg/L		5.91	5.16	10.5	2.16	1.43	0.0172		10.7	0.429	0.233	0.241	0.065	0.095	0.123	0.074	0.062	0.076	0.186
Potassium (K), total	mg/L		16	9.41	7.2	8.5	5.4	1.73		19.1	9.78	10.9	8.43	8.65	8.34	8.3	8.01	9.5	9.5	8.5
Selenium (Se), total	mg/L		0.00297	0.00315	0.00232	0.0025	0.00234	0.00162		0.00443	0.00097	0.000367	0.000218	0.000096	0.000153	<0.00040	0.000166	<0.00020	<0.00020	0.00029

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10S	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D	MW15-10D
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L		68.9	50.8	40.1	46.6	29.1	4.16		113	41.8	49.2	36.8	39.6	33.7	35.8	35.9	39.8	41.6	36.8
Silver (Ag), total	mg/L		0.00764	0.0105	0.00773	0.00476	0.00289	0.000015		0.0109	0.00173	0.000677	0.000657	0.000385	0.000694	0.00063	0.000627	0.000066	0.000093	0.000563
Sodium (Na), total	mg/L		22.5	13.9	10.8	10.3	6.18	5.1		2.8	21.6	24.2	24	22.2	20	22.2	20.1	23.4	24.4	21.2
Strontium (Sr), total	mg/L		0.96	0.771	0.814	0.623	0.652	0.319		0.643	2.36	2.81	2.5	2.74	2.82	2.39	2.87	2.72	2.99	2.53
Sulphur (S), total	mg/L		<75	<15	<75	<15	9.4	7.3		<30	<15	<15	<15	<15	<15	<30	3.8	<15	<15	<15
Thallium (Tl), total	mg/L		0.00152	0.000609	0.000458	0.000698	0.000304	0.000008		0.00158	0.000107	0.000034	0.000036	0.000024	0.000012	<0.000020	0.000019	<0.000010	<0.000010	0.000018
Tin (Sn), total	mg/L		0.0014	0.00036	<0.0010	<0.0010	0.00037	<0.00020		<0.0020	0.00036	<0.00020	<0.00020	<0.00020	<0.00020	<0.0020	<0.00020	<0.0010	<0.0010	<0.0010
Titanium (Ti), total	mg/L		0.646	0.288	0.578	0.872	0.523	0.0236		1.64	0.277	0.214	0.119	0.0415	0.0592	0.078	0.0791	0.027	0.056	0.079
Uranium (U), total	mg/L		0.0219	0.0236	0.0193	0.00915	0.00709	0.00141		0.0138	0.000813	0.000682	0.0018	0.000364	0.000371	0.000381	0.000342	0.000383	0.000344	0.000364
Vanadium (V), total	mg/L		0.262	0.151	0.172	0.131	0.0817	0.00184		0.295	0.0207	0.0127	0.0095	0.00388	0.00524	0.0066	0.00641	0.0031	0.0042	0.0075
Zinc (Zn), total	mg/L		0.917	1.16	1.04	0.587	0.333	0.0086		1.54	0.0426	0.0335	0.0192	0.007	0.0095	0.015	0.0122	0.007	0.008	0.0133
Zirconium (Zr), total	mg/L		0.00518	0.0016	0.00492	0.0018	0.00161	0.00045		0.0123	0.0039	0.00278	0.00073	0.00157	0.00245	0.0017	0.00219	0.00198	0.00345	0.00187
Aluminum (Al), dissolved	mg/L		0.00818	0.00281	0.00427	0.00134	0.00571	0.00225		0.0162	0.438	0.298	0.243	0.0298	0.00948	0.0122	0.195	0.0481	0.0333	0.254
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.000055	0.000195	0.0003	0.000101	0.000092	<0.000020		0.000058	0.000077	0.000064	0.000042	<0.000020	<0.000020	<0.000020	<0.000020	<0.00010	<0.00010	<0.00010
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.0117	0.00966	0.00488	0.00351	0.00846	0.000799		0.00206	0.00167	0.00109	0.000782	0.000203	0.000234	0.000171	0.000637	0.0002	0.00011	0.00043
Barium (Ba), dissolved	mg/L	<b>10</b>	0.126	0.119	0.148	0.146	0.128	0.0916		0.126	0.442	0.415	0.415	0.266	0.227	0.273	0.304	0.277	0.277	0.356
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	0.000041	0.000026	0.000022	0.000016	0.000017	0.00001		0.000018	0.00119	0.00105	0.00103	0.00054	0.000355	0.000411	0.000864	0.000603	0.000452	0.00115
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	0.000012	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.000025	<0.000025	<0.000025
Boron (B), dissolved	mg/L		0.011	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	0.011	0.015	0.011	0.013	0.012	0.011	<0.050	<0.050	<0.050
Cadmium (Cd), dissolved	mg/L	*	0.00019	<b>0.000798</b>	<b>0.00133</b>	<b>0.00139</b>	<b>0.000911</b>	0.000154		<b>0.00128</b>	0.000148	0.000172	0.000135	0.000017	0.000032	0.000061	0.000021	0.000045	0.000032	<0.000025
Calcium (Ca), dissolved	mg/L		132	117	133	126	124	88.6		102	725	673	147	593	579	620	605	641	713	597
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	0.00027	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	0.00539	0.00155	0.00113	<0.00010	<0.00010	<0.00010	0.00056	<0.00050	<0.00050	<0.00050
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.00286	0.00665	<b>0.0122</b>	0.00802	0.00578	0.00144		0.00308	0.00127	0.000833	0.000503	0.000213	0.000192	0.000211	0.00018	0.000257	0.000173	0.000138
Copper (Cu), dissolved	mg/L	*	0.000182	0.000559	0.00285	0.00118	0.000462	0.0358		0.000381	0.000262	0.000993	0.000151	0.00216	0.000053	0.00005	<0.000050	0.00052	0.00031	<0.00025
Iron (Fe), dissolved	mg/L		4.25	0.241	0.0036	0.0011	2.64	0.0315		2.15	36.6	30	26.5	1.35	0.198	0.199	24.4	3.35	0.176	25.5
Lead (Pb), dissolved	mg/L	*	0.000153	0.000019	0.000187	0.000011	0.000151	<0.0000050		0.000287	0.00136	0.00123	0.000346	0.000009	0.000029	0.000008	0.000248	0.00014	0.000032	0.000213
Lithium (Li), dissolved	mg/L		0.0065	0.00498	0.00583	0.00475	0.0041	0.00292		0.00348	0.249	0.237	0.235	0.249	0.201	0.216	0.184	0.235	0.248	0.246
Magnesium (Mg), dissolved	mg/L		11.6	8.29	8.06	8.64	11.1	9.37		8.89	90.8	83.4	78.9	71.1	64.2	71	70.9	71	84.1	74.8
Manganese (Mn), dissolved	mg/L		0.484	1.09	1.56	1.27	0.854	0.177		0.455	5.41	5.09	4.69	5.16	4.62	5.2	4.88	5.08	5.67	4.68
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00158	0.00199	0.00416	0.00255	0.00106	0.000371		0.000186	0.00132	0.00045	0.000488	0.000347	0.000363	0.000342	0.000151	<0.00025	<0.00025	<0.00025
Nickel (Ni), dissolved	mg/L	*	0.0031	0.0101	0.0204	0.0158	0.00981	0.00796		0.0052	0.00233	0.00145	0.000994	0.000507	0.000598	0.000566	0.000598	0.00087	0.00079	0.0004
Phosphorus (P), dissolved	mg/L		0.0168	<0.0020	0.0052	<0.0020	<0.0020	0.0031		<0.0020	0.0151	0.0039	0.012	0.0125	0.0064	<0.0020	0.0062	<0.010	<0.010	<0.010
Potassium (K), dissolved	mg/L		3.12	2.43	2.37	2.01	2.16	2.11		2.18	10.2	9.83	10.2	8.57	7.95	8.54	7.8	8.45	8.88	7.73
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.00172	0.00187	0.00195	0.00242	0.00222	0.00228		0.0021	0.000066	0.000043	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.00020	<0.00020	<0.00020
Silicon (Si), dissolved	mg/L		5.31	4.48	4.44	4.99	4.49	3.86		3.85	39.9	41.8	36.5	38	28.3	34.5	28.1	36.5	37.4	34.5
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	0.000008	<0.0000050	<0.0000050	<0.0000050		<0.0000050	0.000008	0.000012	0.00001	<0.0000050	0.000009	<0.0000050	0.000006	<0.000025	<0.000025	<0.000025
Sodium (Na), dissolved	mg/L		25.9	12.8	10.7	9.38	7.08	3.31		2.15	25	23.6	30.9	20.6	19	21	19.7	20.7	23.1	21.4
Strontium (Sr), dissolved	mg/L		0.668	0.562	0.605	0.555	0.574	0.371		0.44	2.78	2.8	2.74	2.77	2.59	2.8	2.64	2.5	2.81	2.41
Sulphur (S), dissolved	mg/L		16.8	9.9	8.7	9.7	9.8	9.7		8.1	3.6	4	4.6	<3.0	<3.0	3.4	<3.0	4	<15	<15
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	0.000002	0.000006	0.00001	0.000009	0.000006	<0.0000020		0.000005	0.000015	0.000003	0.000003	0.000003	0.000003	0.000002	0.000002	0.000014	<0.000010	<0.000010
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	0.00023	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.0010	<0.0010	<0.0010
Titanium (Ti), dissolved	mg/L	<b>1</b>	0.00057	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	0.00209	0.00076	0.00111	<0.00050	<0.00050	<0.00050	0.00062	<0.0025	<0.0025	<0.0025
Uranium (U), dissolved	mg/L	<b>3</b>	0.00433	0.0024	0.00317	0.00269	0.00269	0.00175		0.000619	0.000649	0.000562	0.000984	0.000258	0.000247	0.000271	0.000225	0.000407	0.000343	0.000265
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	0.00064	0.00155	<0.00020	<0.00020	<0.00020	0.00184	<0.0010	<0.0010	0.0019
Zinc (Zn), dissolved	mg/L	*	0.00744	0.0142	0.0191	0.0137	0.0162	0.00493		0.016	0.0105	0.0217	0.00957	0.00224	0.00197	0.00228	0.00293	0.00338	0.00269	0.00345
Zirconium (Zr), dissolved	mg/L		0.00011	<0.00010	<0.00010	<0.00010	0.00022	<0.00010		<0.00010	0.00158	0.00209	0.00155	0.00144	0.00189	0.00195	0.00215	0.0018	0.00157	0.00168



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	MW15-10D	MW15-10D	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11D	MW15-11D	MW15-11D	MW15-11D	MW15-11D	MW15-11D	
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m		0	0			2.98	2.399	2.049	1.236	1.826	2.514	1.887	2.501	2.881	0.63	0.762	1.6	1.338	0.613	
Well Depth	mbTOC							8.15	8.153	8.155	8.153	8.152	2.725	8.157	8.156	1.98		36.1	36.092	36.097	0.549
Total Suspended Solids	mg/L		116	158	88	464		21.3	20.3	198	14	57.7		8.8	1490			9.5	65.3	95	
pH (field)	pH units		6.43	7.38	7.67	7.79		7.46	7.51	7.5	7.21	7.33		7.64	9.14			7.41	7.55	7.53	
pH (lab)	pH units		6.96	7.22	7.98	8.03		8.22	7.93	7.85	7.83	7.97		8.23	8.06			8.17	8.01	7.87	
Specific Conductance (field)	µS/cm		2733	2906	621	732		577.7	565.7	570.1	465.7	593.1		535.7	684.6			570.8	571.8	567.8	
Specific Conductance (lab)	µS/cm		2890	2910	680	701		556	570	568	613	594		607	620			546	567	566	
Temperature (field)	C		2.1	-0.1	4.3	0.59		2.3	2.8	2.4	1.8	1.3		4.1	-0.2			2.1	2.5	2	
Dissolved Oxygen (field)	mg/L		3.7	6.7	1.2	3.2		2	1.4	1	1.2	1.36		2.5	13.1			2.7	1.6	2.2	
Dissolved Oxygen (field)	%		32	54				17	13	9	11	11.3		22	104			21	13	19	
ORP (field)	mV		30.5	31		448		-64.8	-81.3	-54.3	-52.3	173.4		-74.6	-52.7			-37	-58.2	-60.5	
Hardness (from total)	mg/L		1990	1880	218	364		304	231	307	343	306		323	392			245	328	308	
Hardness (from dissolved)	mg/L		1870	1970	226	368		299	314	304		310		321	321			290	299	300	
Total Acidity	mg/L		423	441	1.01	0.89		1.36	3.9	5.46	<0.50	3.44		3.3	10.8			0.84	7.39	4.71	
Acidity (pH 4.5)	mg/L		<1.0	<1.0	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50		<1.0	<1.0			<0.50	<0.50	<0.50	
Alkalinity, total	mg/L		1770	1890	188	268		232	245	235	245	247		251	259			226	235	232	
Alkalinity, bicarbonate HCO3	mg/L		2150	2310	230	327		283	298	286	299	301		307	316			276	286	283	
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50			<0.50	<0.50	<0.50	
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50			<0.50	<0.50	<0.50	
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50			<0.50	<0.50	<0.50	
Chloride	mg/L		1.6	1.7	24	0.93		0.99	1.2	1.1	1.2	1		0.92	1.2			0.84	1.3	1.2	
Fluoride	mg/L	*	1.3	1.3	0.19	0.16		0.17	0.16	0.15	0.13	0.15		0.14	0.14			0.17	0.16	0.15	
Sulphate, dissolved	mg/L	1000	4.06	<0.50	128	138		61.5	65.1	73.7	100	80.9		90.9	88.7			63.1	65.9	74.5	
Ammonia (N)	mg/L	*	0.29	0.18	0.64	0.054		0.3	0.056	0.061	0.062	0.1		0.048	0.052			0.19	0.081	0.071	
Nitrite (N)	mg/L	*	<0.0020	<0.0020	0.0216	0.01		<0.0020	<0.0020	0.0035	0.0031	<0.0020		<0.0020	<0.0020			<0.0020	<0.0020	<0.0020	
Nitrate (N)	mg/L	400	0.002	0.003	0.0871	0.0106		<0.0020	0.0024	0.0022	0.0808	<0.0020		0.0437	0.0326			<0.0020	0.0025	<0.0020	
Nitrite & Nitrate, as N	mg/L	400	0.002	0.003	0.109	0.0206		<0.0020	0.0024	0.0057	0.0839	<0.0020		0.0437	0.0326			<0.0020	0.0025	<0.0020	
Phosphorus, total-colourimetric	mg/L		0.0751	0.0787	0.122	0.35		0.0193	0.0168	0.122	0.0168	0.0517		0.0046	0.93			0.008	0.0376	0.0361	
Phosphorus, Total Dissolved	mg/L		0.0183	0.0143	0.0114			0.0206	0.0132	0.0118		0.0384		0.005	0.0696			0.0058	0.0351	0.0041	
Dissolved Organic Carbon	mg/L		<0.50	0.56		4.44		2.64	2.41	2.59	2.14	1.62		2.59	18.9			3.02	3.06	2.64	
Aluminum (Al), total	mg/L		0.9	2	0.867	1.05		0.142	0.0624	0.957	0.333	0.128		0.0662	1.99			0.0366	0.313	0.351	
Antimony (Sb), total	mg/L		<0.00010	0.0001	0.00285	0.000495		0.000171	0.000119	0.000267	0.000118	0.000062		0.000073	0.000162			0.000065	0.000374	0.000309	
Arsenic (As), total	mg/L		0.00088	0.00103	0.0011	0.00422		0.0019	0.00169	0.00226	0.00173	0.000584		0.000997	0.00353			0.000221	0.0026	0.00246	
Barium (Ba), total	mg/L		0.411	0.386	0.11	0.213		0.0642	0.0393	0.0955	0.0612	0.0427		0.0399	0.153			0.0298	0.0917	0.0804	
Beryllium (Be), total	mg/L		0.00116	0.00103	0.000049	0.000086		0.000019	0.00001	0.000069	0.000022	0.000018		<0.000010	0.000223			0.000011	0.000022	0.000074	
Bismuth (Bi), total	mg/L		0.000156	0.000163	0.000026	0.000036		0.00001	<0.000010	0.000044	0.000013	<0.000010		<0.000010	<0.000010			<0.000010	0.000054	0.000042	
Boron (B), total	mg/L		<0.050	<0.050	0.017	<0.050		<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010			<0.010	<0.010	<0.010	
Cadmium (Cd), total	mg/L		0.00106	0.00105	0.000371	0.000998		0.000084	0.000046	0.000278	0.000285	0.000108		0.000363	0.000872			0.000029	0.000366	0.000234	
Calcium (Ca), total	mg/L		658	624	65.3	99.5		79.5	57.5	83.6	92.2	81.6		87.3	110			66.1	87.9	83.1	
Chromium (Cr), total	mg/L		0.00196	0.00442	0.0027	0.00423		0.0004	0.00024	0.00269	0.0011	0.00061		0.00015	0.00992			0.00024	0.00083	0.0009	
Cobalt (Co), total	mg/L		0.00115	0.0018	0.00121	0.00318		0.000547	0.000529	0.00245	0.000717	0.000347		0.000218	0.00286			0.000057	0.000376	0.000502	
Copper (Cu), total	mg/L		0.00541	0.00855	0.00851	0.0143		0.00155	0.00073	0.00845	0.00293	0.00156		0.00075	0.00699			0.00057	0.00346	0.00234	
Iron (Fe), total	mg/L		28.9	29.9	3.51	7.45		2.44	1.46	5.29	2.72	1.57		1.56	16.1			0.691	2.16	2.05	
Lead (Pb), total	mg/L		0.014	0.0116	0.00498	0.00696		0.000753	0.000367	0.00442	0.00125	0.00106		0.000633	0.0136			0.000455	0.0391	0.0245	
Lithium (Li), total	mg/L		0.228	0.228	0.0106	0.0098		0.00981	0.00634	0.0108	0.0109	0.0096		0.00874	0.0122			0.00795	0.0108	0.0109	
Magnesium (Mg), total	mg/L		84.5	78.6	13.3	28.2		25.6	17.7	23.8	27.5	24.9		25.5	28.3			19.4	26.4	24.5	
Manganese (Mn), total	mg/L		5.22	4.69	0.31	4.03		0.84	0.42	0.623	0.417	0.256		0.264	0.789			0.112	0.184	0.186	
Mercury (Hg), total	mg/L		<0.000020	<0.000020	0.000004	<0.000020		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020			<0.000020	<0.000020	<0.000020	
Molybdenum (Mo), total	mg/L		0.00041	0.00064	0.0117	0.00835		0.00128	0.000812	0.00296	0.000949	0.000592		0.000388	0.00443			0.000409	0.000826	0.000741	
Nickel (Ni), total	mg/L		0.0019	0.00309	0.00367	0.00799		0.00111	0.00108	0.00352	0.00262	0.00076		0.00114	0.0106			<0.00010	0.00055	0.00072	
Phosphorus (P), total	mg/L		0.116	0.08	0.131	0.286		0.0233	0.0159	0.158	0.0418	0.0333		0.0172	0.985			0.0078	0.0411	0.0438	
Potassium (K), total	mg/L		9.4	8.7	11.1	5.27		4.03	2.78	4.53	4.31	4.19		4.21	5.17			3.21	4.17	4.13	
Selenium (Se), total	mg/L		<0.00020	0.00026	0.00139	0.000061		<0.000040	<0.000040	0.00005	0.000059	<0.000040		0.000134	<0.000040			<0.000040	0.000051	0.000053	

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	MW15-10D	MW15-10D	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11S	MW15-11D	MW15-11D	MW15-11D	MW15-11D	MW15-11D	MW15-11D	
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Silicon (Si), total	mg/L		38.1	35.1	4.66	5.67		4.52	3.2	5.32	4.74	4.49		4.42	6.35				3.59	4.58	4.62
Silver (Ag), total	mg/L		0.00056	0.000518	0.00292	0.00345		0.000388	0.000069	0.00376	0.000952	0.000244		0.000019	0.000315				0.00015	0.00117	0.000438
Sodium (Na), total	mg/L		24.1	22	43	5.62		3.59	2.13	2.77	3.28	2.7		3.57	3.27				2.76	3.28	3.09
Strontium (Sr), total	mg/L		2.51	2.26	0.24	0.529		0.472	0.365	0.509	0.536	0.534		0.497	0.517				0.435	0.541	0.519
Sulphur (S), total	mg/L		<15	<15	36.7	43		21.8	17.3	23.7	30.5	27.2		32	28.5				18.2	25.5	23.7
Thallium (Tl), total	mg/L		<0.000010	0.000011	0.000036	0.000045		0.000007	0.000003	0.00004	0.000007	0.000012		0.0000029	0.0000581				0.000002	0.000018	0.000019
Tin (Sn), total	mg/L		<0.0010	<0.0010	0.00041	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020				<0.00020	<0.00020	0.00027
Titanium (Ti), total	mg/L		0.03	0.086	0.0837	0.0552		0.0075	0.0039	0.0754	0.0319	0.0086		0.0036	0.0797				<0.0020	0.0133	0.0151
Uranium (U), total	mg/L		0.000316	0.000297	0.00948	0.00946		0.0104	0.00958	0.0129	0.0141	0.012		0.00865	0.0221				0.00881	0.0127	0.0119
Vanadium (V), total	mg/L		0.004	0.0067	0.00354	0.00361		0.00041	0.00025	0.00353	0.00134	0.00046		<0.00020	0.00937				<0.00020	0.00093	0.00111
Zinc (Zn), total	mg/L		0.0081	0.0125	0.0196	0.0282		0.0035	0.0026	0.0217	0.00996	0.0058		0.0059	0.0674				0.0035	0.0732	0.0529
Zirconium (Zr), total	mg/L		0.00179	0.00188	0.00079	0.00161		0.00113	0.00091	0.00198	0.00164	0.00182		0.00126	0.00605				0.00092	0.00147	0.00176
Aluminum (Al), dissolved	mg/L		0.289	0.285	0.0462	0.00302		0.00077	0.00277	0.00112		0.0008		0.00768	0.00288				0.00149	0.00296	0.00085
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	<0.00020	<0.00010	0.00286	0.000412		0.000134	0.000177	0.000098		0.000046		0.000076	0.000114				0.000059	0.000085	0.000099
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.00041	0.00033	0.000407	0.00284		0.00088	0.00248	0.000749		0.000273		0.000853	0.00189				0.000154	0.000438	0.000282
Barium (Ba), dissolved	mg/L	<b>10</b>	0.392	0.384	0.0722	0.143		0.055	0.0485	0.0416		0.0425		0.0381	0.0369				0.0316	0.0334	0.0342
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	0.00113	0.00112	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010		<0.000010		<0.000010	<0.000010				<0.000010	<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L		<0.000050	<0.000025	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050		<0.0000050		<0.0000050	<0.0000050				<0.0000050	<0.0000050	<0.0000050
Boron (B), dissolved	mg/L		<0.10	<0.050	0.018	<0.010		<0.010	<0.010	<0.010		<0.010		<0.010	<0.010				<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*	<0.000050	<0.000025	0.000171	0.000045		0.000008	0.000007	<0.0000050		<0.0000050		0.000022	<0.0000050				<0.0000050	<0.0000050	<0.0000050
Calcium (Ca), dissolved	mg/L		618	656	68.5	100		80.5	83	82.3		84.2		86.8	86.4				75.9	77.3	80.7
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.0010	<0.00050	0.00021	<0.00010		<0.00010	<0.00010	<0.00010		<0.00010		<0.00010	<0.00010				<0.00010	<0.00010	<0.00010
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000117	0.000103	0.000564	0.00123		0.000348	0.000652	0.000682		0.00014		0.000147	0.000237				0.000046	0.000068	0.000117
Copper (Cu), dissolved	mg/L	*	<0.00050	<0.00025	0.00109	0.000684		<0.000050	0.00005	<0.000050		<0.000050		<0.000050	<0.000050				<0.000050	<0.000050	<0.000050
Iron (Fe), dissolved	mg/L		26.5	26.5	0.114	3.24		0.0016	1.67	0.0077		0.0581		1.32	0.912				0.001	0.969	<0.0010
Lead (Pb), dissolved	mg/L	*	0.000317	0.000223	0.000179	0.000021		<0.0000050	<0.0000050	<0.0000050		0.000007		0.00005	<0.0000050				<0.0000050	<0.0000050	0.000061
Lithium (Li), dissolved	mg/L		0.237	0.257	0.0097	0.00965		0.00997	0.0096	0.0103		0.0113		0.00928	0.0101				0.0101	0.00985	0.0108
Magnesium (Mg), dissolved	mg/L		80.5	80.1	13.4	28.5		23.9	25.9	23.9		24.2		25.4	25.5				24.4	25.6	23.8
Manganese (Mn), dissolved	mg/L		4.99	5.01	0.158	3.85		0.824	0.518	0.381		0.218		0.261	0.225				0.134	0.138	0.16
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	0.0000029	<0.0000020		<0.0000020	<0.0000020				<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	<0.00050	<0.00025	0.0103	0.00661		0.00137	0.00103	0.00201		0.000498		0.000321	0.000646				0.000419	0.000346	0.000633
Nickel (Ni), dissolved	mg/L	*	0.00072	0.00054	0.00193	0.00422		0.000819	0.00124	0.00143		0.000372		0.000893	0.000839				0.000087	0.000177	0.000282
Phosphorus (P), dissolved	mg/L		<0.020	<0.010	0.0165	0.0142		<0.0020	0.0035	<0.0020		0.0034		0.0037	0.0037				<0.0020	0.0041	0.0034
Potassium (K), dissolved	mg/L		8.83	8.43	11.5	4.86		3.73	3.99	4.12		4.08		4.06	4.12				4.05	3.92	4.05
Selenium (Se), dissolved	mg/L	<b>0.01</b>	<0.00040	<0.00020	0.00135	0.000045		<0.000040	<0.000040	<0.000040		<0.000040		0.000059	<0.000040				<0.000040	<0.000040	<0.000040
Silicon (Si), dissolved	mg/L		39.2	37.9	3.17	4.34		4.77	3.95	3.98		4.23		3.96	4.3				4.49	3.86	3.98
Silver (Ag), dissolved	mg/L	*	<0.000050	<0.000025	0.000011	<0.0000050		<0.0000050	<0.0000050	<0.0000050		<0.0000050		0.000005	<0.0000050				<0.0000050	0.000005	<0.0000050
Sodium (Na), dissolved	mg/L		23	23	44.4	5.89		3.35	3.34	2.82		2.61		3.57	3.37				3.18	3.38	3
Strontium (Sr), dissolved	mg/L		2.58	2.51	0.242	0.534		0.488	0.498	0.513		0.498		0.537	0.509				0.487	0.496	0.499
Sulphur (S), dissolved	mg/L		<30	<15	37.9	43.4		22.1	23.6	22.4		24.5		30	29.1				22.6	23.4	22.2
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	<0.000020	<0.000010	0.000009	<0.0000020		0.000002	<0.0000020	0.000003		0.000002		<0.0000020	<0.0000020				<0.0000020	<0.0000020	0.000003
Tin (Sn), dissolved	mg/L		<0.0020	<0.0010	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020		<0.00020		<0.00020	<0.00020				<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.0050	<0.0025	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050		<0.00050		<0.00050	<0.00050				<0.00050	<0.00050	<0.00050
Uranium (U), dissolved	mg/L	<b>3</b>	0.000246	0.000258	0.00934	0.00832		0.00999	0.0139	0.0114		0.0141		0.00925	0.0111				0.01	0.0114	0.0115
Vanadium (V), dissolved	mg/L		<0.0020	0.0019	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020		<0.00020		<0.00020	<0.00020				<0.00020	<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*	0.0057	0.00548	0.00391	0.0135		<0.00010	0.00027	0.00049		0.00037		0.00203	0.00049				0.00067	0.00027	0.00105
Zirconium (Zr), dissolved	mg/L		0.0016	0.00191	<0.00010	0.0004		<0.00010	0.00131	<0.00010		0.0003		0.00146	0.00117				<0.00010	0.00156	0.00017

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-11D	MW15-11D	MW15-11D	MW15-11D	MW16-12S	MW16-12S	MW16-12S	MW16-12S	MW16-12S	MW16-12S	MW16-12D	MW16-12D	MW16-12D	MW16-12D	MW16-12D	MW16-13	MW16-13	MW16-13
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depth to Water (mbTOC)	m			1.272	1.885	4.057	1.000	1.108	1.162		1.529	0.331	0	0	0	0	0	0.474	1.75	1.172
Well Depth	mbTOC		0.549	2.873	36.226	4.161	7.000	5.325	5.324	0.3		5.334	27.000	27.642	27.648	0	27.644	27.642	4.382	4.428
Total Suspended Solids	mg/L						3490	3140	1380			11800	183	141	76.3	84.7	5.1			
pH (field)	pH units						6.53	6.54	6.66			6.91	6.27	6.46	6.53	6.56	6.83			
pH (lab)	pH units						6.93	6.93	7.02			7.17	6.91	6.96	6.98	7.51	7.19			
Specific Conductance (field)	µS/cm						1785	1425	1290			1293	1608	1242	1161	1467	1384			
Specific Conductance (lab)	µS/cm						1590	1610	1500			1360	1610	1510	1510	1510	1550			
Temperature (field)	C						2.7	3.8	2.2			5.3	2.6	2.8	2.5	3.4	3.7			
Dissolved Oxygen (field)	mg/L						5.4	4.8	5.3			3.3	2.4	6.2	2.4	1.23	4.3			
Dissolved Oxygen (field)	%						47	43	46			30	21	28	21	9.3	38			
ORP (field)	mV						-115	-54.3	-26.3			-27.2	23	45.6	45.7	164.3	25.1			
Hardness (from total)	mg/L						829	943	922			1160	852	859	830	862	812			
Hardness (from dissolved)	mg/L						754	709	746			723	908	752	766	820	901			
Total Acidity	mg/L						302	107	72.9			87	171	109	67.9	191	124			
Acidity (pH 4.5)	mg/L						<0.50	<0.50	<5.0			<1.0	<0.50	<0.50	<5.0	<0.50	<1.0			
Alkalinity, total	mg/L						909	882	776			832	931	870	878	904	972			
Alkalinity, bicarbonate HCO3	mg/L						1110	1080	947			1010	1140	1060	1070	1100	1190			
Alkalinity, hydroxide OH	mg/L						<0.50	<0.50	<0.50			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50			
Alkalinity, carbonate CO3	mg/L						<0.50	<0.50	<0.50			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50			
Alkalinity, PP carbonate CO3	mg/L						<0.50	<0.50	<0.50			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50			
Chloride	mg/L						2.2	2.7	2			1.2	2	2.2	1.9	0.71	1			
Fluoride	mg/L	*					0.72	0.88	0.85			1.1	1.1	1.1	1.1	0.012	1.1			
Sulphate, dissolved	mg/L	1000					11.9	3.72	<0.50			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50			
Ammonia (N)	mg/L	*					0.26	0.085	0.18			0.38	0.4	0.28	0.27	0.27	0.27			
Nitrite (N)	mg/L	*					<0.020	0.0046	0.0024			0.0038	<0.0020	<0.0020	0.0023	<0.0020	<0.0020			
Nitrate (N)	mg/L	400					<0.020	<0.0020	0.0037			<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020			
Nitrite & Nitrate, as N	mg/L	400					<0.020	0.0058	0.0061			0.004	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020			
Phosphorus, total-colourimetric	mg/L						0.442	0.465	0.308			1.62	0.166	0.223	0.138	0.0452	0.0132			
Phosphorus, Total Dissolved	mg/L						0.473	0.0682	0.298			1.66	0.175	0.252	0.125	0.0151	0.0076			
Dissolved Organic Carbon	mg/L						4.57	10.8	6.54			0.96	<0.50	<0.50	1.24	<0.50	<0.50			
Aluminum (Al), total	mg/L						34.6	25	22.3			145	1.71	0.904	0.655	0.361	0.0105			
Antimony (Sb), total	mg/L						0.000658	0.00031	0.0007			0.00103	0.000032	<0.00010	0.000032	<0.000020	<0.00010			
Arsenic (As), total	mg/L						0.0302	0.0219	0.0171			0.121	0.000201	0.0001	0.00007	0.000082	<0.00010			
Barium (Ba), total	mg/L						3.24	3.86	3.94			6.51	3.12	3.1	2.96	2.49	2.98			
Beryllium (Be), total	mg/L						0.00206	0.00176	0.00126			0.00784	0.000145	0.000115	0.000118	0.000106	0.000112			
Bismuth (Bi), total	mg/L						0.00149	0.00113	0.000828			0.00465	0.00001	<0.000050	<0.000010	<0.000050	<0.000025			
Boron (B), total	mg/L						0.021	<0.050	<0.050			<0.10	0.016	<0.050	0.017	0.012	<0.050			
Cadmium (Cd), total	mg/L						0.00182	0.00192	0.000972			0.00505	0.000071	0.00007	0.000031	0.000048	0.000043			
Calcium (Ca), total	mg/L						165	195	189			177	185	184	184	179	167			
Chromium (Cr), total	mg/L						0.105	0.0686	0.0618			0.428	0.00515	0.00256	0.0021	0.00135	<0.00050			
Cobalt (Co), total	mg/L						0.0694	0.122	0.104			0.181	0.00114	0.000415	0.000404	0.000382	<0.000025			
Copper (Cu), total	mg/L						0.221	0.188	0.131			0.873	0.00593	0.00413	0.00282	0.000764	<0.00025			
Iron (Fe), total	mg/L						159	139	138			241	10.4	7.88	7.67	5.55	3.42			
Lead (Pb), total	mg/L						0.06	0.0496	0.0337			0.206	0.000757	0.00068	0.000432	0.000207	0.00004			
Lithium (Li), total	mg/L						0.453	0.468	0.455			0.644	0.422	0.419	0.411	0.372	0.474			
Magnesium (Mg), total	mg/L						101	111	109			173	94.4	96.9	90.3	101	96			
Manganese (Mn), total	mg/L						2.38	1.95	1.52			3.01	0.405	0.352	0.327	0.307	0.247			
Mercury (Hg), total	mg/L						<0.000020	<0.000020	<0.000020			<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020			
Molybdenum (Mo), total	mg/L						0.00431	0.0021	0.00447			0.0132	0.00033	<0.00025	0.000127	<0.000050	<0.00025			
Nickel (Ni), total	mg/L						0.151	0.201	0.162			0.715	0.00427	0.00161	0.00139	0.00137	<0.00010			
Phosphorus (P), total	mg/L						1.21	0.848	0.997			4.92	0.346	0.189	0.148	0.0715	<0.010			
Potassium (K), total	mg/L						22.9	21.4	20.3			67.1	11.6	12	12	12.1	11.5			
Selenium (Se), total	mg/L						0.000836	0.00051	0.00039			0.00276	0.000064	<0.00020	<0.000040	<0.000040	<0.00020			

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW15-11D	MW15-11D	MW15-11D	MW15-11D	MW16-12S	MW16-12S	MW16-12S	MW16-12S	MW16-12S	MW16-12D	MW16-12D	MW16-12D	MW16-12D	MW16-12D	MW16-12D	MW16-13	MW16-13	MW16-13
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L						64.8	46.1	51.1			154	19.5	17.5	17.6		15	18.6		
Silver (Ag), total	mg/L						0.000864	0.00025	0.000177			0.00253	0.000821	0.000292	0.00029		0.000271	0.000067		
Sodium (Na), total	mg/L						43.1	39.9	40.2			30.7	31.6	33.3	30.7		34.4	32.5		
Strontium (Sr), total	mg/L						2.38	2.29	2.39			2.13	2.47	2.04	2.36		2.08	2.13		
Sulphur (S), total	mg/L						4.1	<15	<15			<30	<3.0	<15	<3.0		<3.0	<15		
Thallium (Tl), total	mg/L						0.000971	0.000521	0.000385			0.00367	0.000028	0.000025	0.000013		0.000008	<0.000010		
Tin (Sn), total	mg/L						0.00129	<0.0010	0.0014			0.003	<0.00020	<0.0010	0.00021		<0.00020	<0.0010		
Titanium (Ti), total	mg/L						2.38	1.05	1.46			7.44	0.0769	0.035	0.0267		0.0258	<0.0025		
Uranium (U), total	mg/L						0.00633	0.00599	0.00341			0.0148	0.00148	0.00105	0.000777		0.000509	0.000298		
Vanadium (V), total	mg/L						0.129	0.0821	0.081			0.475	0.00736	0.0042	0.00308		0.00204	<0.0010		
Zinc (Zn), total	mg/L						0.521	0.668	0.565			2.58	0.0102	0.0073	0.268		0.00422	0.00325		
Zirconium (Zr), total	mg/L						0.0107	0.00775	0.0282			0.0293	0.0404	0.0365	0.0425		0.0418	0.0342		
Aluminum (Al), dissolved	mg/L						0.00092	<0.00050	0.00118			0.0078	0.0116	0.00258	0.00169		0.00215	0.0107		
Antimony (Sb), dissolved	mg/L	0.2					0.000123	0.000093	0.000076			0.00061	<0.000020	<0.000020	<0.000020		<0.000020	<0.00010		
Arsenic (As), dissolved	mg/L	0.05					0.00336	0.000187	0.000209			0.0257	0.00006	<0.000020	<0.000020		0.000032	<0.00010		
Barium (Ba), dissolved	mg/L	10					1.84	1.18	1.4			3.15	3.31	2.91	2.55		2.48	2.93		
Beryllium (Be), dissolved	mg/L	0.053					<0.000010	<0.000010	<0.000010			<0.000050	0.000113	0.00008	0.000055		0.000096	0.000093		
Bismuth (Bi), dissolved	mg/L						<0.0000050	<0.0000050	<0.0000050			<0.000025	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.000025		
Boron (B), dissolved	mg/L						0.024	0.019	0.018			<0.050	0.02	0.017	0.015		0.012	<0.050		
Cadmium (Cd), dissolved	mg/L	*					0.000038	0.000012	0.000016			0.000034	0.000007	0.000006	0.000007		0.000028	0.000042		
Calcium (Ca), dissolved	mg/L						161	141	160			141	191	151	164		178	202		
Chromium (Cr), dissolved	mg/L	0.01					<0.00010	<0.00010	<0.00010			<0.00050	<0.00010	<0.00010	<0.00010		<0.00010	<0.00050		
Cobalt (Co), dissolved	mg/L	0.009					0.0324	0.0715	0.057			0.0255	0.000093	0.000041	0.00007		<0.0000050	<0.000025		
Copper (Cu), dissolved	mg/L	*					<0.000050	<0.000050	<0.000050			<0.00025	<0.000050	<0.000050	0.000124		<0.000050	<0.00025		
Iron (Fe), dissolved	mg/L						101	11.3	0.294			17.2	3.97	0.518	0.0032		3.57	4.1		
Lead (Pb), dissolved	mg/L	*					<0.0000050	<0.0000050	<0.0000050			<0.000025	0.00004	<0.0000050	<0.0000050		0.000009	0.000053		
Lithium (Li), dissolved	mg/L						0.41	0.422	0.416			0.444	0.47	0.425	0.386		0.408	0.427		
Magnesium (Mg), dissolved	mg/L						85.5	87	84.3			90.4	104	91	86.4		91.4	96		
Manganese (Mn), dissolved	mg/L						1.87	1.22	0.968			0.601	0.291	0.266	0.257		0.248	0.251		
Mercury (Hg), dissolved	mg/L	0.001					<0.0000020	<0.0000020	<0.0000020			<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020		
Molybdenum (Mo), dissolved	mg/L	10					0.00187	0.00148	0.00149			0.00588	<0.000050	<0.000050	<0.000050		<0.000050	<0.00025		
Nickel (Ni), dissolved	mg/L	*					0.0218	0.0591	0.0567			0.105	0.000238	0.000147	0.000249		<0.000020	0.00016		
Phosphorus (P), dissolved	mg/L						0.0056	0.0046	0.0039			0.035	0.0038	0.0034	0.0034		0.0052	<0.010		
Potassium (K), dissolved	mg/L						10.4	10.9	10.8			9.17	12.7	11.9	11.7		10.8	11.5		
Selenium (Se), dissolved	mg/L	0.01					<0.000040	<0.000040	<0.000040			<0.00020	<0.000040	<0.000040	<0.000040		<0.000040	<0.00020		
Silicon (Si), dissolved	mg/L						14.1	11.7	12.5			16.6	16.5	13.2	15.9		15.4	15.8		
Silver (Ag), dissolved	mg/L	*					0.00002	0.000008	0.000005			0.000043	0.000131	0.000083	0.000067		0.000063	0.000063		
Sodium (Na), dissolved	mg/L						50.7	35.2	36.6			32.2	34.4	31.3	30.5		31	32.3		
Strontium (Sr), dissolved	mg/L						2.28	1.9	1.97			2.5	2.7	2.09	2.05		1.91	2.1		
Sulphur (S), dissolved	mg/L						5	<3.0	<3.0			<15	<3.0	<3.0	<3.0		<3.0	<15		
Thallium (Tl), dissolved	mg/L	0.003					0.000003	0.000011	0.000007			0.000013	<0.0000020	0.000004	0.000005		<0.0000020	<0.000010		
Tin (Sn), dissolved	mg/L						<0.00020	<0.00020	<0.00020			<0.0010	<0.00020	<0.00020	<0.00020		<0.00020	<0.0010		
Titanium (Ti), dissolved	mg/L	1					<0.00050	<0.00050	<0.00050			0.0028	0.00111	0.001	0.00091		0.001	<0.0025		
Uranium (U), dissolved	mg/L	3					0.00125	0.000709	0.00074			0.00104	0.000497	0.000336	0.000315		0.000273	0.000292		
Vanadium (V), dissolved	mg/L						<0.00020	<0.00020	<0.00020			<0.0010	<0.00020	<0.00020	<0.00020		<0.00020	<0.0010		
Zinc (Zn), dissolved	mg/L	*					0.0325	0.0908	0.0994			0.0155	0.00217	0.00192	0.242		0.00117	0.00408		
Zirconium (Zr), dissolved	mg/L						0.0085	0.00302	0.0012			0.0171	0.0481	0.0338	0.029		0.0351	0.0348		

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depth to Water (mbTOC)	m		1.166		1.236	3.127	3.673	0	0	0		0	0	4.902	5.012	4.638	4.61	5.183	5.722	4.658	5.023
Well Depth	mbTOC		4.157	4.157	2.201	3.957	3.961	39.020	38.836	38.84	0	38.856	38.849	6.261	6.260	6.256	6.264	6.261	6.255	6.262	6.282
Total Suspended Solids	mg/L							86.7	191	74.5		455	30.7	669	7430	4050	197	970		2630	2570
pH (field)	pH units							7.43	7.56	7.67		7.6	8.63	7.01	7.49	6.96	7.11	6.92		7.13	7.82
pH (lab)	pH units							7.93	7.92	7.88		7.98	8.14	7.85	7.51	7.38	7.29	7.38		7.96	7.75
Specific Conductance (field)	µS/cm							476.6	378.5	386		493.1	430.6	265.3	262.7	252.1	210.1	272.3		244.9	224.1
Specific Conductance (lab)	µS/cm							472	452	466		448	464	262	266	257	256	274		256	279
Temperature (field)	C							2.1	2.4	1.7		3	2.8	2.6	8.3	4.7	1.7	1.1		3.7	3.2
Dissolved Oxygen (field)	mg/L							0.9	0.9	1.9		1.51	4.5	8.1	8.8	7.6	7.2	7.31		10.64	8.3
Dissolved Oxygen (field)	%							8	8	16		11.4	40	70	88	73	62	61.3		80.5	72
ORP (field)	mV							8.6	8	28.2		152.1	-32.1	147.3	143.7	118	161.9	320.4		238.8	160.3
Hardness (from total)	mg/L							246	261	250		303	251	145	180	244	133	148		234	355
Hardness (from dissolved)	mg/L							245	225	230		243	241	129	128	127	122	121		108	117
Total Acidity	mg/L							3.35	1.67	<0.50		5.53	1.2	1.19	7.66	10.3	0.9	4.98		7.46	2.1
Acidity (pH 4.5)	mg/L							<0.50	<0.50	<0.50		<0.50	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<1.0
Alkalinity, total	mg/L							156	157	159		163	163	82.1	84.5	88.6	90.4	90.2		92.1	103
Alkalinity, bicarbonate HCO3	mg/L							190	191	194		199	199	100	103	108	110	110		112	126
Alkalinity, hydroxide OH	mg/L							<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50
Alkalinity, carbonate CO3	mg/L							<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L							<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50
Chloride	mg/L							0.78	0.96	0.88		<0.50	0.53	1	0.96	0.6	0.96	<0.50		0.75	1.2
Fluoride	mg/L	*						0.23	0.23	0.23		0.24	0.24	0.054	0.055	0.057	0.047	0.052		0.054	0.059
Sulphate, dissolved	mg/L	1000						86.3	81.7	87.7		92.8	89.9	42.1	43	40.5	36.6	44.6		32.6	38.2
Ammonia (N)	mg/L	*						0.059	0.031	0.058		0.056	0.04	0.047	0.024	0.061	0.0094	0.034		0.012	0.01
Nitrite (N)	mg/L	*						<0.0020	<0.0020	<0.0020		0.0053	<0.0020	<0.0020	<0.0020	0.0036	<0.0020	<0.0020		<0.0020	<0.0020
Nitrate (N)	mg/L	400						<0.0020	<0.0020	<0.0020		<0.0020	0.0079	0.421	0.362	0.424	0.537	0.409		0.621	0.902
Nitrite & Nitrate, as N	mg/L	400						<0.0020	<0.0020	<0.0020		0.0046	0.0079	0.421	0.362	0.428	0.537	0.409		0.621	0.902
Phosphorus, total-colourimetric	mg/L							0.023	0.0875	0.0274		0.22	0.0235	0.274	0.688	1.25	0.211	0.603		0.809	1.76
Phosphorus, Total Dissolved	mg/L							0.0227	0.0112	0.0135		0.0413	0.0029	0.0295	0.641	0.178	0.0184	0.127		0.0599	1.52
Dissolved Organic Carbon	mg/L							0.64	<0.50	0.58		<0.50	0.85	1.28	1.55	1.53	1.14	0.68		1.42	2.21
Aluminum (Al), total	mg/L							1.22	1.57	0.588		6.53	0.443	5.67	12.6	34.9	3.13	4.28		16.2	21.4
Antimony (Sb), total	mg/L							0.000037	0.000048	0.000024		0.000038	0.000031	0.0103	0.0325	0.0147	0.00391	0.00643		0.0106	0.0109
Arsenic (As), total	mg/L							0.00376	0.00458	0.00423		0.00658	0.00505	0.16	0.603	0.609	0.058	0.0928		0.226	0.255
Barium (Ba), total	mg/L							0.0311	0.0512	0.0224		0.0624	0.0225	0.217	0.583	1.1	0.149	0.182		0.401	0.574
Beryllium (Be), total	mg/L							0.000123	0.000145	0.00013		0.000501	0.000028	0.000255	0.000796	0.00202	0.00016	0.000247		0.000808	0.00126
Bismuth (Bi), total	mg/L							0.000026	0.000039	0.000024		0.000186	0.000013	0.00139	0.00581	0.00775	0.000528	0.000855		0.00273	0.0031
Boron (B), total	mg/L							<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.050	<0.010	<0.010		<0.050	<0.050
Cadmium (Cd), total	mg/L							0.000034	0.00009	0.000017		0.000209	0.000037	0.00532	0.0163	0.0303	0.00391	0.00464		0.0107	0.0182
Calcium (Ca), total	mg/L							87.9	92.6	89.8		104	89.4	43.3	48.3	57.7	41.5	45		58.5	86.9
Chromium (Cr), total	mg/L							0.00148	0.00294	0.00058		0.00858	0.0007	0.0141	0.0352	0.0856	0.00772	0.0104		0.037	0.0626
Cobalt (Co), total	mg/L							0.000734	0.00153	0.000384		0.00535	0.000396	0.0102	0.0334	0.0616	0.00464	0.00552		0.0177	0.0276
Copper (Cu), total	mg/L							0.00118	0.00235	0.00078		0.00687	0.00056	0.206	0.775	1.3	0.0821	0.11		0.321	0.402
Iron (Fe), total	mg/L							1.47	3.33	0.887		9.63	1.03	18.7	66.4	107	8.79	12.6		46	56.8
Lead (Pb), total	mg/L							0.000956	0.00148	0.000808		0.0047	0.000477	0.568	2.73	4.13	0.248	0.346		1.08	1.78
Lithium (Li), total	mg/L							0.00329	0.00398	0.00263		0.00587	0.00269	0.00855	0.017	0.0519	0.00641	0.00832		0.0251	0.0337
Magnesium (Mg), total	mg/L							6.39	7.2	6.33		10.2	6.79	8.96	14.5	24.1	7.16	8.63		21.4	33.6
Manganese (Mn), total	mg/L							0.306	0.392	0.313		0.564	0.319	0.845	2.43	3.94	0.284	0.32		0.949	1.77
Mercury (Hg), total	mg/L							<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	0.0000227	0.0000337	0.0000404	0.0000107	0.0000098		0.0000168	0.0000181
Molybdenum (Mo), total	mg/L							0.000383	0.000294	0.000762		0.000344	0.000283	0.00254	0.00606	0.0037	0.00103	0.00142		0.00252	0.00278
Nickel (Ni), total	mg/L							0.00205	0.00434	0.00092		0.0126	0.00101	0.0207	0.0457	0.109	0.00985	0.0136		0.0416	0.0621
Phosphorus (P), total	mg/L							0.0362	0.121	0.0282		0.213	0.0364	0.253	0.672	2	0.245	0.332		1.24	2.48
Potassium (K), total	mg/L							2.22	2.38	2.29		3	2.32	4.04	6.16	11.7	3.2	3.6		6.2	7.5
Selenium (Se), total	mg/L							<0.000040	<0.000040	<0.000040		0.000073	0.000051	0.00354	0.00499	0.00391	0.00273	0.00309		0.00312	0.00412

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	MW16-13	MW16-13	MW16-13	MW16-13	MW16-13	MW16-14D	MW16-14D	MW16-14D	MW16-14D	MW16-14D	MW16-14D	MW16-15S	MW16-15S	MW16-15S	MW16-15S	MW16-15S	MW16-15S	MW16-15S	MW16-15S	
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L							6.71	6.08	5.77		12.5	5.37	11.2	20.7	40.7	7.55	9.24			24.2	31.7
Silver (Ag), total	mg/L							0.000019	0.000011	0.000047		0.000066	<0.000010	0.0041	0.0138	0.0313	0.00153	0.00265			0.0272	0.0234
Sodium (Na), total	mg/L							6.03	3.13	2.71		2.71	2.42	0.91	1.31	<1.3	0.81	0.92			<1.3	<1.3
Strontium (Sr), total	mg/L							0.307	0.33	0.331		0.422	0.315	0.117	0.159	0.203	0.131	0.131			0.129	0.168
Sulphur (S), total	mg/L							29	27.7	29.7		31.4	31.4	13.9	16.4	<15	13	14.5			<15	<15
Thallium (Tl), total	mg/L							0.000014	0.000016	0.000012		0.000063	0.0000068	0.000353	0.000886	0.00145	0.000104	0.000116			0.000524	0.000684
Tin (Sn), total	mg/L							<0.00020	<0.00020	<0.00020		0.00025	0.0003	0.0008	0.00169	0.0025	0.00075	0.00054			0.0014	0.002
Titanium (Ti), total	mg/L							0.0277	0.0151	0.0065		0.0683	0.0143	0.327	0.525	1.3	0.186	0.256			0.754	0.91
Uranium (U), total	mg/L							0.00383	0.00447	0.00409		0.00536	0.00391	0.00966	0.0293	0.058	0.0062	0.00731			0.0172	0.0302
Vanadium (V), total	mg/L							0.0017	0.00294	0.00081		0.0102	0.00072	0.0152	0.0403	0.0869	0.00843	0.0118			0.0429	0.0612
Zinc (Zn), total	mg/L							0.0036	0.0069	0.0741		0.0204	0.0063	0.799	2.47	4.27	0.485	0.576			1.53	2.39
Zirconium (Zr), total	mg/L							0.00055	0.00048	0.0003		0.00303	0.00021	0.00074	0.00319	0.00571	0.00032	0.00038			0.00154	0.00233
Aluminum (Al), dissolved	mg/L							0.00248	0.00312	0.00099		0.00445	0.00259	0.00411	0.00422	0.00443	0.00219	0.00342			0.00511	0.0117
Antimony (Sb), dissolved	mg/L	0.2						0.000031	<0.000020	<0.000020		<0.000020	0.000033	0.000179	0.000075	0.000124	0.000081	0.000071			0.000112	0.000085
Arsenic (As), dissolved	mg/L	0.05						0.00386	0.00312	0.0041		0.00371	0.00354	0.000484	0.00023	0.00028	0.000281	0.000155			0.000182	0.000175
Barium (Ba), dissolved	mg/L	10						0.0206	0.0193	0.0169		0.0173	0.0201	0.0678	0.0727	0.0708	0.0696	0.0802			0.0591	0.0705
Beryllium (Be), dissolved	mg/L	0.053						<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010			<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L							<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			<0.0000050	<0.0000050
Boron (B), dissolved	mg/L							<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010			<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*						0.000005	0.000012	<0.0000050		0.000022	0.000099	0.00196	0.00176	0.00185	0.00166	0.0021			0.0017	0.00212
Calcium (Ca), dissolved	mg/L							87.5	80.6	82.9		86.9	86.1	42.6	41.1	42	40.3	39.2			34.8	37.8
Chromium (Cr), dissolved	mg/L	0.01						<0.00010	<0.00010	<0.00010		<0.00010	0.00021	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			<0.00010	0.00016
Cobalt (Co), dissolved	mg/L	0.009						0.000228	0.000216	0.000128		0.000156	0.000101	0.00104	0.000423	0.000508	0.000119	0.000051			0.000044	0.000033
Copper (Cu), dissolved	mg/L	*						0.00006	<0.000050	<0.000050		0.000068	0.000327	0.00531	0.00452	0.00546	0.00371	0.00376			0.00327	0.00343
Iron (Fe), dissolved	mg/L							0.11	<0.0010	<0.0010		0.0306	0.223	0.0012	0.0183	0.0023	0.0012	0.0017			0.0155	0.029
Lead (Pb), dissolved	mg/L	*						0.000011	<0.0000050	<0.0000050		0.000013	0.000014	0.000215	0.000249	0.000159	0.000067	0.000182			0.000387	0.00055
Lithium (Li), dissolved	mg/L							0.00328	0.00294	0.00277		0.00272	0.00269	0.00213	0.00194	0.00162	0.00211	0.00234			0.00182	0.00218
Magnesium (Mg), dissolved	mg/L							6.51	5.86	5.69		6.32	6.36	5.53	6.22	5.37	5.24	5.57			5.19	5.45
Manganese (Mn), dissolved	mg/L							0.274	0.273	0.279		0.305	0.291	0.2	0.062	0.0757	0.0154	0.00654			0.00396	0.00213
Mercury (Hg), dissolved	mg/L	0.001						<0.0000020	<0.0000020	0.000002		<0.0000020	<0.0000020	0.000003	0.0000021	0.0000039	0.0000028	<0.0000020			0.0000085	0.0000052
Molybdenum (Mo), dissolved	mg/L	10						0.000398	0.000311	0.000275		0.000315	0.000282	0.000989	0.000379	0.000589	0.000331	0.000314			0.000319	0.000284
Nickel (Ni), dissolved	mg/L	*						0.000651	0.000726	0.000339		0.000677	0.000281	0.00388	0.00272	0.00326	0.00229	0.00223			0.00203	0.00198
Phosphorus (P), dissolved	mg/L							<0.0020	0.0037	0.0029		0.0024	0.003	<0.0020	0.0047	0.0045	<0.0020	0.0033			0.0037	0.005
Potassium (K), dissolved	mg/L							2.17	2.13	2.07		2.12	2.38	2.27	2.26	2.4	2.27	2.26			1.97	2.24
Selenium (Se), dissolved	mg/L	0.01						<0.000040	<0.000040	<0.000040		<0.000040	<0.000040	0.00289	0.00279	0.00256	0.00315	0.00248			0.00225	0.00282
Silicon (Si), dissolved	mg/L							4.46	4.01	4.88		4.45	4.54	3.7	3.07	3.08	3.51	3.17			2.87	3.49
Silver (Ag), dissolved	mg/L	*						<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050			0.000021	0.000025
Sodium (Na), dissolved	mg/L							6.74	3.05	2.55		2.79	2.51	0.775	0.873	0.759	0.742	0.77			0.807	1.03
Strontium (Sr), dissolved	mg/L							0.323	0.276	0.327		0.329	0.324	0.112	0.118	0.118	0.125	0.118			0.0989	0.11
Sulphur (S), dissolved	mg/L							31.3	25.6	29.4		29.8	28.5	14.5	15.1	12.7	12.8	14			11.2	12.8
Thallium (Tl), dissolved	mg/L	0.003						<0.0000020	0.000003	<0.0000020		<0.0000020	<0.0000020	0.000031	0.000012	0.000011	0.000003	0.000005			0.000006	0.000005
Tin (Sn), dissolved	mg/L							<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020			<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	1						<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050			<0.00050	0.00055
Uranium (U), dissolved	mg/L	3						0.0039	0.00381	0.00385		0.00447	0.00389	0.00205	0.00211	0.00176	0.00186	0.00233			0.00194	0.00173
Vanadium (V), dissolved	mg/L							<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020			<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*						0.00047	0.00037	0.0496		0.00174	0.00481	0.0955	0.118	0.103	0.164	0.138			0.11	0.131
Zirconium (Zr), dissolved	mg/L							<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010			<0.00010	<0.00010



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	MW16-15S	MW16-15D	MW16-15D	MW16-15D	MW16-15D	MW16-15D	MW16-15D	MW16-15D	MW16-15D	MW16-16D	MW16-16D	MW16-16D	MW16-16D	MW16-16D	MW16-16D	MW16-16D	MW16-16D	MW16-17
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L			4.64	20.7	15.2	7.59	6.52	3.98	5.86	14.7	4.37	6.07	12.5		4.72	5.51	4.62	12.3	
Silver (Ag), total	mg/L		0.00012	0.00412	0.00127	0.000749	0.000369	0.000052	0.000373	0.00209	0.000101	0.000071	0.000307		<0.000010	0.00002	0.000061	0.00031		
Sodium (Na), total	mg/L		2.9	2.4	2.3	1.77	1.88	1.49	1.43	1.64	2.73	1.8	2.21		2.53	1.72	2.54	2.2		
Strontium (Sr), total	mg/L		0.191	0.254	0.248	0.205	0.203	0.188	0.175	0.217	0.186	0.309	0.373		0.269	0.291	0.302	0.454		
Sulphur (S), total	mg/L		<30	25.3	25	22.4	23.2	23.1	21.3	22.3	23.9	13.5	14.2		11.7	13.6	12.5	15.6		
Thallium (Tl), total	mg/L		0.000027	0.000382	0.000268	0.000086	0.00006	0.000016	0.000073	0.000357	0.0000607	0.000013	0.000084		0.000002	0.00001	0.000008	0.000096		
Tin (Sn), total	mg/L		<0.0020	0.00048	<0.0010	0.00047	0.00064	<0.00020	<0.00020	0.00059	0.00041	0.00058	0.00144		<0.00020	<0.00020	0.00037	0.00155		
Titanium (Ti), total	mg/L		0.052	0.436	0.383	0.146	0.115	0.0237	0.115	0.24	0.0405	0.039	0.196		0.0205	0.0269	0.0205	0.137		
Uranium (U), total	mg/L		0.00866	0.0124	0.011	0.00661	0.00545	0.00375	0.00427	0.0104	0.00474	0.00404	0.00818		0.00347	0.0044	0.00434	0.0103		
Vanadium (V), total	mg/L		0.0023	0.0202	0.0173	0.00615	0.00474	0.00084	0.00397	0.0148	0.00214	0.00306	0.0228		0.00185	0.00258	0.00161	0.0187		
Zinc (Zn), total	mg/L		0.182	3.38	2.62	1.47	0.489	0.0656	0.509	3.25	0.932	0.0515	0.787		0.017	0.0241	0.0146	0.288		
Zirconium (Zr), total	mg/L		0.0058	0.0184	0.0329	0.0188	0.00882	0.0024	0.00899	0.0181	0.00711	0.00305	0.0122		0.00201	0.00267	0.00551	0.0108		
Aluminum (Al), dissolved	mg/L		0.0107	0.00644	0.0127	0.00815	0.00465	0.00262	0.00325	0.00519	0.00597	0.00388	0.00366		0.00467	0.0007	0.00276	0.00264		
Antimony (Sb), dissolved	mg/L	0.2	0.000762	0.000508	0.000468	0.000308	0.000158	0.000053	0.000062	0.000064	0.000104	0.000036	0.00019		<0.000020	<0.000020	0.000022	0.000046		
Arsenic (As), dissolved	mg/L	0.05	0.0153	0.0191	0.0155	0.018	0.0123	0.017	0.0169	0.018	0.0127	0.000538	0.000407		0.000135	0.000191	0.000103	0.000415		
Barium (Ba), dissolved	mg/L	10	0.0405	0.0304	0.037	0.0381	0.0385	0.0312	0.0318	0.0325	0.0318	0.0357	0.0405		0.0376	0.0346	0.0368	0.0377		
Beryllium (Be), dissolved	mg/L	0.053	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010		
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050		
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010		
Cadmium (Cd), dissolved	mg/L	*	0.000067	<0.0000050	0.000096	0.000024	0.000012	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000008		<0.0000050	<0.0000050	0.000005	<0.0000050		
Calcium (Ca), dissolved	mg/L		62.7	64	64.9	60.1	60	61.5	60.9	60.8	57.1	82.1	76		70.2	76	76.1	76.8		
Chromium (Cr), dissolved	mg/L	0.01	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00019	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010		
Cobalt (Co), dissolved	mg/L	0.009	0.000159	0.000184	0.000104	0.00014	0.00009	0.000043	0.000044	0.00008	0.000079	0.000035	0.000236		0.000041	0.000012	0.000008	0.000053		
Copper (Cu), dissolved	mg/L	*	0.000151	0.000054	0.000097	0.000058	0.000055	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.00009		0.000053	<0.000050	<0.000050	<0.000050		
Iron (Fe), dissolved	mg/L		<0.0010	0.202	<0.0010	<0.0010	<0.0010	0.462	0.531	0.465	0.0411	0.431	<0.0010		<0.0010	0.261	0.58	0.0023		
Lead (Pb), dissolved	mg/L	*	0.000011	0.000007	0.000032	<0.0000050	0.000014	<0.0000050	<0.0000050	0.000021	0.000005	<0.0000050	0.000012		0.000006	<0.0000050	0.000025	0.00001		
Lithium (Li), dissolved	mg/L		0.00406	0.00347	0.00337	0.00337	0.00373	0.00278	0.00289	0.00288	0.00268	0.00413	0.00471		0.00494	0.00413	0.00542	0.00486		
Magnesium (Mg), dissolved	mg/L		9.19	9.72	8.71	8.23	8.42	8.42	8.25	8.76	7.65	8.28	7.59		7.48	8.22	7.65	7.69		
Manganese (Mn), dissolved	mg/L		0.12	0.148	0.138	0.134	0.112	0.118	0.115	0.117	0.109	0.0568	0.0521		0.0521	0.0521	0.0473	0.047		
Mercury (Hg), dissolved	mg/L	0.001	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	<0.0000020		
Molybdenum (Mo), dissolved	mg/L	10	0.0011	0.000885	0.000887	0.000766	0.000781	0.000652	0.00061	0.000622	0.000667	0.000968	0.00131		0.000979	0.000901	0.000877	0.00132		
Nickel (Ni), dissolved	mg/L	*	0.000279	0.000332	0.000241	0.000202	0.000197	0.000066	0.000086	0.000208	0.000177	0.000182	0.000702		0.000244	0.000094	0.000042	0.00041		
Phosphorus (P), dissolved	mg/L		<0.0020	0.0051	0.0025	<0.0020	0.004	0.0036	0.0042	0.003	0.0032	0.0035	0.0025		<0.0020	0.0043	0.0033	0.0023		
Potassium (K), dissolved	mg/L		4.02	3.56	3.41	3.12	2.73	2.57	2.47	2.71	2.18	2.42	2.58		2.48	2.58	2.62	2.62		
Selenium (Se), dissolved	mg/L	0.01	0.000074	<0.000040	0.00009	0.000045	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	0.000111		<0.000040	<0.000040	<0.000040	<0.000040		
Silicon (Si), dissolved	mg/L		3.35	2.91	3.02	3.32	2.9	3	2.73	2.98	2.82	3.83	3.65		3.72	3.95	3.86	3.86		
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050		
Sodium (Na), dissolved	mg/L		2.8	2.23	1.93	1.8	1.76	1.62	1.57	1.69	2.7	1.82	2.07		2.25	1.85	2.44	2.1		
Strontium (Sr), dissolved	mg/L		0.184	0.194	0.202	0.203	0.181	0.175	0.17	0.197	0.17	0.288	0.274		0.294	0.29	0.272	0.293		
Sulphur (S), dissolved	mg/L		23.1	22.9	21.3	23.7	22.2	22.8	21.1	22.3	21	13.4	12.2		12.5	13.5	11.9	12.5		
Thallium (Tl), dissolved	mg/L	0.003	0.000004	<0.0000020	0.000007	0.000002	0.000003	<0.0000020	<0.0000020	0.000002	0.000002	<0.0000020	0.000002		<0.0000020	<0.0000020	<0.0000020	<0.0000020		
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020		
Titanium (Ti), dissolved	mg/L	1	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050		
Uranium (U), dissolved	mg/L	3	0.00833	0.00634	0.00688	0.00528	0.00463	0.00347	0.00341	0.00346	0.00328	0.0037	0.00484		0.00379	0.0039	0.00365	0.00545		
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020		
Zinc (Zn), dissolved	mg/L	*	<0.00010	0.00119	0.00168	0.0303	0.00176	0.0006	0.00058	0.00057	0.00248	0.00056	0.00581		0.00034	0.00014	0.00105	0.00068		
Zirconium (Zr), dissolved	mg/L		<0.00010	0.00015	<0.00010	<0.00010	<0.00010	0.00014	0.00014	0.00012	<0.00010	0.00028	0.00017		<0.00010	0.00019	0.00023	0.00016		



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	MW16-17	MW16-17	MW16-17	MW16-17	MW16-17	MW16-17	MW16-17	MW16-17	BH95G-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m		3.546	3.142	3.697	4.587	5.372	3.109	4.215	4.819					17.536	16.03	12.332	4.856	3.501	4.457	8.401	
Well Depth	mbTOC		28.020	27.878	27.88	27.898	27.895	27.899	27.891	27.896					19.49	19.49	19.545	19.624	19.516	19.514	19.511	
Total Suspended Solids	mg/L		1330	1150	409	530	71.5	151	435	247			54.3	162	1230	570	538	1290	331	50.1	<1.0	103
pH (field)	pH units		7.65	7.72	7.73	7.88	7.59	9.75	8.53	8.25	7.25	7.53	7.71	7.54	7.73	7.29	7.55	7.67	7.55	7.69	7.55	
pH (lab)	pH units		8.08	8.03	8.02	8.06	8.12	8.26	8.12	8.12	8.12	8.32	8.18	8.18	8.25	8.25	8.31	8.05	8.08	7.94	7.95	
Specific Conductance (field)	µS/cm		370.3	298.1	275.6	364.6	367.6	299.7	295.2	340	258.2	585.7	516	570	379.5	429.3	433.1	656.3	451.4	458.7	580.7	
Specific Conductance (lab)	µS/cm		365	362	361	364	364	271	266	359	263	518	564	554	444	434	438	560	546	555	586	
Temperature (field)	C		2.0	2.5	1.6	1.4	1.5	3	2.6	1.3	2.7		-0.1	0.63	2.1	2.1	1.8	1.2	2.5	0.8	0.4	
Dissolved Oxygen (field)	mg/L		1.0	0.8	1.4	0.76	6.28	2.34	5.8	10.1	5.92	5.33	3.7	3.9	5.89	4.7	6.88	4.9	3.5	3.4	3.73	
Dissolved Oxygen (field)	%		9	7	12	6.5	53.9	17.5	50	84					50.9	41	58.8	40.1	33	28	29.9	
ORP (field)	mV		-63.2	-28.2	-45	78.9	96.7	303.7	80.1	-59.9				400	92.4	102.3	128.6	335.2	35.1	114.6	363.2	
Hardness (from total)	mg/L		331	570	214	270	197	175	240	225	226	306	289	381	265	261	400	310	319	311	327	
Hardness (from dissolved)	mg/L		195	179		180	196	202	123	185	136	305	325	297	238	239	246	291	312	301	310	
Total Acidity	mg/L		<0.50	<0.50	<0.50	0.96	0.59	<0.50	<1.0	1.3	<0.50	<0.50	4.31	<0.50	<0.50	<0.50	0.62	4.44	<0.50	<0.50	3.66	
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, total	mg/L		154	164	164	167	162	121	111	166	128	247	260	258	199	217	221	269	268	271	277	
Alkalinity, bicarbonate HCO3	mg/L		188	200	200	204	198	147	136	202	157	295	317	315	243	265	267	328	327	330	338	
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	3.05	<0.50	<0.50	<0.50	<0.50	1.02	<0.50	<0.50	<0.50	<0.50	
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	2.54	<0.50	<0.50	<0.50	<0.50	0.85	<0.50	<0.50	<0.50	<0.50	
Chloride	mg/L		0.81	0.95	0.54	<0.50	0.61	<0.50	0.65	1.1	1.2	0.96	0.79	0.63	0.6	1.1	<0.50	0.8	1	0.88	0.64	
Fluoride	mg/L	*	0.57	0.55	0.49	0.55	0.54	0.54	0.47	0.52	0.04	0.059	0.057	0.047	0.048	0.049	0.041	0.056	0.059	0.057	0.063	
Sulphate, dissolved	mg/L	1000	34.3	32.3	33	31.3	31.2	28.7	30.1	30.7	7.43	45.2	51.1	52.1	30	29.5	26	48.3	39.2	40.1	52.1	
Ammonia (N)	mg/L	*	0.06	0.036	0.053	0.049	0.058	0.05	0.051	0.031	0.051	0.0097	0.051	0.043	0.045	0.025	0.036	0.0093	0.0091	0.085	0.019	
Nitrite (N)	mg/L	*	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0067	<0.0020	<0.0020	<0.0020	<0.0020	0.002	0.0034	<0.0020	0.005	0.0024	<0.0020	<0.0020	<0.0020	<0.0020	
Nitrate (N)	mg/L	400	<0.0020	0.0037	0.0025	<0.0020	<0.0020	0.0283	0.0237	<0.0020	1.36	0.387	0.407	0.441	0.388	0.372	0.509	0.435	0.428	0.443	0.464	
Nitrite & Nitrate, as N	mg/L	400	<0.0020	0.0037	0.0025	<0.0020	<0.0020	0.035	0.0237	<0.0020	1.36	0.387	0.409	0.444	0.388	0.377	0.512	0.435	0.428	0.443	0.464	
Phosphorus, total-colourimetric	mg/L		0.71	0.375	0.273	0.537	0.038	0.0812	0.464	0.231	8.66	0.0314	0.442	1.22	0.145	0.0173	1.01	0.697	0.0282	0.0069	0.442	
Phosphorus, Total Dissolved	mg/L		0.632	0.0294		0.0607	0.0427	0.0156	0.13	0.227	0.0156	0.006	0.0048		0.156	0.0194	1.02	0.655	0.0324	0.0061	0.0393	
Dissolved Organic Carbon	mg/L		0.74	<0.50	<0.50	0.67	<0.50	<0.50	1.7	<0.50				1.77	3.34	3.08	3.58	1.1	0.77	0.73	1.08	
Aluminum (Al), total	mg/L		15.1	24.7	0.812	6.18	1.26	1.53	5.23	1.42	12.7	0.0405	0.167	3.93	2.81	3.46	19.3	1.35	0.0217	0.00193	0.614	
Antimony (Sb), total	mg/L		0.000349	0.00034	0.00013	0.000107	<0.000020	0.000197	0.000311	0.000029	0.0014	0.000205	0.000052	0.000502	0.000098	0.000504	0.00041	0.000123	0.000029	<0.000020	0.000079	
Arsenic (As), total	mg/L		0.00361	0.00559	0.000605	0.00116	0.000229	0.00136	0.0011	0.000335	0.0451	0.000274	0.000767	0.0125	0.00413	0.0153	0.0195	0.00348	0.000137	0.000074	0.00144	
Barium (Ba), total	mg/L		1.65	4.58	0.11	0.759	0.106	0.193	0.573	0.274	0.307	0.027	0.0331	0.1	0.0843	0.0872	0.355	0.0608	0.0279	0.0262	0.0429	
Beryllium (Be), total	mg/L		0.000876	0.00152	0.000072	0.000372	0.000095	0.000108	0.000271	0.000172	0.000647	<0.000010	0.000021	0.000263	0.000159	0.00019	0.00104	0.00008	<0.000010	<0.000010	0.000037	
Bismuth (Bi), total	mg/L		0.000183	0.000304	<0.000010	0.000064	0.000015	0.000016	0.000073	0.000016	0.00048	0.000006	0.000008	0.00011	0.000074	0.000115	0.00063	0.000044	<0.000010	<0.000050	0.000022	
Boron (B), total	mg/L		0.021	<0.050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.010	<0.010	<0.050	<0.050	<0.050	<0.10	<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd), total	mg/L		0.000442	0.00108	0.000042	0.000247	0.000024	0.000039	0.000307	0.0000573	0.0255	0.00171	0.00275	0.0113	0.00983	0.00868	0.044	0.00472	0.00169	0.00144	0.00305	
Calcium (Ca), total	mg/L		102	177	70.1	84.6	63.2	57.3	77.6	73.1	54.5	71.2	67.4	87	62.4	64	94.1	76.9	75.5	79.2	76.8	
Chromium (Cr), total	mg/L		0.0205	0.038	0.0012	0.0106	0.00159	0.0028	0.0101	0.00272	0.0349	<0.00010	0.00067	0.0124	0.00689	0.00861	0.0492	0.00335	<0.00010	<0.00010	0.00152	
Cobalt (Co), total	mg/L		0.0159	0.0351	0.00118	0.00695	0.000589	0.00141	0.00563	0.000691	0.0394	0.00017	0.000768	0.0117	0.00767	0.0114	0.0494	0.00482	0.000057	0.000005	0.0018	
Copper (Cu), total	mg/L		0.0401	0.0945	0.00253	0.0176	0.00107	0.00299	0.0159	0.00301	0.33	0.00124	0.00781	0.12	0.0837	0.105	0.52	0.037	0.00098	0.000237	0.0135	
Iron (Fe), total	mg/L		44.1	111	3.14	23.9	2.91	4.02	17.6	11	59.9	0.095	0.898	18.5	8.11	18.5	55.5	4.85	0.0741	0.0036	2.03	
Lead (Pb), total	mg/L		0.0161	0.0367	0.00101	0.00548	0.00084	0.00115	0.00776	0.00172	0.169	0.000946	0.0106	0.0588	0.0365	0.0404	0.17	0.0137	0.000473	0.000051	0.00952	
Lithium (Li), total	mg/L		0.0137	0.0211	0.00357	0.00701	0.00334	0.00296	0.0061	0.00358	0.011	0.00126	0.00151	0.00569	0.0058	0.00398	0.021	0.00224	0.00151	0.00148	0.00248	
Magnesium (Mg), total	mg/L		18.7	31.2	9.45	14.3	9.38	7.84	11.2	10.3	21.7	31.1	29.4	39.7	26.6	24.5	40.1	28.7	31.7	27.5	32.9	
Manganese (Mn), total	mg/L		1.34	2.99	0.226	0.7	0.133	0.136	0.475	0.343	0.894	0.00308	0.0305	0.251	0.175	0.228	1.1	0.0952	0.00163	0.000242	0.048	
Mercury (Hg), total	mg/L		<0.000020	<0.000020	0.000027	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000024	<0.000020	<0.000020	0.000025	0.000043	0.000037	0.000028	0.000033	<0.000020	<0.000020	<0.000020	
Molybdenum (Mo), total	mg/L		0.00206	0.00222	0.000751	0.000798	0.000303	0.00247	0.00187	0.000372	0.0246	0.00225	0.0018	0.0055	0.000895	0.00999	0.00277	0.00261	0.00236	0.00		



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-2	BH95G-2	BH95G-2	BH95G-2	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	BH95G-21	
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m		16.582	8.772	5.909	9.885				3.31	1.93	1.971	1.676	1.981	2.692	0	2.309	2.489			
Well Depth	mbTOC		19.551	19.533	19.529	19.525					10.1	10.100	10.095	10.089	10.095	3.051	10.109	10.099			
Total Suspended Solids	mg/L		8	192	310	11.6		2830	6540		674	659	944	378	468		704	914		2060	970
pH (field)	pH units		7.42	7.53	7.87	8.65	7.3	7.43	7.42		7.62	7.65	7.56	7.56	7.58		7.96	8.39	7.53	5.98	7.5
pH (lab)	pH units		8.05	8.45	8.31	8.17	8.22	8.02	8.22		8.22	8	7.98	7.71	7.99		8.24	8.09	8.22	7.8	8.23
Specific Conductance (field)	µS/cm		578.1	467.1	491.2	439.7	413.7	380.1	406		415	411.3	402.6	310.2	410.7		354.3	395.2	395	358.6	317
Specific Conductance (lab)	µS/cm		576	460	561	568	402	403	403		405	406	400	411	410		407	409	391	328	332
Temperature (field)	C		0.7	3	1.4	1.7	0.7	4.3			1.7	2.5	3	1.6	1.3		2.1	1.1	3.3	3.4	1.8
Dissolved Oxygen (field)	mg/L			4.83	4.9	5.0	1.73	0	0.9		3.1	1.9	1.6	1.4	1.4		3.6	9.4	7	7.7	7.7
Dissolved Oxygen (field)	%			35.9	40	43					27	17	15	13	12		29	77			
ORP (field)	mV		224.4	378.1	243.7	141.4					-46.7	-67.8	-49.2	-38.5	246.8		-41.1	-82			
Hardness (from total)	mg/L		253	261	315	326	238	344	573		236	239	265	241	244		230	226	310	229	289
Hardness (from dissolved)	mg/L		318	247	312	298	221	204	219		220	219	210	208	200		219	201	198	159	177
Total Acidity	mg/L		3.29	4.3	<1.0	3.6	<0.50	<0.50	3.76		2.6	1.11	3.55	1.02	2.06		<1.0	2.7	<0.50	0.96	8
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<1.0	<1.0	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50		<1.0	<1.0	<0.50	<0.50	<0.50
Alkalinity, total	mg/L		262	223	279	259	165	167	165		161	165	167	166	170		174	176	152	127	129
Alkalinity, bicarbonate HCO3	mg/L		320	259	334	316	201	204	202		197	201	204	202	208		213	215	186	155	158
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, carbonate CO3	mg/L		<0.50	6.56	3.22	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L		<0.50	5.47	2.68	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50
Chloride	mg/L		0.69	0.6	0.67	0.83	<0.50	<0.50	0.99		1.4	0.88	1.9	0.67	<0.50		0.68	0.69	<0.50	<0.50	1.2
Fluoride	mg/L	*	0.059	0.055	0.06	0.055	0.1	0.091	0.083		0.096	0.095	0.095	0.097	0.094		0.093	0.089	0.07	0.052	0.048
Sulphate, dissolved	mg/L	1000	55.5	32.2	50.6	54.8	46.5	46	47.1		46	46.9	48.6	48	47.9		47.6	48.5	52.8	40.8	41.9
Ammonia (N)	mg/L	*	0.028	0.13	0.005	0.013	0.019	0.044	0.052		0.045	0.27	0.026	0.05	0.037		0.022	0.032	0.51	0.083	0.042
Nitrite (N)	mg/L	*	<0.0020	0.0085	<0.0020	<0.0020	<0.0020	0.0038	<0.0020		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020		0.0072	<0.0020	<0.0020	0.0071	<0.0020
Nitrate (N)	mg/L	400	0.476	0.423	0.367	0.36	0.0048	0.0024	0.0039		0.0035	<0.0020	0.0034	0.0047	<0.0020		<0.0020	0.01	0.105	0.168	0.198
Nitrite & Nitrate, as N	mg/L	400	0.476	0.431	0.367	0.36	0.0048	0.0062	0.0039		0.0035	<0.0020	0.0034	0.0047	<0.0020		0.0042	0.01	0.105	0.175	0.198
Phosphorus, total-colourimetric	mg/L		0.0106	0.626	1.07	0.0305	0.914	0.0072	7.33		0.301	0.393	0.713	0.325	0.315		0.682	0.877	6.61	0.0192	3.7
Phosphorus, Total Dissolved	mg/L		0.0089	0.0372	0.997	0.0193	0.0023	<0.0020	0.0024		0.0149	0.393	0.114	0.315	0.0565		0.7	0.074	0.0027	0.0025	0.0155
Dissolved Organic Carbon	mg/L		1.08	2.47	1.96	0.82					1.61	1.35	1.89	2.4	1.26		2.57	1.11			
Aluminum (Al), total	mg/L		0.0377	1.86	2.93	0.118	11	29.7	64.6		6.68	6.56	8.99	3.73	5.18		3.89	1.74	39.5	18.6	33.3
Antimony (Sb), total	mg/L		<0.000020	0.000135	0.00025	0.000028	0.000952	0.00216	0.00122		0.000507	0.000777	0.00047	0.000429	0.000646		0.00025	0.000068	0.00423	0.00326	0.0029
Arsenic (As), total	mg/L		0.000071	0.00289	0.00719	0.000255	0.0289	0.0813	0.0823		0.00843	0.0163	0.0105	0.00738	0.0105		0.00692	0.00312	0.16	0.0717	0.0927
Barium (Ba), total	mg/L		0.0224	0.0613	0.0757	0.0286	1.62	11.4	18.1		2.13	1.94	2.49	0.992	1.4		0.816	0.284	1.09	0.509	0.844
Beryllium (Be), total	mg/L		<0.000010	0.000097	0.000132	<0.000010	0.000858	0.00167	0.00349		0.000455	0.000362	0.000656	0.000415	0.000411		0.000338	0.000162	0.00208	0.000959	0.00154
Bismuth (Bi), total	mg/L		<0.000010	0.000052	0.000082	<0.000050	0.000873	0.00257	0.0069		0.000603	0.000488	0.000935	0.00042	0.000503		0.000475	0.000066	0.00442	0.00191	0.00349
Boron (B), total	mg/L		<0.010	<0.010	<0.010	<0.010	<0.050	<0.050	<0.050		<0.010	<0.010	<0.050	<0.010	<0.010		<0.010	<0.010	<0.050	<0.050	<0.050
Cadmium (Cd), total	mg/L		0.00144	0.00556	0.00595	0.00187	0.000612	0.00165	0.00496		0.000253	0.000164	0.000427	0.00021	0.000208		0.000256	0.000114	0.0213	0.00994	0.0142
Calcium (Ca), total	mg/L		60.6	60.1	72.5	74.4	66.9	90.1	147		69.9	69.6	77.2	72.7	71.9		68	68.5	75.7	61.9	71.5
Chromium (Cr), total	mg/L		<0.00010	0.0047	0.0069	0.00041	0.0142	0.052	0.108		0.0089	0.0108	0.0132	0.00544	0.00883		0.00493	0.00209	0.0782	0.0385	0.069
Cobalt (Co), total	mg/L		0.000062	0.0042	0.00668	0.000288	0.00826	0.0279	0.0644		0.0047	0.00582	0.00725	0.00323	0.00491		0.00408	0.0032	0.0691	0.0334	0.0765
Copper (Cu), total	mg/L		0.00076	0.0285	0.0598	0.00232	0.0834	0.333	0.77		0.0497	0.0557	0.0844	0.035	0.0532		0.0537	0.0357	0.887	0.36	0.533
Iron (Fe), total	mg/L		0.0805	4.97	9.25	0.274	34.9	133	228		19.8	27.5	25.2	14	20.4		10.9	5.94	206	62	118
Lead (Pb), total	mg/L		0.000333	0.0194	0.0206	0.00103	0.0446	0.132	0.321		0.0256	0.0205	0.0416	0.0226	0.0238		0.0252	0.01	0.532	0.191	0.406
Lithium (Li), total	mg/L		0.00126	0.00291	0.00385	0.00152	0.0125	0.0272	0.0664		0.0082	0.0109	0.0134	0.00872	0.0104		0.01	0.00792	0.0386	0.0166	0.0327
Magnesium (Mg), total	mg/L		24.7	26.8	32.6	34.1	17.1	28.8	50		15	15.8	17.6	14.4	15.7		14.6	13.4	29.3	18.2	26.8
Manganese (Mn), total	mg/L		0.00185	0.121	0.133	0.00651	0.339	0.918	2.34		0.211	0.237	0.287	0.182	0.225		0.193	0.132	6.3	2.79	4.07
Mercury (Hg), total	mg/L		<0.000020	0.000021	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	0.000065	0.000039	0.000007
Molybdenum (Mo), total	mg/L		0.00145	0.00102	0.00373	0.00177	0.00161	0.00288	0.00497		0.000209	0.000543	<0.00025	0.000309	0.000328		0.000255	0.00014	0.00673	0.00256	0.00147
Nickel (Ni), total	mg/L		0.00067	0.0149	0.0354	0.0017	0.017	0.0599	0.125		0.00955	0.0121	0.0151	0.00643	0.00977		0.00762	0.00483	0.127	0.0578	0.121
Phosphorus (P), total	mg/L		0.0152	0.574	0.965	0.0276	0.509	2.47	10.9		0.51	0.478	0.621	0.346	0.417		0.68	0.596	2.22	0.723	3.67
Potassium (K), total	mg/L		0.36	0.79	1.1	0.484	4.56	8.35	16.4		2.86	2.98	4	2.53	2.99		2.4	1.9	11.3	6.14	8.88
Selenium (Se), total	mg/L		0.00418	0.0037	0.00643	0.00616	0.00106	0.00243													



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-23	BH95G-23	BH95G-23	BH95G-23	BH95G-24	BH95G-24	BH95G-24	
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m			4.21	2.63	3.119	2.472	1.827	2.374	3.608	4.51	2.078	3.039					1.317	0.484	
Well Depth	mbTOC			6.56	6.578	6.586	6.606	6.586	6.619	6.584	6.59	6.585	6.589		0.325	0.34	0.325	0.325	3.5	3.485
Total Suspended Solids	mg/L		1030	5790	834	3090	1580	1250	612	292	1190	1110	848	7320					983	
pH (field)	pH units		7.12	7.4	7.39	7.49	7.56	7.17	6.97	7.2	7.51	7.29	7.82	7.02					7.24	
pH (lab)	pH units		7.87	7.93	7.63	8.2	7.62	7.66	7.66	7.58	7.76	7.67	7.97	7.33					7.81	
Specific Conductance (field)	µS/cm		365	333.6	332.6	362.3	431.7	316.2	288.5	353.4	382.4	342.9	311.5	301.7					779.9	
Specific Conductance (lab)	µS/cm		354	375	334	356	367	315	326	352	380	340	339	267					768	
Temperature (field)	C		1.17	10	3.2	5.5	3.0	4.2	2.6	2.4	1.4	3.3	3.7	0.5					0.6	
Dissolved Oxygen (field)	mg/L		11	6.27	10.8	9.44	7.4	7.8	7.5	6.35		11.4	8.1	1.14					0.82	
Dissolved Oxygen (field)	%			80.2	96	89.2	65.5	77	65	53.5		85.4	72							
ORP (field)	mV		390	142.6	68.4	153.3	329.4	103.7	136.7	354.5	102.2	346.3	85.7							
Hardness (from total)	mg/L		183	349	188	303	212	201	185	192	268	251	218	306					484	
Hardness (from dissolved)	mg/L		176	176	170	188	202	164		177	193	168	171	126					387	
Total Acidity	mg/L		1.01	4.61	3.55	0.9	5.16	7.06	<0.50	5.27	4.19	8.32	1.9	5.15					4.68	
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<0.50					<0.50	
Alkalinity, total	mg/L		141	153	134	144	141	126	130	141	147	138	139	53.9					293	
Alkalinity, bicarbonate HCO3	mg/L		172	186	164	175	173	153	158	172	180	168	169	65.7					358	
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50					<0.50	
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50					<0.50	
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50					<0.50	
Chloride	mg/L		<0.50	0.99	1.3	<0.50	0.66	0.88	<0.50	<0.50	0.57	0.71	0.73	<0.50					0.63	
Fluoride	mg/L	*	0.047	0.067	0.054	0.055	0.052	0.056	0.047	0.054	0.063	0.054	0.055	0.06					0.067	
Sulphate, dissolved	mg/L	1000	45.1	48.4	40.1	51.3	47.6	35.1	38.9	44.5	51.2	38.4	44.6	72.8					135	
Ammonia (N)	mg/L	*	0.049	0.049	0.011	0.036	0.037	0.019	0.04	0.028	0.042	0.022	0.013	0.5					0.062	
Nitrite (N)	mg/L	*	0.0071	<0.0020	0.0167	<0.0020	0.0036	0.0023	0.026	<0.0020	0.0021	0.0067	0.0076	<0.0020					0.0062	
Nitrate (N)	mg/L	400	0.156	0.126	0.392	0.37	0.358	0.557	0.768	0.434	0.278	0.712	0.315	<0.0020					0.0054	
Nitrite & Nitrate, as N	mg/L	400	0.163	0.126	0.409	0.37	0.361	0.56	0.794	0.434	0.28	0.719	0.322	<0.0020					0.0116	
Phosphorus, total-colourimetric	mg/L		0.305	0.0158	0.0286	0.5	0.43	0.476	0.244	0.29	4.21	1.29	1.03	0.0918					0.0065	
Phosphorus, Total Dissolved	mg/L			0.0154	0.0289	0.196	0.358	0.221		0.0287	3.27	0.152	0.603	0.0214					0.004	
Dissolved Organic Carbon	mg/L		3.06	2.03	0.82	<0.50	1.07	1.25	3.14	1.01	1.12	1.45	1.91							
Aluminum (Al), total	mg/L		4.63	25	6.59	33.1	10.9	9.54	2.17	2.83	14.7	22.1	13.7	58.1					13.4	
Antimony (Sb), total	mg/L		0.00104	0.000837	0.00131	0.00146	0.00166	0.00102	0.000422	0.000748	0.000769	0.00163	0.00081	0.135					0.006	
Arsenic (As), total	mg/L		0.0299	0.0393	0.0204	0.034	0.0333	0.0185	0.00765	0.013	0.0262	0.0515	0.0409	1.36					0.075	
Barium (Ba), total	mg/L		0.246	1.66	0.262	1.21	0.41	0.531	0.204	0.206	0.562	0.591	0.536	3.39					1.04	
Beryllium (Be), total	mg/L		0.000242	0.0024	0.000375	0.00233	0.000613	0.000723	0.000166	0.000178	0.000894	0.00105	0.000856	0.00212					0.000628	
Bismuth (Bi), total	mg/L		0.000545	0.00515	0.000747	0.00615	0.00144	0.00159	0.000518	0.000312	0.000433	0.00201	0.00203	0.0393					0.00127	
Boron (B), total	mg/L		<0.050	<0.050	<0.050	<0.10	<0.010	<0.050	<0.010	<0.010	<0.010	<0.050	<0.050	<0.050					<0.050	
Cadmium (Cd), total	mg/L		0.00236	0.0404	0.00278	0.0238	0.0045	0.0065	0.00227	0.00193	0.00865	0.00946	0.00925	0.857					0.054	
Calcium (Ca), total	mg/L		55.7	96.6	56.5	74.6	60.8	60.7	58.8	59.4	80.2	67.2	61.3	66.1					139	
Chromium (Cr), total	mg/L		0.00916	0.0514	0.0132	0.0701	0.0233	0.0131	0.00422	0.00568	0.0241	0.0386	0.0267	0.167					0.0349	
Cobalt (Co), total	mg/L		0.011	0.127	0.0132	0.102	0.0259	0.0269	0.00898	0.00535	0.0325	0.0382	0.0425	0.0937					0.0227	
Copper (Cu), total	mg/L		0.107	0.943	0.134	0.984	0.251	0.215	0.072	0.0582	0.213	0.323	0.346	4.45					1.56	
Iron (Fe), total	mg/L		25.5	405	23.2	187	42.5	58.7	18.7	11.3	34.9	61.6	115	276					34.1	
Lead (Pb), total	mg/L		0.0676	0.874	0.082	0.855	0.186	0.258	0.0659	0.0377	0.237	0.277	0.268	17.7					0.243	
Lithium (Li), total	mg/L		0.00566	0.0332	0.00843	0.0366	0.0121	0.0115	0.004	0.00474	0.0194	0.0213	0.0129	0.0453					0.0188	
Magnesium (Mg), total	mg/L		10.6	26.1	11.4	28.3	14.5	12.1	9.15	10.6	16.5	20.1	15.7	34.3					33.2	
Manganese (Mn), total	mg/L		0.824	11.3	0.874	8.1	1.73	1.86	0.66	0.564	3.38	3.51	3.2	2.96					1.6	
Mercury (Hg), total	mg/L		0.000057	0.000035	0.000032	0.000037	0.0000105	0.000039	0.000005	0.000075	0.0000196	0.0000207	0.0000036	<0.0000020					0.0000251	
Molybdenum (Mo), total	mg/L		0.00113	0.000517	0.00044	0.0005	0.000503	0.00045	0.000187	0.000588	0.000457	0.00078	0.0011	0.00669					0.00364	
Nickel (Ni), total	mg/L		0.0186	0.174	0.0218	0.171	0.0437	0.0405	0.0152	0.00992	0.0496	0.0708	0.0747	0.221					0.0364	
Phosphorus (P), total	mg/L		0.252	1.65	0.211	1.79	0.672	0.8	0.155	0.396	4.87	4.24	1.38	5.24					0.744	
Potassium (K), total	mg/L		2.48	8.72	2.88	9.1	4.06	3.3	1.87	2.21	5.04	5.7	4.5	11.8					9.42	
Selenium (Se), total	mg/L		0.00081	0.00157	0.000851	0.00116	0.00076	0.00135	0.000889	0.000693	0.000635	0.00083	0.00205	0.0225					0.0029	

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-22	BH95G-23	BH95G-23	BH95G-23	BH95G-23	BH95G-23	BH95G-24	BH95G-24	BH95G-24
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L		10.2	74.9	12.2	54.6	19	15.8	6.86	7.41	22.7	30.1	27.8	60.7						26.4
Silver (Ag), total	mg/L		0.00165	0.0126	0.00174	0.0144	0.00383	0.00187	0.000685	0.000823	0.00437	0.00482	0.00308	0.15						0.00286
Sodium (Na), total	mg/L		0.99	1.23	0.82	<2.5	1.09	<1.3	0.97	1.03	1.22	<1.3	<1.3	1.02						2.53
Strontium (Sr), total	mg/L		0.175	0.394	0.169	0.255	0.193	0.203	0.164	0.18	0.255	0.209	0.199	0.243						0.464
Sulphur (S), total	mg/L		<15	<15	<15	<30	14.4	<15	13.1	15.2	16.6	<15	<15	26						45
Thallium (Tl), total	mg/L		0.000087	0.000656	0.000149	0.000838	0.000178	0.000178	0.000052	0.000042	0.00039	0.000534	0.000308	0.0133						0.00139
Tin (Sn), total	mg/L		0.00128	0.00095	0.00083	<0.0020	0.00071	<0.0010	0.00043	0.00054	0.00031	0.0011	<0.0010	0.0057						0.00107
Titanium (Ti), total	mg/L		0.182	0.4	0.251	0.613	0.405	0.21	0.0841	0.156	0.433	0.803	0.316	3.38						0.917
Uranium (U), total	mg/L		0.00356	0.0179	0.0036	0.0141	0.00492	0.00556	0.00227	0.00248	0.00619	0.00627	0.00528	0.0391						0.00664
Vanadium (V), total	mg/L		0.0142	0.056	0.0172	0.0869	0.0344	0.0216	0.00718	0.011	0.0416	0.0711	0.042	0.191						0.0433
Zinc (Zn), total	mg/L		0.327	3.6	0.44	3.06	0.833	0.787	0.276	0.185	0.735	1.08	1.28	25.1						3.17
Zirconium (Zr), total	mg/L		0.00189	0.00238	0.00112	0.005	0.00193	0.00274	0.00063	0.00075	0.00329	0.00661	0.00327	0.0129						0.00267
Aluminum (Al), dissolved	mg/L		0.00332	0.00186	0.00099	0.00089	0.0132	0.00087		0.0007	0.00217	0.00373	0.00483	0.00583						0.00139
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.00007	0.000083	0.00007	0.00007	0.000206	0.000066		0.000074	0.000097	0.000102	0.000139	0.00303						0.000528
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.000055	0.000081	0.000086	0.000302	0.000163	0.00015		0.000074	0.000106	0.000073	0.000105	<b>0.0747</b>						0.0103
Barium (Ba), dissolved	mg/L	<b>10</b>	0.101	0.102	0.1	0.107	0.117	0.0977		0.12	0.109	0.109	0.112	0.049						0.0602
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010						<0.000010
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050						<0.0000050
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010						<0.010
Cadmium (Cd), dissolved	mg/L	*	0.000104	0.000167	0.000123	0.000133	0.000109	0.000074		0.000135	0.000137	0.000117	0.000091	<b>0.00169</b>						<b>0.00375</b>
Calcium (Ca), dissolved	mg/L		56	56	53.9	59.8	63.2	52.8		56.9	61.4	52.3	54.4	42.8						117
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010						<0.00010
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000017	0.00002	0.000006	<0.0000050	0.000021	0.000007		0.000005	0.000009	0.000018	0.000013	0.0047						0.00665
Copper (Cu), dissolved	mg/L	*	0.000718	0.000761	0.000798	0.000549	0.00116	0.000598		0.000675	0.000794	0.000681	0.00112	0.000119						0.000408
Iron (Fe), dissolved	mg/L		0.0102	0.0023	0.0019	0.0024	0.0474	0.0053		0.0014	0.0146	0.011	0.027	6.48						0.571
Lead (Pb), dissolved	mg/L	*	0.000057	0.000031	0.0000134	0.000008	0.000234	0.000013		0.00001	0.000062	0.000041	0.000076	0.000361						0.00406
Lithium (Li), dissolved	mg/L		0.00168	0.00178	0.00157	0.00197	0.00191	0.00163		0.00226	0.00215	0.00179	0.00171	0.00185						0.00563
Magnesium (Mg), dissolved	mg/L		8.81	8.93	8.52	9.37	10.7	7.76		8.56	9.71	9.02	8.46	4.76						23.3
Manganese (Mn), dissolved	mg/L		0.00302	0.00645	0.000799	0.00153	0.00103	0.000336		0.000174	0.000878	0.00141	0.000677	0.622						0.82
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	0.0000023	<0.0000020	<0.0000020	0.0000022	<0.0000020	<0.0000020	0.000002	<0.0000020	<0.0000020	<0.0000020						<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.000194	0.000203	0.000199	0.000296	0.000176	0.000156		0.000183	0.00021	0.0002	0.000182	0.000185						0.0017
Nickel (Ni), dissolved	mg/L	*	0.000211	0.000211	0.000168	0.000596	0.000265	0.000198		0.000164	0.00027	0.000185	0.000221	0.00686						0.00212
Phosphorus (P), dissolved	mg/L		0.0038	0.0031	<0.0020	<0.0020	0.003	0.0067		0.0022	0.0037	0.003	<0.0020	0.0052						<0.0020
Potassium (K), dissolved	mg/L		1.43	1.31	1.28	1.32	1.42	1.39		1.38	1.46	1.26	1.36	2.13						4.42
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.000698	0.000592	0.000866	0.000857	0.000688	0.000879		0.000571	0.000548	0.000556	0.000501	<0.000040						<0.000040
Silicon (Si), dissolved	mg/L		2.82	3.11	3.04	3.53	3.11	2.94		3.14	2.99	2.81	3.01	6.5						5.17
Silver (Ag), dissolved	mg/L	*	<0.0000050	0.000007	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	0.000006	<0.0000050	<0.0000050						<0.0000050
Sodium (Na), dissolved	mg/L		0.963	0.925	0.888	0.9	1.06	0.831		0.897	1.07	0.955	1.05	0.716						2.44
Strontium (Sr), dissolved	mg/L		0.176	0.17	0.15	0.164	0.188	0.155		0.167	0.178	0.146	0.162	0.103						0.385
Sulphur (S), dissolved	mg/L		15.7	16.2	13.1	15.2	16.6	10.8		13.4	16.5	13	14.2	25.5						43.3
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	0.000002	0.000002	<0.0000020	0.000003	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000387						0.000105
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020						<0.00020
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050	<0.00050	0.00053	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050						<0.00050
Uranium (U), dissolved	mg/L	<b>3</b>	0.00215	0.00223	0.00224	0.00169	0.00222	0.00117		0.00185	0.00238	0.00219	0.00158	0.000113						0.00465
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020						<0.00020
Zinc (Zn), dissolved	mg/L	*	0.00707	0.00479	0.00541	0.0033	0.00787	0.00452		0.00613	0.00649	0.00582	0.00792	<b>2.03</b>						0.845
Zirconium (Zr), dissolved	mg/L		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010						<0.00010

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-24	BH95G-24	BH95G-24	BH95G-24	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25D			
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		
Depth to Water (mbTOC)	m		0	0		1.682				3.84	3.367	3.2	2.717	0.768	1.597	3.206	4.034	0	2.639	3.197			
Well Depth	mbTOC		3.475	3.468	0	2.102				12.3	12.3	12.34	12.331	12.327	13.326	12.33	12.328	3.369	12.323	12.321			
Total Suspended Solids	mg/L									3320	539	201	3630	746	465	1870	215	1360	2730	1080	684	1560	
pH (field)	pH units									7.5	7.13	7.19	7.3	7.24	7.28	7.2	7.13	7.31	7.22	7.17	7.66	8.48	7.22
pH (lab)	pH units									8.11	7.88	8.15	7.88	7.69	8.07	7.82	7.86	7.79	7.68	7.88	8.1	8.07	7.66
Specific Conductance (field)	µS/cm									926	931	937	864.7	960	1019	1009	905	709.7	916.8	891.3	850.7	884.6	985
Specific Conductance (lab)	µS/cm									908	961	962	934	955	942	981	951	916	895	867	914	937	1020
Temperature (field)	C									1	3.3	1.2	2.6	2.3	1.6	1.7	2.4	1.3	0.1	1.4	2.1	0.1	2.5
Dissolved Oxygen (field)	mg/L									11.3	0	1.8	3.06	1.5	2.1		0.6	0.7	1.93	6.47	1.8	9.3	0
Dissolved Oxygen (field)	%									26.9	13	18	2	5	6	15.8	55.2			16	76		
ORP (field)	mV									-85.2	-71.7	-59.5	-91.6	-78.5	-58.7	111.5	-39.3			84.5	-82.2		
Hardness (from total)	mg/L									610	639	565	527	724	563	553	570	552	514	579	569	559	616
Hardness (from dissolved)	mg/L									522	517	558	528	536	567	557	491	575	482	474	505	526	556
Total Acidity	mg/L									1.33	4.29	18.5	16.5	15.7	20.9	14.8	23.5	8.88	12.8	11.4	9.5	13.1	9.7
Acidity (pH 4.5)	mg/L									<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, total	mg/L									302	332	329	350	354	321	337	336	335	333	325	340	348	349
Alkalinity, bicarbonate HCO3	mg/L									368	405	401	427	432	392	412	410	409	407	397	415	424	425
Alkalinity, hydroxide OH	mg/L									<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, carbonate CO3	mg/L									<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L									<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloride	mg/L									0.51	0.63	1.2	1.1	1.2	1.3	0.93	0.88	1.1	0.82	0.86	0.65	1	1
Fluoride	mg/L	*								0.12	0.12	0.11	0.13	0.13	0.14	0.12	0.12	0.13	0.12	0.13	0.13	0.12	0.098
Sulphate, dissolved	mg/L	1000								197	203	189	182	190	189	195	200	191	171	167	194	212	220
Ammonia (N)	mg/L	*								0.16	0.4	0.2	0.28	0.23	0.91	0.24	0.29	0.26	0.29	0.28	0.26	0.22	0.1
Nitrite (N)	mg/L	*								<0.0020	0.0095	<0.0020	<0.0020	0.0035	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0037	<0.0020	<0.0020
Nitrate (N)	mg/L	400								0.0024	<0.0020	<0.0020	0.0041	0.0024	<0.0020	<0.0020	<0.0020	0.0025	<0.0020	0.0029	<0.0020	0.0025	0.0095
Nitrite & Nitrate, as N	mg/L	400								0.0024	0.0093	<0.0020	0.0041	0.0059	<0.0020	<0.0020	<0.0020	0.0025	<0.0020	0.0029	<0.0020	0.0025	0.0095
Phosphorus, total-colourimetric	mg/L									3.28	0.008	0.676	0.0047	0.0057	0.0477	0.136	1.03	0.0671	0.809	1.15	0.554	0.353	0.0087
Phosphorus, Total Dissolved	mg/L									0.0024	0.0043	0.0067	0.0045	0.0062	0.0113	0.113	0.0668	0.0571	0.0558	0.843	0.475	0.0338	0.0034
Dissolved Organic Carbon	mg/L												3.27	2.49	2.45	2.62	2.88	2.73	2.22	2.26	2.14	1.43	
Aluminum (Al), total	mg/L									23.2	20.9	6.33	1.32	33.9	7.89	4.39	8.21	1.74	9.17	17.8	12.3	1.85	6.72
Antimony (Sb), total	mg/L									0.000396	0.000366	0.000179	0.000122	0.000272	0.000187	0.000132	0.000182	0.000057	0.000235	0.00016	0.00038	0.000055	0.00078
Arsenic (As), total	mg/L									0.039	0.0439	0.0158	0.0102	0.034	0.0144	0.0111	0.0134	0.00862	0.018	0.0208	0.0165	0.00864	0.0158
Barium (Ba), total	mg/L									0.408	0.402	0.174	0.0944	0.689	0.208	0.14	0.231	0.0879	0.257	0.399	0.27	0.0962	0.629
Beryllium (Be), total	mg/L									0.00149	0.00157	0.000452	0.00013	0.00328	0.000502	0.000343	0.000847	0.00012	0.001	0.00195	0.000869	0.000316	0.000617
Bismuth (Bi), total	mg/L									0.000846	0.000844	0.000263	0.000071	0.00167	0.000358	0.000162	0.000567	0.00006	0.000482	0.000392	0.000439	0.000084	0.000398
Boron (B), total	mg/L									<0.050	<0.050	<0.050	<0.050	<0.050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050	<0.010	<0.010	<0.050
Cadmium (Cd), total	mg/L									0.000928	0.00108	0.000317	0.00008	0.00209	0.000362	0.000212	0.000512	0.000082	0.000567	0.00103	0.000528	0.000224	0.000438
Calcium (Ca), total	mg/L									152	160	149	142	179	149	149	152	149	130	149	148	151	145
Chromium (Cr), total	mg/L									0.0531	0.0546	0.014	0.00307	0.0775	0.018	0.00899	0.0201	0.00368	0.0191	0.0357	0.0255	0.00435	0.00886
Cobalt (Co), total	mg/L									0.0191	0.018	0.00599	0.00143	0.031	0.00702	0.00365	0.00796	0.00192	0.0073	0.0172	0.00935	0.00288	0.00476
Copper (Cu), total	mg/L									0.0723	0.0856	0.0228	0.0048	0.111	0.0207	0.0103	0.0359	0.00412	0.0259	0.0417	0.0276	0.00659	0.0221
Iron (Fe), total	mg/L									60.6	57.6	21.7	10.5	80.5	25.8	16.8	24.4	12	22.7	44	30.2	13.5	19.3
Lead (Pb), total	mg/L									0.0658	0.0629	0.0209	0.00515	0.124	0.024	0.0116	0.03	0.00526	0.0286	0.0705	0.032	0.0124	0.0287
Lithium (Li), total	mg/L									0.0403	0.0393	0.0191	0.0145	0.0597	0.0167	0.0176	0.0226	0.0135	0.0236	0.0367	0.0272	0.0145	0.0176
Magnesium (Mg), total	mg/L									56.1	58.3	46.7	41.8	67.1	46.5	44	46.3	43.6	46	50.2	48.4	44.1	61.5
Manganese (Mn), total	mg/L									1.07	0.907	0.594	0.461	1.4	0.646	0.532	0.65	0.474	0.629	0.883	0.731	0.488	0.566
Mercury (Hg), total	mg/L									<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020
Molybdenum (Mo), total	mg/L									0.00246	0.00209	0.0016	0.00164	0.00181	0.00187	0.00164	0.00134	0.00176	0.00186	0.00123	0.00183	0.00139	0.00076
Nickel (Ni), total	mg/L									0.0463	0.0478	0.0125	0.00304	0.0704	0.0154	0.00797	0.0193	0.00347	0.0171	0.0358	0.021	0.00523	0.01
Phosphorus (P), total	mg/L									3.29	1.14	0.602	0.11	3.54	0.853	0.456	0.709	0.231	0.611	2.38	1.52	0.589	0.347
Potassium (K), total	mg/L									13.5	12.3	8.11	6.63	18.5	8.58	6.92	9.1	6.41	9.45	12.1	9.95	6.5	6.49
Selenium (Se), total	mg/L									0.000222	0.000283	0.00009	<0.000040	0.00017	0.00007	<0.000040	0.000062	<0.000040	0.000084	<0.000020	0.000087	<0.000040	0.000181



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-24	BH95G-24	BH95G-24	BH95G-24	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25S	BH95G-25D	
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L						47.6	41.3	16.9	8.62	49.2	16.8	13.3	17.2	8.76	20.4	31.1		23.9	8.42	17.3
Silver (Ag), total	mg/L						0.000342	0.000275	0.00018	0.000129	0.000471	0.000149	0.000072	0.000136	0.000046	0.000095	0.000273		0.000172	0.000019	0.000133
Sodium (Na), total	mg/L						2.35	2.49	2.12	4.84	4.45	3.8	3.27	2.76	2.78	2.86	2.7		2.73	2.49	2.15
Strontium (Sr), total	mg/L						0.597	0.577	0.544	0.513	0.67	0.558	0.507	0.516	0.524	0.546	0.496		0.568	0.461	0.589
Sulphur (S), total	mg/L						67	73	72	68	70	66.4	70	66.5	67.2	63.7	59		68.7	67.2	78
Thallium (Tl), total	mg/L						0.000429	0.000383	0.000142	0.000044	0.00063	0.000201	0.000087	0.000143	0.000021	0.000121	0.000385		0.000247	0.0000222	0.00011
Tin (Sn), total	mg/L						0.00186	0.00109	0.00039	0.00023	0.00057	0.00031	0.00022	<0.00020	<0.00020	0.00031	<0.0010		0.00046	<0.00020	0.00078
Titanium (Ti), total	mg/L						1.01	0.751	0.373	0.0659	0.545	0.397	0.225	0.214	0.14	0.241	0.213		0.498	0.0606	0.122
Uranium (U), total	mg/L						0.00875	0.00916	0.00651	0.0035	0.0128	0.00593	0.0044	0.00707	0.00412	0.00676	0.00883		0.00702	0.00448	0.00856
Vanadium (V), total	mg/L						0.0686	0.0612	0.0187	0.00415	0.0937	0.0247	0.0123	0.0257	0.00547	0.0252	0.0481		0.0345	0.00646	0.0123
Zinc (Zn), total	mg/L						0.176	0.182	0.0661	0.0157	0.331	0.0657	0.0341	0.0745	0.0155	0.0796	0.155		0.0865	0.0235	0.509
Zirconium (Zr), total	mg/L						0.00254	0.00144	0.00059	0.00027	0.00151	0.0008	0.00123	0.00062	0.00036	0.00053	0.0021		0.001	0.00073	0.00288
Aluminum (Al), dissolved	mg/L						0.00076	0.00361	0.00204	<0.00050	<0.00050	<0.00050	0.00093	<0.00050	<0.00050	<0.00050	<0.00050		0.0038	0.00052	0.0033
Antimony (Sb), dissolved	mg/L	0.2					0.000026	<0.000020	<0.000020	<0.000020	0.000053	0.000025	<0.000020	0.000028	<0.000020	0.000032	0.00002		0.000037	0.000023	0.000057
Arsenic (As), dissolved	mg/L	0.05					0.00719	0.00661	0.00824	0.00146	0.00187	0.00127	0.00715	0.00136	0.00145	0.00131	0.0058		0.00715	0.00276	0.00163
Barium (Ba), dissolved	mg/L	10					0.0689	0.0879	0.0698	0.0623	0.0763	0.0628	0.0647	0.0564	0.0488	0.0588	0.0577		0.0577	0.0569	0.0229
Beryllium (Be), dissolved	mg/L	0.053					<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L						<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050
Boron (B), dissolved	mg/L						<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*					<0.0000050	0.0000074	<0.0000050	0.000009	0.0000088	0.00001	<0.0000050	0.000006	<0.0000050	0.000005	<0.0000050		<0.0000050	<0.0000050	<0.0000050
Calcium (Ca), dissolved	mg/L						140	134	150	145	147	156	149	133	166	131	129		135	141	132
Chromium (Cr), dissolved	mg/L	0.01					<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010
Cobalt (Co), dissolved	mg/L	0.009					0.000183	0.000307	0.000176	0.000285	0.000351	0.000266	0.000283	0.000228	0.000227	0.000249	0.000257		0.000192	0.000205	0.000112
Copper (Cu), dissolved	mg/L	*					0.000112	<0.000050	0.000089	0.000116	0.000059	0.000113	<0.000050	0.000084	<0.000050	0.000104	<0.000050		<0.000050	<0.000050	0.0037
Iron (Fe), dissolved	mg/L						5.35	5.97	7.62	0.0023	0.0015	0.0011	7.6	0.0011	<0.0010	0.0024	5.16		6.46	2.06	1.86
Lead (Pb), dissolved	mg/L	*					0.0000138	<0.0000050	0.000017	0.000014	<0.0000050	<0.0000050	0.000007	<0.0000050	<0.0000050	0.000005	0.000005		0.000028	<0.0000050	0.0000658
Lithium (Li), dissolved	mg/L						0.0118	0.0098	0.0111	0.0118	0.0119	0.0123	0.0123	0.0116	0.0106	0.0113	0.0107		0.011	0.0117	0.0142
Magnesium (Mg), dissolved	mg/L						42.1	44.3	44.3	40.4	41.3	43.3	44.9	38.4	38.9	37.7	36.6		40.5	42.5	54.9
Manganese (Mn), dissolved	mg/L						0.373	0.439	0.389	0.407	0.393	0.406	0.441	0.387	0.383	0.382	0.383		0.422	0.399	0.32
Mercury (Hg), dissolved	mg/L	0.001					<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	10					0.00152	0.0013	0.00149	0.00164	0.00183	0.00175	0.00177	0.00168	0.00162	0.0018	0.00108		0.00155	0.00155	0.000217
Nickel (Ni), dissolved	mg/L	*					0.00063	0.000691	0.000481	0.000426	0.000641	0.000497	0.000487	0.000487	0.000466	0.000537	0.000493		0.000389	0.000409	0.000339
Phosphorus (P), dissolved	mg/L						0.003	0.0105	0.0065	0.0029	<0.0020	<0.0020	<0.0020	0.0036	0.0036	0.0049	0.0044		0.0065	0.0027	0.0078
Potassium (K), dissolved	mg/L						5.71	5.95	5.76	6.41	6.13	5.7	5.67	5.73	5.57	6.11	5.89		5.82	5.84	4.43
Selenium (Se), dissolved	mg/L	0.01					<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040		<0.000040	<0.000040	<0.000040
Silicon (Si), dissolved	mg/L						6.53	6.24	5.78	6.48	5.98	6.35	5.75	4.99	4.83	5.62	6.05		5.53	5.68	6.3
Silver (Ag), dissolved	mg/L	*					<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	0.0000051
Sodium (Na), dissolved	mg/L						2.05	2.08	2.22	4.55	4.05	3.79	3.4	2.48	2.69	2.53	2.6		2.43	2.51	2.09
Strontium (Sr), dissolved	mg/L						0.505	0.501	0.468	0.508	0.461	0.499	0.514	0.445	0.449	0.463	0.44		0.499	0.478	0.536
Sulphur (S), dissolved	mg/L						71.9	73.1	74.1	62.3	65.9	72.4	72.6	60.2	62.1	59.1	56.4		64.9	68.4	78.2
Thallium (Tl), dissolved	mg/L	0.003					<0.0000020	<0.0000020	<0.0000020	0.000004	<0.0000020	0.000003	<0.0000020	0.000002	0.000002	0.000002	<0.0000020		<0.0000020	<0.0000020	<0.0000020
Tin (Sn), dissolved	mg/L						<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	1					<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050
Uranium (U), dissolved	mg/L	3					0.00441	0.00427	0.00495	0.00292	0.00339	0.00339	0.00352	0.0038	0.00329	0.00365	0.00335		0.00372	0.00371	0.00597
Vanadium (V), dissolved	mg/L						<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*					0.0005	0.00071	0.00134	0.00048	0.00037	<0.00010	0.00104	0.00048	0.00023	0.0005	0.00051		0.0038	0.00045	0.0125
Zirconium (Zr), dissolved	mg/L						<0.00010	0.00036	<0.00010	<0.00010	<0.00010	<0.00010	0.00015	<0.00010	<0.00010	<0.00010	<0.00010		0.0001	<0.00010	0.00302



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-29	BH95G-29	BH95G-29	BH95G-29	BH95G-29	BH95G-29	
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depth to Water (mbTOC)	m			5.514	5.188	5.145	4.924	4.139	4.686	5.354	5.62	5.2	5.117	5.399		1.35	0.521	0.758	0.354	0	
Well Depth	mbTOC			21.2	21.1	21.1	21.115	21.094	21.089	21.116	21.08	21.101	21.091	21.099		2.06	16.57	16.54	16.582	16.584	0
Total Suspended Solids	mg/L		459	142	1220	426	5110	1020	576	186	238	621	692	728	9360		8290	1210	887	3270	
pH (field)	pH units		7.13	7.16	7.23	7.15	7.05	7	7.26	7.03	7.09	7.19	7.64	7.93	7.56		7.37	7.47	7.49	7.35	
pH (lab)	pH units		8.16	7.94	7.61	7.94	7.54	7.65	7.63	7.64	7.94	8.05	7.97	8.05	8.03		7.86	8.24	7.98	7.98	
Specific Conductance (field)	µS/cm		984	1069	1055	1103	1080	1008	800.3	1067	1091	1083	948	961	446.2		429.6	452.1	443.6	431.6	
Specific Conductance (lab)	µS/cm		1050	1060	1050	1020	1070	1060	1040	1050	1080	1050	1010	1020	435		428	436	441	440	
Temperature (field)	C		1.1	3.8	2.4	1.9	2.3	1.8	1.4	1	1.7	3.5	2.1	1	-0.1		3.4	1.9	2.4	3.4	
Dissolved Oxygen (field)	mg/L		0.9		2.4	2.6	0.9	1	1.2	1.18	6.57	0.93	2.7	3.7	0.81		2.1	1.5	1.0	0.8	
Dissolved Oxygen (field)	%				21	22	9	9	11	9.8	57	7	23	31			20	13	9	8	
ORP (field)	mV			-42.3	-41.4	-12.4	-35.2	-18.7	-8.8	175	37.50	91.8	-26.1	-21.3			-56.2	-44.9	-54.8	-36.3	
Hardness (from total)	mg/L		677	668	741	635	734	651	650	598	631	605	586	632	775		420	301	277	305	
Hardness (from dissolved)	mg/L		593	621	614	603	631	587	597	582	599	599	588	557	217		230	239	238	240	
Total Acidity	mg/L		14.6	15.5	14.3	7.58	17.4	22.6	12.7	15.1	11.4	18.9	9.1	17.6	<0.50		2.52	<0.50	1.55	4.52	
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50		<0.50	<0.50	<0.50	<0.50	
Alkalinity, total	mg/L		350	361	360	346	343	351	352	357	356	347	354	360	181		186	178	181	184	
Alkalinity, bicarbonate HCO3	mg/L		427	440	439	422	418	429	429	436	434	423	432	439	221		227	217	221	224	
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	
Chloride	mg/L		1.2	2	1.1	1.3	1	1.1	1.2	0.8	0.85	<0.50	0.61	1.2	0.88		0.96	1.6	0.94	1.5	
Fluoride	mg/L	*	0.083	0.097	0.095	0.1	0.09	0.087	0.093	0.096	0.092	0.093	0.092	0.086	0.11		0.11	0.13	0.12	0.11	
Sulphate, dissolved	mg/L	1000	222	254	222	249	257	243	221	238	260	223	232	248	44		50.2	48.1	45.8	49.9	
Ammonia (N)	mg/L	*	0.079	0.081	0.077	0.2	0.12	0.07	0.1	0.079	0.092	0.065	0.055	0.088	0.22		0.1	1.2	0.06	0.071	
Nitrite (N)	mg/L	*	<0.0020	<0.0020	0.0058	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.004	0.0047	<0.0020	<0.0020		0.0078	0.0159	<0.0020	<0.0020	
Nitrate (N)	mg/L	400	<0.0020	0.053	<0.0020	<0.0020	<0.0020	<0.0020	0.0035	<0.0020	0.0029	<0.0020	<0.0020	0.0026	<0.0020		0.0022	<0.0020	<0.0020	0.0021	
Nitrite & Nitrate, as N	mg/L	400	<0.0020	0.053	0.0066	<0.0020	<0.0020	<0.0020	0.0035	<0.0020	0.0029	0.002	<0.0020	0.0026	<0.0020		0.01	0.0152	<0.0020	0.0021	
Phosphorus, total-colourimetric	mg/L		0.256	0.0059	0.0105	0.0272	0.357	0.413	0.0873	0.078	0.0858	0.159	0.312	0.626	0.0598		0.0316	2.3	1.41	3.35	
Phosphorus, Total Dissolved	mg/L		0.0036	0.0063	0.0121	0.0286	0.365	0.0231	0.0799	0.0163	0.09	0.0213	0.294	0.058	0.264		<0.0020	2.31	1.36	0.52	
Dissolved Organic Carbon	mg/L			2.47	2.22	2.48	2.55	2.74	2.11	2.08	2.02	2.01	2.12	2.12			1.32	1.16	1.78	1.49	
Aluminum (Al), total	mg/L		3.58	1.73	9.21	4.02	10.4	3.48	4.37	0.669	2.13	5.63	5.53	4.33	79.8		37.5	11.1	7.84	12.6	
Antimony (Sb), total	mg/L		0.000619	0.000222	0.000595	0.000434	0.000383	0.0003	0.000388	0.000146	0.000153	0.000429	0.00035	0.000511	0.00207		0.00232	0.000506	0.000704	0.00102	
Arsenic (As), total	mg/L		0.00853	0.00283	0.013	0.00467	0.0157	0.005	0.0054	0.00222	0.00186	0.00525	0.0047	0.00443	0.134		0.0843	0.0242	0.0187	0.0291	
Barium (Ba), total	mg/L		0.551	0.0693	1.09	0.34	0.792	0.44	0.48	0.0832	0.164	0.869	0.55	0.524	1.97		0.999	0.393	0.266	0.44	
Beryllium (Be), total	mg/L		0.000346	0.000073	0.0011	0.000321	0.00225	0.000716	0.000703	0.000128	0.000139	0.000498	0.0005	0.000415	0.00617		0.00234	0.0011	0.000619	0.00125	
Bismuth (Bi), total	mg/L		0.000239	0.000086	0.000638	0.000247	0.00124	0.000351	0.000419	0.000054	0.000066	0.000256	0.000261	0.000249	0.00482		0.0028	0.000872	0.000453	0.000951	
Boron (B), total	mg/L		<0.050	<0.050	<0.050	<0.010	0.011	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.052		<0.050	<0.010	<0.010	<0.050	
Cadmium (Cd), total	mg/L		0.000334	0.000154	0.000996	0.000286	0.000728	0.000331	0.000377	0.000077	0.000086	0.000347	0.000301	0.000225	0.0212		0.0193	0.00186	0.00173	0.00356	
Calcium (Ca), total	mg/L		165	160	176	154	184	162	163	145	155	145	146	153	202		112	94.2	88.3	94.6	
Chromium (Cr), total	mg/L		0.00483	0.00433	0.0121	0.00426	0.00593	0.00273	0.00379	0.00078	0.0015	0.00553	0.0047	0.00423	0.173		0.0866	0.017	0.013	0.0226	
Cobalt (Co), total	mg/L		0.00332	0.00194	0.0112	0.0037	0.00862	0.00515	0.0048	0.000888	0.00105	0.00424	0.00323	0.00365	0.0836		0.0505	0.00802	0.00616	0.0115	
Copper (Cu), total	mg/L		0.0143	0.00705	0.0394	0.0115	0.0248	0.0114	0.0117	0.00271	0.00346	0.0146	0.0102	0.00921	0.565		0.509	0.0541	0.0509	0.11	
Iron (Fe), total	mg/L		12.3	5.86	28.2	10.9	31.2	12.6	14.3	3.43	5.71	14.5	14.3	14.8	161		81.7	21.2	15.8	25	
Lead (Pb), total	mg/L		0.0219	0.00957	0.0494	0.0147	0.0811	0.0225	0.0268	0.00375	0.00487	0.0211	0.0172	0.0149	0.786		0.486	0.0911	0.185	0.2	
Lithium (Li), total	mg/L		0.0162	0.0159	0.0194	0.0118	0.0241	0.0152	0.0163	0.0128	0.0157	0.0161	0.0153	0.0151	0.104		0.0502	0.0129	0.0126	0.0213	
Magnesium (Mg), total	mg/L		64.4	64.9	73	61	66.7	60	58.9	57.1	59.5	59.2	54.1	61	65.5		34.4	15.9	13.8	16.6	
Manganese (Mn), total	mg/L		0.58	0.57	0.998	0.614	1.44	0.741	0.732	0.431	0.47	0.666	0.607	0.655	5.44		2.75	1	0.656	1.04	
Mercury (Hg), total	mg/L		<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020		<0.000020	<0.000020	<0.000020	<0.000020	
Molybdenum (Mo), total	mg/L		0.00048	0.000353	0.000775	0.000513	0.000606	0.000331	0.000515	0.000424	0.000269	0.000588	0.000416	0.000429	0.0039		0.00423	0.000967	0.000991	0.00113	
Nickel (Ni), total	mg/L		0.00724	0.00277	0.0183	0.00628	0.0126	0.00609	0.00609	0.0014	0.00174	0.00687	0.00524	0.00535	0.228		0.151	0.0206	0.0162	0.0322	
Phosphorus (P), total	mg/L		0.246	0.092	0.92	0.279	1.32	0.711	0.546	0.0706	0.106	0.418	0.506	0.485	12.1		3.11	2.6	1.37	2.63	
Potassium (K), total	mg/L		6.56	5.03	7.68	5.57	7.86	5.64	5.98	4.86	4.98	5.85	5.65	5.71	22.7		10.9	5.9	4.51	6.1	
Selenium (Se), total	mg/L		0.000102	0.000079	0.000178	0.000082	0.000157	0.000067	0.000103	<0.000040	<0.000040	0.000095	0.000078	0.000059	0.00239						

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-25D	BH95G-29	BH95G-29	BH95G-29	BH95G-29	BH95G-29	BH95G-29	BH95G-29
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L		11.4	8.62	19.9	11.8	25.2	10.1	11.8	6.63	9.95	12.8	13.7	11.3	106		48.2	22.1	16.8	21.8	
Silver (Ag), total	mg/L		0.000162	0.000088	0.000297	0.000171	0.000507	0.000074	0.000081	0.000022	0.000025	0.00012	0.000189	0.000093	0.00426		0.00325	0.00051	0.000409	0.000329	
Sodium (Na), total	mg/L		2.53	2.84	2.52	2.32	2.46	2.07	2.43	2.22	2.14	2.14	2.21	2.38	2.65		1.13	1.52	1.14	<1.3	
Strontium (Sr), total	mg/L		0.649	0.588	0.695	0.562	0.728	0.586	0.638	0.576	0.562	0.549	0.553	0.495	1.33		0.374	0.415	0.299	0.407	
Sulphur (S), total	mg/L		94	96	99	89.5	94.8	87.9	87.8	90.7	95.7	86.5	79.2	83.5	19		18	15.8	17.2	16	
Thallium (Tl), total	mg/L		0.000067	0.00004	0.000143	0.000078	0.000254	0.000063	0.000069	0.000011	0.000026	0.000092	0.000091	0.0000735	0.00186		0.000834	0.000282	0.000153	0.000228	
Tin (Sn), total	mg/L		0.00067	0.0004	0.0005	0.0004	0.00035	<0.00020	0.0004	<0.00020	<0.00020	0.00026	0.00024	0.00026	0.0019		0.00052	0.00048	0.0004	0.0011	
Titanium (Ti), total	mg/L		0.129	0.118	0.146	0.11	0.117	0.0398	0.0687	0.0215	0.0512	0.104	0.0784	0.0776	0.876		0.6	0.164	0.2	0.189	
Uranium (U), total	mg/L		0.0116	0.00759	0.0117	0.00902	0.0182	0.0117	0.0112	0.008	0.0084	0.00865	0.0104	0.00908	0.0486		0.0292	0.0102	0.00676	0.0111	
Vanadium (V), total	mg/L		0.00778	0.00512	0.017	0.00694	0.0143	0.00638	0.0078	0.00122	0.00285	0.0106	0.00915	0.0085	0.225		0.101	0.0228	0.0175	0.0287	
Zinc (Zn), total	mg/L		0.313	0.0699	0.758	0.206	0.651	0.291	0.284	0.0484	0.0872	0.343	0.305	0.287	3.07		2.89	0.317	0.306	0.595	
Zirconium (Zr), total	mg/L		0.00476	0.00078	0.00467	0.00493	0.00326	0.0016	0.00183	0.00128	0.00516	0.00486	0.00323	0.00335	0.00558		0.00313	0.00238	0.00232	0.00159	
Aluminum (Al), dissolved	mg/L		0.00258	0.00089	<0.00050	0.00117	0.00128	<0.00050	<0.00050	0.0012	<0.00050	0.00118	0.00096	0.005	0.00966		0.00158	0.00109	0.00171	0.00128	
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.000024	0.000021	0.000185	0.000164	0.000169	0.00009	0.000133	0.000031	0.00004	0.000104	0.000053	0.000081	0.000253		0.00164	0.000516	0.000061	0.00063	
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.00152	0.000703	0.000906	0.000597	0.00166	0.00047	0.000578	0.000608	0.00102	0.00102	0.00102	0.000921	0.00782		0.00633	0.00466	0.00581	0.00419	
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0233	0.0285	0.0252	0.0257	0.023	0.0215	0.0271	0.0234	0.0211	0.0214	0.0201	0.0212	0.0459		0.0943	0.0529	0.0608	0.0698	
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010	
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050	
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	
Cadmium (Cd), dissolved	mg/L	*	<0.0000050	0.000006	<0.0000050	0.00001	<0.0000050	<0.0000050	0.000009	<0.0000050	<0.0000050	<0.0000050	0.000009	<0.0000050	<0.0000050		<0.0000050	0.000031	<0.0000050	0.000011	
Calcium (Ca), dissolved	mg/L		146	157	152	148	157	143	149	143	146	146	143	140	67.1		76.6	79.1	78	80.4	
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010	
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000121	0.000301	0.000679	0.000788	0.000351	0.000849	0.000585	0.000332	0.000171	0.00029	0.000188	0.000276	0.000347		0.000264	0.000105	0.000119	0.000225	
Copper (Cu), dissolved	mg/L	*	0.000134	0.000086	<0.000050	0.000115	0.000152	<0.000050	0.000093	0.000069	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050		0.000076	0.000141	0.000112	0.000127	
Iron (Fe), dissolved	mg/L		2.21	0.0021	0.0014	<0.0010	1.1	0.0011	<0.0010	0.0017	1.87	0.971	1.83	1.07	0.438		<0.0010	<0.0010	0.884	<0.0010	
Lead (Pb), dissolved	mg/L	*	0.000054	<0.0000050	<0.0000050	<0.0000050	0.000023	<0.0000050	<0.0000050	0.000008	0.000006	0.000007	0.000029	<0.0000050	0.0000303		0.000481	0.00003	0.000014	0.000105	
Lithium (Li), dissolved	mg/L		0.0114	0.0122	0.0126	0.0128	0.0124	0.0125	0.012	0.0123	0.0126	0.0132	0.0115	0.012	0.0029		0.00503	0.00528	0.00526	0.00495	
Magnesium (Mg), dissolved	mg/L		55.5	55.6	56.8	56.8	58.2	55.9	54.7	54.7	56.8	56.8	56.5	50.5	12		9.46	10.1	10.5	9.44	
Manganese (Mn), dissolved	mg/L		0.317	0.421	0.402	0.392	0.432	0.401	0.305	0.39	0.402	0.415	0.395	0.338	0.315		0.129	0.157	0.179	0.178	
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000088	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	<0.0000020	
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00024	0.000312	0.000542	0.000433	0.000297	0.000251	0.000414	0.000333	0.000247	0.000285	0.000215	0.000242	0.000887		0.00313	0.00111	0.000807	0.00131	
Nickel (Ni), dissolved	mg/L	*	0.000252	0.000377	0.00126	0.00176	0.000684	0.000932	0.00103	0.000451	0.000247	0.0004	0.000252	0.000344	0.000449		0.000766	0.000682	0.000191	0.000547	
Phosphorus (P), dissolved	mg/L		0.0061	<0.0020	<0.0020	<0.0020	0.0035	0.0026	<0.0020	0.0065	0.0029	0.0026	0.0028	0.003	0.302		<0.0020	0.161	0.159	0.023	
Potassium (K), dissolved	mg/L		4.52	4.48	4.66	4.49	4.3	4.44	4.44	4.49	4.42	4.28	4.42	3.98	3.57		3.03	2.81	2.73	2.97	
Selenium (Se), dissolved	mg/L	<b>0.01</b>	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040		0.000154	0.000076	<0.000040	0.000109	
Silicon (Si), dissolved	mg/L		4.51	5.5	5.85	5.72	5.24	4.42	4.94	5.16	5.56	5.18	4.79	4.96	3.24		3.34	3.72	3.04	3.09	
Silver (Ag), dissolved	mg/L	*	0.000011	0.000006	<0.0000050	<0.0000050	0.000009	<0.0000050	<0.0000050	<0.0000050	0.000008	0.000005	0.00001	<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050	
Sodium (Na), dissolved	mg/L		2.31	2.44	2.29	2.07	2.22	2.02	2.29	2.13	2.16	2.12	2.26	2.12	1.52		0.937	1.17	1.1	0.943	
Strontium (Sr), dissolved	mg/L		0.49	0.552	0.506	0.553	0.563	0.505	0.513	0.546	0.542	0.521	0.546	0.479	0.364		0.197	0.281	0.233	0.258	
Sulphur (S), dissolved	mg/L		81.2	85.3	88.8	91.2	93.8	78.5	83.6	85.4	94.5	84.4	82.3	76.2	18.8		16.2	16.9	15.9	15	
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	<0.0000020	0.000002	<0.0000020	0.000005	<0.0000020	0.000002	0.000005	0.000002	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000092		0.0000026	0.000004	<0.0000020	0.000002	
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050		<0.00050	<0.00050	<0.00050	<0.00050	
Uranium (U), dissolved	mg/L	<b>3</b>	0.0091	0.00672	0.00688	0.00689	0.00711	0.00772	0.00701	0.00742	0.00717	0.00706	0.00761	0.00745	0.00338		0.0103	0.0034	0.00276	0.00417	
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020		0.00057	0.00048	<0.00020	0.00039	

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-29	BH95G-29	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-31	BH95G-31	BH95G-31	BH95G-31	BH95G-31	BH95G-31	BH95G-31	BH95G-31	
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m		1.292	1.525		2.205	1.781	2.527	1.220	0.902		0.86				1.55	1.44	1.545	1.228	0.223	
Well Depth	mbTOC			16.411		8.65	8.4	8.665	8.648	8.652		8.513	0.92				8.72	7.235	8.764	8.717	0.975
Total Suspended Solids	mg/L				970	30.3	13.3	10.4	42.4			9.1			5060	713	180	1450	495	110	
pH (field)	pH units				7.57	7.79	7.72	7.85	7.23			7.48			8.1	7.95	7.86	7.89	7.71	7.91	
pH (lab)	pH units				8.17	8.08	8.18	8.14	7.66			7.99			8.17	8.16	8.25	8.23	8.07	8	
Specific Conductance (field)	µS/cm				402.2	348.8	399.2	401.9	397.9			385.6			307.3	265	300.2	215.6	352.6	294.7	
Specific Conductance (lab)	µS/cm				386	384	387	371	392			392			286	289	297	294	300	294	
Temperature (field)	C					9.6	5.6	4.6	6.5			3.2			-0.2	1.2	1.3	2.6	2.3	3.1	
Dissolved Oxygen (field)	mg/L				10.94	10.43	7.2		7.4			5.8			11.24	8	9.9	10.9	7.9	7.8	
Dissolved Oxygen (field)	%					101.8	70		71			52					84	96.4	67.9	70	
ORP (field)	mV					161	64.8	110.9	100.8			78.1					62.6	118.8	322.5	97.3	
Hardness (from total)	mg/L				196	209	206	200	192			215			432	152	193	239	213	151	
Hardness (from dissolved)	mg/L				203	225	214	206	215			202			142	162	151	153	155	154	
Total Acidity	mg/L				<0.50	2.54	0.95	<0.50	7.9			<0.50			<0.50	0.72	<0.50	<0.50	<0.50	2.04	
Acidity (pH 4.5)	mg/L				<0.50	<0.50	<0.50	<0.50	<0.50			<0.50			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, total	mg/L				180	187	189	174	183			189			126	127	135	132	131	130	
Alkalinity, bicarbonate HCO3	mg/L				220	228	230	212	223			231			154	155	165	161	160	158	
Alkalinity, hydroxide OH	mg/L				<0.50	<0.50	<0.50	<0.50	<0.50			<0.50			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, carbonate CO3	mg/L				<0.50	<0.50	<0.50	<0.50	<0.50			<0.50			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, PP carbonate CO3	mg/L				<0.50	<0.50	<0.50	<0.50	<0.50			<0.50			<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Chloride	mg/L				0.87	0.71	0.93	<0.50	0.67			0.77			0.54	0.6	0.81	<0.50	0.7	0.71	
Fluoride	mg/L	*			0.14	0.14	0.14	0.14	0.13			0.13			0.1	0.1	0.09	0.098	0.09	0.095	
Sulphate, dissolved	mg/L	1000			22.4	26	26.4	24.5	23.4			25			20	20.4	24.2	25.4	23.9	22.2	
Ammonia (N)	mg/L	*			0.047	0.015	0.024	0.018	0.037			0.015			0.22	0.2	0.044	0.037	0.028	0.041	
Nitrite (N)	mg/L	*			0.013	0.0036	0.0052	<0.0020	<0.0020			<0.0020			0.0075	0.0032	0.002	<0.0020	<0.0020	0.0024	
Nitrate (N)	mg/L	400			0.279	0.351	0.291	0.341	0.328			0.312			0.192	0.199	0.161	0.206	0.21	0.211	
Nitrite & Nitrate, as N	mg/L	400			0.292	0.354	0.296	0.341	0.328			0.312			0.199	0.202	0.163	0.206	0.21	0.213	
Phosphorus, total-colourimetric	mg/L				0.228	0.0112	0.0043	0.0229	0.0402			0.0309			4.67	1.09	0.0129	0.237	0.219	0.0221	
Phosphorus, Total Dissolved	mg/L				0.0048	0.0105	0.003	0.0179	0.0438			0.0061			0.0028	0.0029	0.0144	0.239	0.226	0.0197	
Dissolved Organic Carbon	mg/L					1.17	3.32	1.62	0.6			<0.50					0.91	0.98	0.54	1.27	
Aluminum (Al), total	mg/L				0.984	0.259	0.125	0.095	0.581			0.218			62	1.89	8.75	15	12.2	0.542	
Antimony (Sb), total	mg/L				0.000081	0.000054	0.000025	<0.00020	0.000058			0.000071			0.000668	0.000063	0.000255	0.00029	0.000281	0.000076	
Arsenic (As), total	mg/L				0.000647	0.000285	0.000078	0.0002	0.000296			0.000206			0.126	0.00627	0.0263	0.03	0.0216	0.00195	
Barium (Ba), total	mg/L				0.0911	0.0805	0.0708	0.076	0.0823			0.0891			2.25	0.275	0.526	0.865	0.54	0.154	
Beryllium (Be), total	mg/L				0.000093	0.000038	<0.000010	<0.00010	0.000042			0.000038			0.00178	0.000136	0.000253	0.00066	0.000365	0.000019	
Bismuth (Bi), total	mg/L				0.000034	<0.000020	<0.000050	<0.00010	0.000011			0.000017			0.00289	0.00027	0.00038	0.00121	0.000615	0.000034	
Boron (B), total	mg/L				<0.050	<0.050	<0.010	<0.10	<0.010			<0.010			<0.050	<0.010	<0.050	<0.10	<0.010	<0.010	
Cadmium (Cd), total	mg/L				0.00023	0.00014	0.00012	0.000213	0.000229			0.000294			0.00644	0.000699	0.00128	0.00284	0.00145	0.000119	
Calcium (Ca), total	mg/L				64.3	71.7	70.9	68.5	66.2			73.8			103	54.8	63.9	75.4	68.1	55.5	
Chromium (Cr), total	mg/L				0.00143	<0.00050	0.00022	<0.0010	0.00072			0.00044			0.197	0.00454	0.0276	0.0454	0.038	0.00155	
Cobalt (Co), total	mg/L				0.00171	0.000222	0.000075	0.00018	0.000519			0.000859			0.244	0.0164	0.0506	0.0645	0.0593	0.00229	
Copper (Cu), total	mg/L				0.00783	0.00284	0.000769	0.0028	0.0044			0.00415			1.42	0.104	0.242	0.61	0.248	0.0213	
Iron (Fe), total	mg/L				1.32	0.302	0.126	0.211	0.818			0.759			228	13.8	45.6	81.6	42.9	3.01	
Lead (Pb), total	mg/L				0.00393	0.00135	0.000265	0.00137	0.00166			0.0017			0.561	0.0809	0.123	0.278	0.134	0.00959	
Lithium (Li), total	mg/L				0.0023	0.00203	0.00107	<0.0050	0.00154			0.00159			0.0453	0.00191	0.00648	0.0148	0.00988	0.00156	
Magnesium (Mg), total	mg/L				8.66	7.23	7.02	7	6.56			7.47			42.6	3.74	8.2	12.2	10.4	3.02	
Manganese (Mn), total	mg/L				0.0564	0.0102	0.00203	0.007	0.0129			0.0193			3.25	0.327	0.668	1.15	0.955	0.0399	
Mercury (Hg), total	mg/L				<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020			<0.0000020			<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	
Molybdenum (Mo), total	mg/L				0.00216	0.00197	0.00237	0.0022	0.00279			0.00273			0.00569	0.00129	0.00225	0.0015	0.00193	0.00161	
Nickel (Ni), total	mg/L				0.00313	0.00106	0.00126	0.0015	0.0029			0.00474			0.469	0.0246	0.0748	0.14	0.0973	0.00535	
Phosphorus (P), total	mg/L				0.137	0.027	0.0088	<0.050	0.0398			0.0319			3.88	0.247	0.43	1.41	0.663	0.0358	
Potassium (K), total	mg/L				2.49	2.03	1.74	1.6	1.74			1.84			17.3	3.22	4.44	6.6	5.41	2.9	
Selenium (Se), total	mg/L				0.0018	0.00254	0.0024	0.00248	0.00243			0.0026			0.00434	0.00142	0.0021	0.00197	0.00186	0.00166	

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-29	BH95G-29	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-30	BH95G-31	BH95G-31	BH95G-31	BH95G-31	BH95G-31	BH95G-31	BH95G-31	BH95G-31		
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####		
Silicon (Si), total	mg/L				5.86	3.92	3.29	3.38	4.56				3.59			72.5	6.09		16.7	28.4	21.1	3.58
Silver (Ag), total	mg/L				0.000306	0.000116	0.000033	<0.00010	0.000108				0.000065			0.0129	0.000703		0.00267	0.00616	0.00306	0.000137
Sodium (Na), total	mg/L				1.7	1.67	1.43	<2.5	1.28				1.3			1.56	0.922		0.9	<2.5	1.04	0.95
Strontium (Sr), total	mg/L				0.287	0.261	0.239	0.231	0.236				0.239			0.427	0.192		0.216	0.261	0.234	0.19
Sulphur (S), total	mg/L				<15	<15	8	<30	7.7				8.6			<15	6.8		<15	<30	7.3	7.1
Thallium (Tl), total	mg/L				0.000011	0.000008	0.000002	<0.000020	0.000008				0.000006			0.000877	0.000037		0.000149	0.000266	0.000172	0.000009
Tin (Sn), total	mg/L				0.00031	<0.00020	<0.00020	<0.00020	<0.00020				<0.00020			0.00471	0.00034		0.00085	<0.00020	0.00105	<0.00020
Titanium (Ti), total	mg/L				0.0377	0.0062	0.00322	<0.020	0.0143				0.0079			3.04	0.142		0.528	0.923	0.69	0.042
Uranium (U), total	mg/L				0.00295	0.0028	0.00273	0.00264	0.00255				0.00342			0.00602	0.00144		0.00163	0.00248	0.00194	0.00105
Vanadium (V), total	mg/L				0.00251	<0.00050	<0.00020	<0.00020	0.00173				0.00105			0.382	0.0196		0.0605	0.103	0.0736	0.00411
Zinc (Zn), total	mg/L				0.0297	0.0155	0.0101	0.02	0.0246				0.0287			0.936	0.0514		0.135	0.296	0.174	0.0107
Zirconium (Zr), total	mg/L				0.00121	0.00022	0.00032	<0.0010	0.00066				0.00026			0.0294	0.00086		0.00574	0.0033	0.00962	0.00026
Aluminum (Al), dissolved	mg/L				0.0129	0.00098	0.00076	0.00296	0.00104				0.0005			0.00375	0.0852		0.00284	0.00289	0.00314	0.00182
Antimony (Sb), dissolved	mg/L	0.2			0.00002	0.000035	<0.000020	0.00004	0.000022				0.00003			0.000059	0.000108		<0.000020	<0.000020	0.000028	<0.000020
Arsenic (As), dissolved	mg/L	0.05			0.000062	0.000085	0.00004	0.000067	0.000031				0.000028			0.000124	0.000137		0.00021	0.000248	0.00006	0.0001
Barium (Ba), dissolved	mg/L	10			0.0745	0.0747	0.0734	0.069	0.0719				0.0731			0.127	0.146		0.131	0.128	0.127	0.124
Beryllium (Be), dissolved	mg/L	0.053			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010				<0.000010			<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L				<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050				<0.0000050			<0.0000050	<0.0000050		<0.0000050	<0.0000050	<0.0000050	<0.0000050
Boron (B), dissolved	mg/L				<0.010	<0.010	<0.010	<0.010	<0.010				<0.010			<0.010	<0.010		<0.010	<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*			0.000095	0.000096	0.000106	0.000156	0.000152				0.000186			0.00002	0.000023		0.000018	0.000023	0.000021	0.000022
Calcium (Ca), dissolved	mg/L				69.7	78.6	74.6	71.2	73.7				69			52.2	59.8		56	56.7	57.3	57.2
Chromium (Cr), dissolved	mg/L	0.01			0.0001	<0.00010	<0.00010	<0.00010	<0.00010				<0.00010			<0.00010	0.00023		<0.00010	0.00011	0.00011	<0.00010
Cobalt (Co), dissolved	mg/L	0.009			0.000056	0.000025	0.000008	0.000011	0.000008				0.000026			0.000027	0.000162		0.000016	0.000032	0.000012	0.000215
Copper (Cu), dissolved	mg/L	*			0.000623	0.000595	0.000262	0.000437	0.000537				0.000369			0.000453	0.00132		0.000437	0.000738	0.000548	0.000433
Iron (Fe), dissolved	mg/L				0.0149	<0.0010	<0.0010	<0.0010	<0.0010				<0.0010			<0.0010	0.0875		0.0013	0.0013	0.0031	0.0015
Lead (Pb), dissolved	mg/L	*			0.000044	0.000084	0.000016	0.00002	0.000014				0.000006			0.000016	0.000259		0.000021	0.000032	0.00003	0.000012
Lithium (Li), dissolved	mg/L				0.00193	0.00218	0.00158	0.00166	0.00154				0.00213			0.001	0.00102		0.00111	0.00114	0.00146	0.0008
Magnesium (Mg), dissolved	mg/L				6.94	7.07	6.61	6.89	7.52				7.14			2.92	3.13		2.79	2.81	3.04	2.78
Manganese (Mn), dissolved	mg/L				0.00836	0.00243	0.000293	0.000063	0.000589				0.002			0.000728	0.00121		0.000426	0.00139	0.00018	0.00532
Mercury (Hg), dissolved	mg/L	0.001			0.0000054	<0.0000020	<0.0000020	<0.0000020	<0.0000020				<0.0000020			<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	10			0.00216	0.0021	0.00242	0.00219	0.00244				0.00314			0.00178	0.00179		0.0015	0.00158	0.00159	0.00165
Nickel (Ni), dissolved	mg/L	*			0.000471	0.000558	0.00106	0.00104	0.00124				0.00242			0.000403	0.000597		0.000444	0.000396	0.000425	0.000491
Phosphorus (P), dissolved	mg/L				0.0084	0.0048	0.005	<0.0020	0.0063				<0.0020			0.0028	0.009		0.0022	<0.0020	<0.0020	0.0026
Potassium (K), dissolved	mg/L				1.91	2.03	1.76	1.64	1.75				1.77			2.88	3.15		2.72	2.56	2.71	2.87
Selenium (Se), dissolved	mg/L	0.01			0.00211	0.00258	0.00234	0.00259	0.00277				0.0025			0.00136	0.00166		0.00139	0.00163	0.00165	0.00154
Silicon (Si), dissolved	mg/L				3.33	3.51	3.12	3.31	3.13				2.83			2.79	2.97		2.65	3.11	2.53	2.68
Silver (Ag), dissolved	mg/L	*			<0.0000050	<0.0000050	0.00001	<0.0000050	<0.0000050				<0.0000050			<0.0000050	<0.0000050		0.000005	<0.0000050	<0.0000050	<0.0000050
Sodium (Na), dissolved	mg/L				1.44	1.65	1.29	1.35	1.37				1.24			1.02	1.09		0.883	0.954	0.977	0.93
Strontium (Sr), dissolved	mg/L				0.238	0.247	0.244	0.223	0.259				0.233			0.176	0.197		0.193	0.175	0.185	0.183
Sulphur (S), dissolved	mg/L				8.1	7.9	7.4	8	8.5				7.9			6.8	7.3		6.8	7.7	7.9	7.1
Thallium (Tl), dissolved	mg/L	0.003			<0.0000020	<0.0000020	<0.0000020	0.000002	<0.0000020				<0.0000020			0.000006	0.000002		0.000008	0.000004	<0.0000020	0.000002
Tin (Sn), dissolved	mg/L				<0.00020	<0.00020	<0.00020	<0.00020	<0.00020				<0.00020			<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	1			0.00054	<0.00050	<0.00050	<0.00050	<0.00050				<0.00050			<0.00050	0.00357		<0.00050	<0.00050	<0.00050	<0.00050
Uranium (U), dissolved	mg/L	3			0.00259	0.00255	0.00275	0.0026	0.00267				0.00304			0.00105	0.0012		0.00101	0.000975	0.000986	0.000944
Vanadium (V), dissolved	mg/L				<0.00020	<0.00020	<0.00020	<0.00020	<0.00020				<0.00020			<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*			0.00759	0.00697	0.0078	0.00803	0.00761				0.00926			0.00085	0.0026		0.00038	<0.00010	0.00086	0.00065
Zirconium (Zr), dissolved	mg/L				<0.00010	<0.00010	<0.00010	<0.00010	<0.00010				<0.00010			<0.00010	<0.00010		<0.00010	<0.00010	<0.00010	<0.00010



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-31	BH95G-31	BH95G-31	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-32	BH95G-33S	BH95G-33S
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L			21.3	8.57	99.9	67.5	7.82	24.5	3.17	9.59	5.82	4.84	7.74	5.8	5.02	9.09	15.5	15.8			
Silver (Ag), total	mg/L		0.00346	0.000654	0.00532	0.000874	0.000101	0.000445	<0.0000050	0.000131	0.000066	0.000054	0.000303	0.00018	0.000134	0.000126	0.000736	0.000554				
Sodium (Na), total	mg/L		<1.3	0.95	2.13	1.89	0.752	1.19	0.74	0.84	0.74	0.78	0.76	0.7	0.74	0.87	<1.3	1.09				
Strontium (Sr), total	mg/L		0.258	0.202	0.544	0.511	0.307	0.367	0.276	0.29	0.266	0.3	0.289	0.298	0.277	0.308	0.298	0.333				
Sulphur (S), total	mg/L		<15	5	<15	<15	11.5	<15	<15	<15	10.8	12.7	11.5	11.7	11.1	12.8	<15	12.3				
Thallium (Tl), total	mg/L		0.000179	0.00006	0.00136	0.000671	0.000074	0.000173	0.000004	0.000033	0.000019	0.000015	0.000037	0.000033	0.000017	0.00004	0.000083	0.000112				
Tin (Sn), total	mg/L		<0.0010	0.00042	0.00471	0.00201	<0.00020	0.00078	<0.00020	0.00024	<0.00020	<0.00020	0.00034	<0.00020	<0.00020	<0.00020	<0.0010	0.00047				
Titanium (Ti), total	mg/L		0.811	0.273	10.4	5.9	0.281	1.79	0.0235	0.389	0.185	0.202	0.462	0.282	0.165	0.388	0.854	1.08				
Uranium (U), total	mg/L		0.00176	0.0011	0.0115	0.00733	0.00191	0.00344	0.00112	0.00157	0.00138	0.00135	0.00165	0.00143	0.00125	0.00167	0.00237	0.00239				
Vanadium (V), total	mg/L		0.0785	0.025	0.608	0.402	0.029	0.11	0.00106	0.0202	0.0102	0.0107	0.0303	0.0153	0.00718	0.0205	0.0531	0.0595				
Zinc (Zn), total	mg/L		0.173	0.0572	0.904	0.53	0.0491	0.175	0.0126	0.0275	0.0176	0.0158	0.0526	0.0273	0.0147	0.0359	0.12	0.0915				
Zirconium (Zr), total	mg/L		0.004	0.0022	0.0207	0.00887	0.00088	0.00476	<0.00010	0.00199	0.0014	0.00039	0.001	0.0007	0.00078	0.00205	0.00288	0.00266				
Aluminum (Al), dissolved	mg/L		0.00235	0.00485	0.00202	0.00269	0.0142	0.00383	0.00328	0.00653	0.00274	0.00192	0.00184	0.00153	0.00129	0.00183	0.00175	0.00314				
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.000035	0.000022	0.000227	0.000118	0.000033	0.000046	0.000029	0.000041	0.000035	0.00002	0.000045	0.000029	0.000034	0.000032	0.000029	0.000108				
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.000072	0.000048	0.000353	0.000376	0.000256	0.000285	0.000264	0.000239	0.000241	0.000263	0.000184	0.000162	0.00017	0.000232	0.000216	0.000239				
Barium (Ba), dissolved	mg/L	<b>10</b>	0.124	0.114	0.168	0.171	0.176	0.19	0.175	0.187	0.174	0.169	0.179	0.179	0.193	0.155	0.165	0.178				
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010				
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050				
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010				
Cadmium (Cd), dissolved	mg/L	*	0.000021	0.000015	0.00013	0.000118	0.000051	0.000062	0.000026	0.00008	0.000046	0.00002	0.000068	0.000045	0.000049	0.000049	0.000021	0.000055				
Calcium (Ca), dissolved	mg/L		55.3	50.7	73.4	71.4	74.3	80.4	76.1	81.4	79.3	83	75.4	73.1	75.3	83.5	72.7	71.5				
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010				
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000014	0.000018	0.000438	0.000469	0.000279	0.000237	0.000194	0.000252	0.000312	0.000152	0.00014	0.000154	0.000241	0.000236	0.00016	0.000347				
Copper (Cu), dissolved	mg/L	*	0.000593	0.000334	0.000111	0.000147	0.000305	0.000599	0.000213	0.000269	0.00023	0.000175	0.000214	0.00009	0.000202	0.000192	0.000151	0.000079				
Iron (Fe), dissolved	mg/L		0.0023	0.0034	0.0382	0.0919	0.129	0.121	<0.0010	0.0027	<0.0010	0.169	<0.0010	<0.0010	<0.0010	0.029	0.0952	0.0038				
Lead (Pb), dissolved	mg/L	*	0.000047	0.000027	0.000141	0.000121	0.000052	0.000135	<0.0000050	0.000012	<0.0000050	0.00004	0.000007	<0.0000050	0.000005	0.000011	0.000011	0.000026				
Lithium (Li), dissolved	mg/L		0.00119	0.00102	0.00161	0.0011	0.00119	0.00121	0.00178	0.00125	0.00123	0.00152	0.00102	0.00126	0.00144	0.00114	0.00146	0.00116				
Magnesium (Mg), dissolved	mg/L		2.99	2.73	4.24	4.34	3.93	4.44	4.21	4.22	4.25	4.49	4.02	3.9	4.15	4.64	4.34	4.29				
Manganese (Mn), dissolved	mg/L		0.000506	0.000666	0.0585	0.0712	0.0729	0.0688	0.0904	0.0782	0.0715	0.0753	0.0344	0.063	0.0631	0.075	0.075	0.0824				
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020				
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00146	0.00158	0.000714	0.000736	0.000721	0.00078	0.000719	0.000664	0.000668	0.000654	0.000685	0.000681	0.000701	0.000624	0.000625	0.000748				
Nickel (Ni), dissolved	mg/L	*	0.000348	0.000337	0.00148	0.00168	0.0011	0.000965	0.0007	0.000918	0.00155	0.00067	0.0015	0.000834	0.00106	0.000812	0.000431	0.00129				
Phosphorus (P), dissolved	mg/L		0.0032	<0.0020	<0.0020	0.0022	<0.0020	0.0034	0.0032	0.0024	<0.0020	<0.0020	0.0047	0.0026	0.0024	0.0046	<0.0020	<0.0020				
Potassium (K), dissolved	mg/L		2.69	2.81	4.53	4.56	4.31	4.7	4.73	4.71	4.18	4.43	4.59	4.55	4.63	5.17	4.56	4.63				
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.00175	0.00104	0.000326	0.000551	0.000561	0.000649	0.000341	0.000806	0.000768	0.000559	0.000696	0.000835	0.000757	0.00063	0.000304	0.000449				
Silicon (Si), dissolved	mg/L		2.68	2.7	2.54	2.4	2.09	2.71	2.57	2.4	2.53	2.41	2.19	2.46	2.35	2.46	2.42	2.21				
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050				
Sodium (Na), dissolved	mg/L		0.965	1.02	0.687	0.724	0.664	0.706	0.698	0.693	0.652	0.695	0.657	0.639	0.676	0.764	0.727	0.737				
Strontium (Sr), dissolved	mg/L		0.17	0.17	0.281	0.275	0.266	0.305	0.285	0.293	0.265	0.293	0.272	0.293	0.276	0.309	0.273	0.286				
Sulphur (S), dissolved	mg/L		7.4	5.2	11.8	11.8	10.7	12.4	11.4	10.9	11.8	12.9	11	12.3	11.4	14	11.4	11.9				
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	<0.0000020	<0.0000020	0.0000235	0.000009	0.000006	0.000005	0.000004	0.000008	0.000007	0.000005	0.000008	0.000003	0.000005	0.000004	0.000003	0.000006				
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020				
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050				
Uranium (U), dissolved	mg/L	<b>3</b>	0.000991	0.000788	0.0013	0.00117	0.00123	0.00116	0.0011	0.00119	0.00112	0.00109	0.0011	0.00113	0.00117	0.00102	0.00117	0.00113				
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020				
Zinc (Zn), dissolved	mg/L	*	0.0011	0.00112	0.00057	0.00142	0.00218	0.00328	0.00346	0.00048	<0.00010	0.00131	0.00075	0.00027	0.00145	0.0014	0.00056	0.00077				
Zirconium (Zr), dissolved	mg/L		<0.00010	<0.00010	<0.00010	0.0001</																

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3 Aquatic Life vs DM	BH95G-33S	BH95G-33S	BH95G-33S	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-129	
			#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m		6.202	6.134					7.05	6.554	6.33	6.131	5.821	5.783	6.453	7.115	6.826	6.166	6.556		
Well Depth	mbTOC		6.452	6.451	6.454				12.94	12.941	12.96	12.962	12.941	12.942	12.942	12.94	12.949	12.867	12.882		
Total Suspended Solids	mg/L					900	1290	954	843	561	285	439	266	132	75	17.2	340	115	515	20.1	
pH (field)	pH units					7.39	7.8	7.53	7.41	7.7	7.67	7.7	7.48	7.44	7.65	7.43	7.57	7.62	7.7	8.21	7.77
pH (lab)	pH units					8.07	8.16	8.17	8.02	7.98	8.15	8.05	7.83	7.83	7.91	7.89	7.79	8.05	8.1	7.93	8.17
Specific Conductance (field)	µS/cm					454.2	486.8	452.6	462	409.8	457	471	458.2	436.9	360.5	482.4	465.9	521.9	435.4	447.3	366
Specific Conductance (lab)	µS/cm					408	441	460	447	447	447	446	455	466	476	480	458	448	464	475	383
Temperature (field)	C					2.1	-0.2		1.37	4.7	3	2.6	3.5	3.2	1.9	1.5	1.7	7.8	3.2	0.1	
Dissolved Oxygen (field)	mg/L					3.56	7.21	6.19	6.2	5.26	4.1	7	5.8	4.2	4.4	4.54	8.69	3.89	6.1	13.4	2.84
Dissolved Oxygen (field)	%								51.1	36	61	51	3.9	38	38.1	74.7	32.8	54	109		
ORP (field)	mV							17	111.1	65.8	109.8	66.8	80.7	127.8	325.1	178.7	320.7	34.6	90.8		
Hardness (from total)	mg/L					430	308	335	275	287	264	266	252	252	277	240	259	242	254	287	234
Hardness (from dissolved)	mg/L					230	257	255	235	237	247	256	244	230	245	242	245	258	256	229	211
Total Acidity	mg/L					<0.50	<0.50	<0.50	<0.50	3.6	1	0.8	5.57	3.48	1.88	3.5	2.34	7.6	2	4.6	<0.50
Acidity (pH 4.5)	mg/L					<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<1.0	<1.0	<0.50
Alkalinity, total	mg/L					152	165	173	176	177	175	162	172	179	186	191	177	168	186	187	160
Alkalinity, bicarbonate HCO3	mg/L					186	201	211	215	216	214	198	209	218	227	233	216	205	227	228	195
Alkalinity, hydroxide OH	mg/L					<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, carbonate CO3	mg/L					<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L					<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Chloride	mg/L					<0.50	0.83	0.78	<0.50	0.64	0.95	<0.50	0.59	0.86	0.64	<0.50	0.51	<0.50	0.53	1	2.5
Fluoride	mg/L	*				0.061	0.053	0.055	0.045	0.057	0.054	0.062	0.051	0.051	0.05	0.054	0.056	0.051	0.052	0.052	0.22
Sulphate, dissolved	mg/L	1000				62.3	64.7	68.6	62.3	63.6	68.4	69.9	64.6	75.5	77	68.9	69.6	67.6	68.4	72.7	37.2
Ammonia (N)	mg/L	*				0.12	0.032	0.019	0.044	0.015	0.055	0.017	0.062	0.013	0.0086	0.024	0.03	0.015	<0.0050	0.01	0.032
Nitrite (N)	mg/L	*				<0.0020	<0.0020	0.0022	0.0031	0.0036	0.0024	<0.0020	0.004	<0.0020	0.0041	<0.0020	0.0024	<0.0020	<0.0020	<0.0020	0.0021
Nitrate (N)	mg/L	400				0.177	0.191	0.213	0.205	0.206	0.193	0.171	0.209	0.183	0.164	0.179	0.247	0.252	0.23	0.276	0.0055
Nitrite & Nitrate, as N	mg/L	400				0.177	0.191	0.216	0.209	0.209	0.195	0.171	0.213	0.183	0.169	0.179	0.25	0.252	0.23	0.276	0.0076
Phosphorus, total-colourimetric	mg/L					3.48	0.832	1.05	2.67	0.0091	0.0068	0.245	0.0951	0.198	0.209	0.0909	0.0186	0.494	0.118	0.407	0.0321
Phosphorus, Total Dissolved	mg/L					<0.0020	0.0029	0.151		0.0073	0.0062	0.243	0.106	0.0079	0.172	0.0105	0.0178	0.0417	0.0053	0.0707	0.0035
Dissolved Organic Carbon	mg/L								3.08	0.87	1.11	1.08	0.71	0.52	1.38	0.9	0.95	1.26	<0.50	0.97	
Aluminum (Al), total	mg/L					43.8	13.6	15	9.44	5.79	9.33	6.19	4.58	1.49	2.33	1.14	0.275	4.45	1.65	1.11	0.258
Antimony (Sb), total	mg/L					0.000513	0.000289	0.000284	0.000215	0.000088	0.000335	0.000121	0.000132	0.000067	0.000098	0.000056	0.000023	0.000079	<0.00010	0.000103	0.000622
Arsenic (As), total	mg/L					0.149	0.0328	0.0316	0.0257	0.0153	0.0271	0.0107	0.0118	0.00513	0.0106	0.00379	0.000875	0.0108	0.00632	0.011	0.01
Barium (Ba), total	mg/L					0.839	0.322	0.372	0.256	0.284	0.26	0.273	0.171	0.135	0.16	0.119	0.102	0.198	0.117	0.141	0.0819
Beryllium (Be), total	mg/L					0.00218	0.000887	0.000927	0.000467	0.000536	0.000509	0.000358	0.000199	0.000125	0.000142	0.000076	0.000023	0.000262	0.000085	0.000184	<0.000010
Bismuth (Bi), total	mg/L					0.00105	0.000306	0.000322	0.00017	0.000121	0.00016	0.000134	0.000066	0.000044	0.00006	0.000018	<0.000010	0.000036	0.000025	0.000023	0.000041
Boron (B), total	mg/L					<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.050
Cadmium (Cd), total	mg/L					0.000724	0.000263	0.00038	0.000208	0.000191	0.000134	0.000165	0.000149	0.000063	0.000093	0.000031	0.000011	0.000122	0.000047	0.000123	0.000129
Calcium (Ca), total	mg/L					119	96.4	103	88.2	92.3	85.9	86.2	83.1	84	93.3	80.4	87.9	79.2	84.4	93.8	68.4
Chromium (Cr), total	mg/L					0.0629	0.0163	0.0242	0.0158	0.0086	0.0115	0.00776	0.00777	0.00173	0.00346	0.00181	0.00033	0.00615	0.00204	0.00185	0.00103
Cobalt (Co), total	mg/L					0.0794	0.0285	0.0396	0.028	0.0215	0.0145	0.0135	0.0136	0.00458	0.00821	0.00264	0.000488	0.0117	0.0034	0.00836	0.000442
Copper (Cu), total	mg/L					0.185	0.0612	0.114	0.0665	0.0297	0.0385	0.0255	0.0344	0.00886	0.0164	0.00887	0.00111	0.0194	0.00744	0.0118	0.011
Iron (Fe), total	mg/L					150	42.6	50.5	30.4	14.3	27.9	17.4	13.2	4.36	8.2	3.14	0.496	8.67	4.65	4.61	1.44
Lead (Pb), total	mg/L					0.0683	0.0194	0.0213	0.0148	0.0118	0.0117	0.00842	0.00607	0.00319	0.00536	0.00151	0.000297	0.00589	0.00187	0.0032	0.00551
Lithium (Li), total	mg/L					0.0264	0.00943	0.0139	0.00755	0.00659	0.00723	0.00383	0.00436	0.00208	0.00219	0.00209	0.00137	0.0048	0.00225	0.00283	0.012
Magnesium (Mg), total	mg/L					32.4	16.4	19	13.4	13.6	12.1	12.4	10.9	10.3	10.7	9.45	9.62	10.7	10.6	12.9	15.4
Manganese (Mn), total	mg/L					6.57	2.68	3.09	1.55	2.79	1.47	2.38	1.15	0.683	1.18	0.111	0.0552	1.1	0.405	1.24	0.137
Mercury (Hg), total	mg/L					<0.000020	<0.000020	<0.000020	0.000026	0.000058	0.000026	0.000033	0.000036	0.00003	<0.000020	<0.000020	<0.000020	0.000041	<0.000020	0.000022	<0.000020
Molybdenum (Mo), total	mg/L					0.014	0.0042	0.00241	0.00295	0.000447	0.00731	0.00138	0.00142	0.000797	0.00141	0.00121	0.00111	0.000546	0.00193	0.000936	0.00142
Nickel (Ni), total	mg/L					0.296	0.105	0.165	0.0899	0.0688	0.063	0.0734	0.0466	0.0203	0.0338	0.012	0.00297	0.0439	0.0159	0.0386	0.00143
Phosphorus (P), total	mg/L					3.35	0.778	0.862	1.97	0.675	0.369	0.529	0.563	0.178	0.262	0.0646	0.0182	0.518	0.107	0.516	0.049
Potassium (K), total	mg/L					5.79	2.67	3.49	2.11	1.95	1.98	1.72	1.59	1.14	1.39	1.16	1.05	1.68	1.2	1.32	2.68
Selenium (Se), total	mg/L					0.0103	0.00695	0.00569	0.00391	0.00428	0.00475	0.00468	0.00697	0.00728	0.00736	0.00456	0.00471	0.0041	0.00614	0.00246	<0.000040

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-33S	BH95G-33S	BH95G-33S	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-33D	BH95G-129
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Silicon (Si), total	mg/L					62.4	21.7	28.8	15.4	11.6	13.3	12.2	9.54	4.56	6.28	4.47	3.65	9.34	5.37	4.43	7.89
Silver (Ag), total	mg/L					0.0018	0.000677	0.000434	0.000376	0.000209	0.000369	0.000329	0.000195	0.000143	0.000079	0.000051	<0.000010	0.000142	0.000068	0.000085	0.000075
Sodium (Na), total	mg/L					1.59	1.29	1.14	0.96	0.86	0.8	0.85	0.76	0.74	0.84	0.76	0.82	0.81	0.87	0.91	3.43
Strontium (Sr), total	mg/L					0.396	0.316	0.317	0.278	0.286	0.272	0.259	0.248	0.239	0.281	0.239	0.255	0.278	0.258	0.275	0.226
Sulphur (S), total	mg/L					19	22	25	21	21	21	20.7	21.3	21.5	24	20.9	24.3	22.3	25	24.4	15
Thallium (Tl), total	mg/L					0.000389	0.000134	0.000158	0.000104	0.000061	0.000105	0.000075	0.000057	0.000019	0.000017	0.000014	0.000003	0.000052	0.000016	0.000065	0.000009
Tin (Sn), total	mg/L					0.00271	0.00091	0.0008	0.00055	<0.00020	0.00078	0.00024	0.00029	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.0003	0.00152
Titanium (Ti), total	mg/L					0.504	0.185	0.297	0.228	0.0557	0.187	0.144	0.169	0.0319	0.0829	0.0419	0.0095	0.103	0.0402	0.0303	0.0121
Uranium (U), total	mg/L					0.0161	0.00832	0.0088	0.0062	0.00717	0.00744	0.00684	0.00425	0.00525	0.00532	0.00428	0.00477	0.00515	0.00547	0.00729	0.0126
Vanadium (V), total	mg/L					0.148	0.0458	0.0531	0.0365	0.0178	0.0245	0.0194	0.0178	0.00538	0.00899	0.00406	0.00059	0.0126	0.00519	0.0045	<0.00050
Zinc (Zn), total	mg/L					0.578	0.153	0.251	0.137	0.0913	0.117	0.0641	0.0692	0.0175	0.0339	0.0185	0.0027	0.0609	0.0208	0.0306	0.0321
Zirconium (Zr), total	mg/L					0.0187	0.00567	0.00601	0.00574	0.00071	0.0086	0.00361	0.00249	0.00041	0.00106	0.00074	0.00022	0.00419	0.00119	0.00175	0.00043
Aluminum (Al), dissolved	mg/L					0.00126	0.0012	0.00199	0.00506	0.00059	0.00145	0.00115	0.00102	0.00088	0.00082	0.00135	<0.00050	0.00112	0.00225	0.00112	0.00527
Antimony (Sb), dissolved	mg/L	0.2				<0.000020	0.000035	<0.000020	0.000025	<0.000020	0.000024	0.000022	<0.000020	0.000035	0.00002	0.000021	<0.000020	0.000044	0.000167	0.000024	0.000227
Arsenic (As), dissolved	mg/L	0.05				0.000215	0.000213	0.000144	0.000138	0.000286	0.000758	0.000433	0.000137	0.000304	0.000451	0.000211	0.000157	0.000211	0.000191	0.000176	0.00611
Barium (Ba), dissolved	mg/L	10				0.0824	0.0864	0.0982	0.0923	0.0794	0.0882	0.0873	0.0931	0.0876	0.0912	0.101	0.0839	0.09	0.085	0.0868	0.0666
Beryllium (Be), dissolved	mg/L	0.053				<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000013	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L					<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000022
Boron (B), dissolved	mg/L					<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*				<0.0000050	0.00001	0.000006	0.00001	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.00001	0.000005	0.000022	0.000022
Calcium (Ca), dissolved	mg/L					77.5	87.1	87.2	79.8	79.8	84	86	82.8	77	82.9	82.4	83.1	86.8	85.4	77.9	61.2
Chromium (Cr), dissolved	mg/L	0.01				<0.00010	<0.00010	<0.00010	0.00018	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00119	<0.00010	<0.00010
Cobalt (Co), dissolved	mg/L	0.009				0.0000149	0.000026	0.000015	0.000015	<0.0000050	<0.0000050	0.000007	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000009	0.000006	0.000029	0.000009	0.000153
Copper (Cu), dissolved	mg/L	*				0.000132	0.0002	0.00036	0.000226	0.000096	0.000152	0.000089	0.000121	0.000899	0.000068	0.000076	0.000109	0.000156	0.000287	0.000157	0.000253
Iron (Fe), dissolved	mg/L					0.0013	<0.0010	0.0042	0.0014	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	<0.0010	0.0012	0.007	0.0015	0.31
Lead (Pb), dissolved	mg/L	*				0.0000062	<0.0000050	0.000011	0.000016	<0.0000050	0.000006	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000008	0.00001	0.000017	0.000028
Lithium (Li), dissolved	mg/L					0.00126	0.00108	0.00111	0.00133	0.00122	0.00099	0.00133	0.00076	0.00115	0.00069	0.00146	0.00107	0.00134	0.0011	0.00107	0.00948
Magnesium (Mg), dissolved	mg/L					8.82	9.49	9.17	8.69	9.24	9.06	9.92	8.98	9.13	9.31	8.73	9.13	9.92	10.3	8.33	14.2
Manganese (Mn), dissolved	mg/L					0.00131	0.00718	0.00483	0.0067	0.000384	0.000853	0.00252	0.000111	0.000875	0.000171	0.00023	0.00294	0.00182	0.00577	0.00126	0.113
Mercury (Hg), dissolved	mg/L	0.001				<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	10				0.00124	0.00118	0.0012	0.00126	0.00142	0.00152	0.00175	0.000926	0.00115	0.00125	0.00121	0.0011	0.00134	0.00132	0.00106	0.00135
Nickel (Ni), dissolved	mg/L	*				0.000781	0.0012	0.00108	0.000906	0.000521	0.00122	0.00119	0.000658	0.00111	0.000901	0.000817	0.00104	0.00115	0.00187	0.00112	0.000408
Phosphorus (P), dissolved	mg/L					<0.0020	0.0044	0.0045	0.0023	0.0038	0.003	<0.0020	<0.0020	0.0054	0.0042	0.0039	0.0024	0.0029	0.0058	0.004	0.0041
Potassium (K), dissolved	mg/L					1.01	0.987	1.05	1.02	0.987	0.962	0.922	0.889	0.927	0.926	0.928	0.969	0.978	0.988	0.867	2.44
Selenium (Se), dissolved	mg/L	0.01				0.00383	0.00627	0.00614	0.00407	0.00389	0.00432	0.00514	0.00791	0.00762	0.00693	0.00491	0.00464	0.00496	0.0063	0.00568	<0.000040
Silicon (Si), dissolved	mg/L					3.03	3.53	3.52	3.16	3.14	2.8	3.19	3.03	2.58	2.87	3.23	2.87	2.88	2.81	2.89	6.49
Silver (Ag), dissolved	mg/L	*				<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.000014
Sodium (Na), dissolved	mg/L					0.759	0.802	0.812	0.769	0.82	0.741	0.751	0.767	0.713	0.751	0.761	0.791	0.846	0.898	0.735	3.07
Strontium (Sr), dissolved	mg/L					0.237	0.238	0.26	0.243	0.244	0.252	0.238	0.246	0.222	0.237	0.236	0.234	0.236	0.251	0.218	0.213
Sulphur (S), dissolved	mg/L					20.4	21.7	23	22	22.1	19.8	22.6	22.4	20.7	21.4	21	22.2	21.4	23.7	19.8	14.7
Thallium (Tl), dissolved	mg/L	0.003				<0.0000020	0.000002	<0.0000020	<0.0000020	<0.0000020	0.000005	0.000002	<0.0000020	<0.0000020	0.000006	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.000003
Tin (Sn), dissolved	mg/L					<0.00020	<0.00020	<0.00020	0.00043	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	1				<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Uranium (U), dissolved	mg/L	3				0.00485	0.00442	0.00475	0.00428	0.0044	0.00464	0.00511	0.00358	0.00441	0.00443	0.00455	0.00425	0.00469	0.00485	0.00415	0.0112
Vanadium (V), dissolved	mg/L					<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*				0.0004	0.00117	0.00182	0.00123	0.00014	0.00024	<0.00010	0.00042	0.00067	0.00036	0.00015	0.00036	0.00057	0.00276	0.00171	0.00663
Zirconium (Zr), dissolved																					



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-129	BH95G-129	BH95G-129	BH95G-129	BH95G-129	BH95G-129	BH95G-129	BH95G-129	BH95G-129	BH95G-129	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-131	
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	
Depth to Water (mbTOC)	m			12.03	10.166	8.78	8.114	7.313		7.973		10.418	8.744				32.898	32.42	32.223	32.804	30.449
Well Depth	mbTOC				150.9	150	150.0	150				150					128	128	128	128.0	128
Total Suspended Solids	mg/L		6.2	2.7	1.9	1.5	6.4		9		3		161	154	36.3	287	44.2	126	36.6	67.3	
pH (field)	pH units		6.82	7.67	7.25	7.51	7.59		7.75		7.9		7.05	7.09	7.26	7.2	7.08	7.17	7.66	7.23	
pH (lab)	pH units		7.96	8.14	8.12	8.26	8.02		8.08		7.97		7.77	8.07	8.04	7.94	7.9	7.79	7.78	7.75	
Specific Conductance (field)	µS/cm		372	314.9	348.1	376.9	405.2		328.3		294.6		109.8	1163	1166	1014	1118	1175	1160	1115	
Specific Conductance (lab)	µS/cm		363	366	353	361	387		378		387		1160	1120	1100	1120	1110	1090	1150	1150	
Temperature (field)	C		0.95	2.1	2.7	1.9	3.4		2.3		1.8		1.8		2.06	3.1	4.7	3.7	3.5	3	
Dissolved Oxygen (field)	mg/L		4.1	2.93	2.3	3.5	1.9		1.3		2.7		0.67	5.8	4.5	3.86	2.2	3.4	2.6	2.6	
Dissolved Oxygen (field)	%			25.3	20	31	17		12		23					35.1	20	31	23	23	
ORP (field)	mV		213	-53.2	-76.5	-32.7	-16.1		-18.4		10.2				66	-30.1	-51.8	-33.9	-48.6	-20.8	
Hardness (from total)	mg/L		182	187	181	194	211		200		206		693	773	654	682	658	682	662	666	
Hardness (from dissolved)	mg/L		187	187	185	194	209		191		199		683	653	627	666	665	676	695	646	
Total Acidity	mg/L		<0.50	<0.50	0.52	<0.50	0.78		<0.50		1.85		16.7	18	5.36	5.12	12.1	13	16.3	31.2	
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50		<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, total	mg/L		150	136	144	148	165		165		170		430	355	431	391	419	401	437	443	
Alkalinity, bicarbonate HCO3	mg/L		183	166	176	181	202		201		207		524	433	525	476	511	489	533	540	
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50		<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50		<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50	<0.50	<0.50		<0.50		<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Chloride	mg/L		<0.50	1.4	0.84	<0.50	0.59		0.7		0.87		1	0.69	0.76	0.57	1.3	0.65	1	0.88	
Fluoride	mg/L	*	0.22	0.22	0.22	0.18	0.19		0.2		0.21		0.095	0.085	0.075	0.069	0.075	0.094	0.082	0.088	
Sulphate, dissolved	mg/L	1000	42.2	43.7	45.2	54.6	35.2		35.7		33.4		231	235	215	217	227	247	222	237	
Ammonia (N)	mg/L	*	0.041	0.031	0.048	0.035	0.034		0.036		0.035		0.032	0.042	0.046	0.039	0.035	0.049	0.054	0.038	
Nitrite (N)	mg/L	*	<0.0020	<0.0020	<0.0020	0.0022	0.0023		<0.0020		<0.0020		<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Nitrate (N)	mg/L	400	<0.0020	<0.0020	<0.0020	0.0023	<0.0020		<0.0020		<0.0020		0.0028	0.0027	<0.0020	<0.0020	<0.0020	0.0033	<0.0020	<0.0020	
Nitrite & Nitrate, as N	mg/L	400	<0.0020	<0.0020	<0.0020	0.0045	0.0026		<0.0020		<0.0020		0.0028	0.0027	<0.0020	<0.0020	<0.0020	0.0033	<0.0020	<0.0020	
Phosphorus, total-colourimetric	mg/L		0.0156	0.0068	0.0105	0.0105	0.0185		0.0241		0.0424		0.162	0.157	0.0299	0.0106	0.0134	0.189	0.162	0.292	
Phosphorus, Total Dissolved	mg/L			0.0059	0.0095	0.0103	0.0216		0.0087		0.0372		0.0113	0.0076		0.0109	0.0118	0.178	0.161	0.0313	
Dissolved Organic Carbon	mg/L		3.67	<0.50	0.7	<0.50	0.67		1.08		1.1				2.12	1.07	1.23	0.75	1.01	1.43	
Aluminum (Al), total	mg/L		0.0186	0.0171	0.00449	0.0077	0.0499		0.0307		0.0553		0.981	1.28	0.309	1.68	0.291	1.39	0.278	0.384	
Antimony (Sb), total	mg/L		0.000404	0.00035	0.00023	0.000289	0.000197		0.000335		0.000361		0.0529	0.0363	0.0106	0.059	0.00766	0.0289	0.00687	0.0103	
Arsenic (As), total	mg/L		0.00736	0.00963	0.00518	0.0052	0.00404		0.00405		0.004		0.14	0.11	0.0319	0.2	0.0291	0.0857	0.0163	0.0204	
Barium (Ba), total	mg/L		0.0463	0.0427	0.0368	0.0435	0.0715		0.0704		0.0745		0.0483	0.0601	0.0293	0.146	0.0268	0.104	0.0337	0.0612	
Beryllium (Be), total	mg/L		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010		<0.000010		<0.000010		0.000114	0.000152	0.000044	0.000252	0.000041	0.00022	0.000034	0.000059	
Bismuth (Bi), total	mg/L		0.000028	<0.0000050	<0.0000050	<0.0000050	<0.0000050		<0.000010		<0.000010		0.00014	0.000213	0.000055	0.000306	0.000051	0.00019	0.00003	0.000077	
Boron (B), total	mg/L		<0.050	<0.010	<0.010	<0.010	<0.010		<0.010		<0.010		<0.050	<0.050	<0.050	<0.050	<0.050	<0.10	<0.010	<0.010	
Cadmium (Cd), total	mg/L		0.000245	0.000027	0.000005	0.000008	0.000007		0.000034		0.000021		0.000698	0.00107	0.00032	0.00336	0.000371	0.00176	0.000383	0.00124	
Calcium (Ca), total	mg/L		56.4	58.3	56.9	61.2	60.8		58.2		59.7		177	193	166	168	153	163	167	164	
Chromium (Cr), total	mg/L		<0.00050	<0.00010	<0.00010	<0.00010	<0.00010		0.00018		0.0003		0.00187	0.00226	0.00076	0.00361	0.00067	0.003	0.00053	0.00088	
Cobalt (Co), total	mg/L		0.000173	0.000138	0.000135	0.000165	0.000133		0.000127		0.000109		0.000754	0.000931	0.000236	0.00138	0.000203	0.00092	0.00012	0.00026	
Copper (Cu), total	mg/L		0.00149	0.000865	0.000146	0.00032	0.0013		0.00108		0.00259		0.00632	0.00953	0.00256	0.0131	0.00384	0.0096	0.00217	0.00318	
Iron (Fe), total	mg/L		0.661	1.54	0.632	0.706	0.768		0.658		0.799		14.6	15.3	5.27	20.8	4.89	13.9	3.97	4.86	
Lead (Pb), total	mg/L		0.0066	0.000928	0.000152	0.00154	0.000334		0.000573		0.000596		0.519	0.423	0.136	0.787	0.11	0.348	0.0791	0.122	
Lithium (Li), total	mg/L		0.00709	0.00657	0.00534	0.00634	0.00996		0.00864		0.00939		0.0151	0.0184	0.0157	0.0198	0.0158	0.0213	0.0196	0.0165	
Magnesium (Mg), total	mg/L		9.95	10.1	9.36	10.1	14.5		13.2		13.9		60.9	70.4	58.2	63.5	66.8	66.9	59.5	62	
Manganese (Mn), total	mg/L		0.107	0.11	0.103	0.112	0.0947		0.0918		0.0866		0.246	0.269	0.181	0.255	0.226	0.243	0.142	0.152	
Mercury (Hg), total	mg/L		<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020		<0.0000020		<0.0000020		<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	
Molybdenum (Mo), total	mg/L		0.00108	0.0011	0.00101	0.000957	0.000742		0.000819		0.000812		0.000286	0.000306	0.000109	0.000321	0.000117	<0.00050	0.000108	0.000151	
Nickel (Ni), total	mg/L		0.00041	0.000276	0.000262	0.000351	0.000245		0.00032		0.00036		0.00175	0.00211	0.00065	0.00314	0.00056	0.0021	0.00038	0.00065	
Phosphorus (P), total	mg/L		<0.010	0.0199	0.0136	0.0109	0.0175		0.0212		0.0422		0.115	0.109	0.029	0.167	0.068	0.244	0.169	0.303	
Potassium (K), total	mg/L		2.08	2.14	1.89	1.98	2.01		2.09		2.13		4.67	5.33	4	4.35	4.31	4	3.78	3.93	
Selenium (Se), total	mg/L		<0.000040	<0.000040	<0.000040	<0.000040	<0.000040		<0.000040		<0.000040		0.000312	0.000318	0.000078	0.000892	0.000072	0.00043	<0.000040	0.000122	



Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-15D	BH95G-15D	BH95G-15D
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####
Depth to Water (mbTOC)	m		31.018	32.343	33.09	32.491	31.814	32.265		0	0	0	0	0	0	0	0	0	4.657	6.785	
Well Depth	mbTOC		128	128	128		>100	>100		138	137	137.0	137		137	0			22.6	22.949	
Total Suspended Solids	mg/L		170			42.7	634		31.5	5.4	6.4	6.8	6.3		10.4				3740		518
pH (field)	pH units		7.35			7.35			6.67	7.63	7.54	7.76	7.48	7.31	7.64				7.54		7.26
pH (lab)	pH units		7.58			8.05	8.2		8.12	7.92	8.09	7.81	8.18	7.85	7.81				7.67		7.98
Specific Conductance (field)	µS/cm		992			1204			740.6	774.9	661.1	745.8	779	764	639.3				279.4		351.5
Specific Conductance (lab)	µS/cm		1140			1130	1070		767	771	767	751	758	754	740				359		353
Temperature (field)	C		1.5			4.9			2.9	3.3	3.4	4.7	3.1	3.3	4.2				1.2		0.6
Dissolved Oxygen (field)	mg/L		4.4			5.8			2.53	2.16	3.38	3.0	3.1	1.5	1.1				6.2		1.46
Dissolved Oxygen (field)	%		35			45.2					31.4	28	27	13	10				53		12.1
ORP (field)	mV		-23.7			153.9					-57.5	-46.7	-44.8	-49	-19.4				115.5		362
Hardness (from total)	mg/L		654			653	622		399	437	434	376	327	407	388				450		207
Hardness (from dissolved)	mg/L		655			676	609		415	413	390	392	397	391	389				194		177
Total Acidity	mg/L		8.89			38.1	12		<0.50	<0.50	<0.50	3.8	1.62	3.96	2.68				2.2		2.23
Acidity (pH 4.5)	mg/L		<0.50			<0.50	<1.0		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50				<0.50		<0.50
Alkalinity, total	mg/L		444			400	413		130	133	126	135	135	130	130				171		173
Alkalinity, bicarbonate HCO3	mg/L		542			488	503		159	163	154	165	164	159	159				208		211
Alkalinity, hydroxide OH	mg/L		<0.50			<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50				<0.50		<0.50
Alkalinity, carbonate CO3	mg/L		<0.50			<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50				<0.50		<0.50
Alkalinity, PP carbonate CO3	mg/L		<0.50			<0.50	<0.50		<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50				<0.50		<0.50
Chloride	mg/L		1.3			0.63	1.9		<0.50	<0.50	<0.50	0.76	<0.50	0.55	0.8				0.71		<0.50
Fluoride	mg/L	*	0.099			0.085	0.097		0.31	0.3	0.28	0.29	0.31	0.29	0.3				0.15		0.15
Sulphate, dissolved	mg/L	1000	229			222	230		273	255	243	232	279	240	234				13.5		14.1
Ammonia (N)	mg/L	*	0.034			0.031	0.032		0.043	0.13	0.031	0.022	0.045	0.78	0.045				0.053		0.023
Nitrite (N)	mg/L	*	<0.0020			<0.0020	<0.0020		<0.0020	<0.0020	0.0021	<0.0020	<0.0020	0.0021	<0.0020				0.0052		0.002
Nitrate (N)	mg/L	400	0.0026			0.0031	0.156		0.0053	<0.0020	<0.0020	0.0028	0.0026	<0.0020	<0.0020				0.567		0.603
Nitrite & Nitrate, as N	mg/L	400	0.0026			0.0031	0.156		0.0053	<0.0020	<0.0020	0.0028	0.0026	<0.0020	<0.0020				0.572		0.605
Phosphorus, total-colourimetric	mg/L		0.383			0.0503	0.785		0.0034	0.0971	0.0734	0.0041	0.0147	0.429	0.149				1.16		0.42
Phosphorus, Total Dissolved	mg/L		0.033			0.0075	0.0595		0.0026	<0.0020	0.0049	0.0067	0.0139	0.433	0.164				1.11		0.0505
Dissolved Organic Carbon	mg/L		1.08			1.15	8.35				<0.50	<0.50	<0.50	0.81	1.11				1.95		0.89
Aluminum (Al), total	mg/L		1.51			0.539	2.37		0.54	0.0958	0.0786	0.0623	0.0174	0.0666	0.0532				30.8		4.67
Antimony (Sb), total	mg/L		0.00523			0.0048	0.00272		0.00121	0.00569	0.0016	0.000183	0.000106	0.000054	0.000153				0.00036		0.000159
Arsenic (As), total	mg/L		0.0158			0.0123	0.0071		0.0108	0.025	0.00223	0.000983	0.000547	0.00108	0.000967				0.0267		0.00433
Barium (Ba), total	mg/L		0.0902			0.0258	0.101		0.0306	0.018	0.0201	0.00956	0.011	0.0147	0.015				0.906		0.227
Beryllium (Be), total	mg/L		0.000116			0.000032	0.000079		0.000032	0.000014	0.000013	<0.000010	<0.000010	<0.000010	0.000016				0.00622		0.000726
Bismuth (Bi), total	mg/L		0.000082			0.000061	0.000105		0.000056	<0.000050	0.00002	0.000013	<0.000010	<0.000050	<0.000010				0.00281		0.000343
Boron (B), total	mg/L		<0.010			<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010				<0.050		<0.010
Cadmium (Cd), total	mg/L		0.000628			0.000525	0.000628		0.000359	0.0000837	0.000116	0.000069	0.000034	0.000013	0.000023				0.00345		0.000435
Calcium (Ca), total	mg/L		166			160	156		121	131	136	115	101	123	119				141		71.1
Chromium (Cr), total	mg/L		0.00357			0.00063	0.0067		0.00206	0.00036	0.00075	0.00023	<0.00010	0.0001	0.00012				0.0394		0.00548
Cobalt (Co), total	mg/L		0.00104			0.000215	0.00263		0.000465	0.000112	0.000093	0.00007	0.000023	0.000015	0.000025				0.0274		0.00285
Copper (Cu), total	mg/L		0.00625			0.00135	0.0165		0.00703	0.00118	0.000988	0.000628	0.00056	0.000168	0.00053				0.214		0.0245
Iron (Fe), total	mg/L		5.87			3.37	6.34		2.23	1.98	4.47	1.44	0.685	1.26	1.41				53.2		6.67
Lead (Pb), total	mg/L		0.0636			0.0474	0.0234		0.0143	0.0062	0.00576	0.00358	0.00204	0.00084	0.00129				0.151		0.0154
Lithium (Li), total	mg/L		0.0186			0.0139	0.0138		0.0209	0.022	0.0214	0.0196	0.0189	0.0209	0.0193				0.0404		0.00684
Magnesium (Mg), total	mg/L		58			61.4	56.7		23.4	26.4	22.6	21.4	18.2	24.2	22				23.5		7.06
Manganese (Mn), total	mg/L		0.203			0.22	0.378		0.0371	0.0468	0.0255	0.0198	0.0155	0.168	0.0271				1.59		0.191
Mercury (Hg), total	mg/L		<0.000020			<0.000020	<0.000020		0.000031	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020				<0.000020		<0.000020
Molybdenum (Mo), total	mg/L		0.000283			0.000114	0.000678		0.000373	0.000322	0.000222	0.000223	0.000197	0.000324	0.000307				0.00245		0.00225
Nickel (Ni), total	mg/L		0.00249			0.000486	0.00717		0.00471	0.000438	0.0003	0.000253	0.00014	0.000066	<0.00010				0.0777		0.00796
Phosphorus (P), total	mg/L		0.288			0.0389	0.627		0.0192	0.0055	0.0133	0.0108	0.0054	0.501	0.143				3.27		0.349
Potassium (K), total	mg/L		4.19			3.98	5.15		2.93	2.92	2.85	2.35	1.9	2.35	2.44				10.3		2.92
Selenium (Se), total	mg/L		0.000123			0.000065	0.000218		0.000075	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040				0.00643		0.0039

Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-131	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-146	BH95G-15D	BH95G-15D	BH95G-15D			
		Aquatic Life vs DM	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####	#####			
Silicon (Si), total	mg/L		13.6			10	10.5		16.3	15.9	16	13.9	11.9	13.4					13.7			54.2		10.3
Silver (Ag), total	mg/L		0.000189			0.000529	0.000182		0.0000439	0.0000087	0.000017	0.000033	<0.000010	0.000007					<0.000010			0.000394		0.000057
Sodium (Na), total	mg/L		3.06			1.77	9.72		3.45	4.11	3.21	3.07	2.82	5.41					3.31			1.4		0.89
Strontium (Sr), total	mg/L		0.898			0.749	0.749		0.41	0.448	0.426	0.405	0.333	0.65					0.406			0.56		0.238
Sulphur (S), total	mg/L		77.9			87.2	82.5		88.5	104	87.8	85.1	74.5	91.9					87.8			<15		4.7
Thallium (Tl), total	mg/L		0.000084			0.000068	0.000049		0.0000362	0.0000254	0.000009	0.000011	0.000004	0.000002					0.000005			0.000558		0.00005
Tin (Sn), total	mg/L		0.00162			0.00069	0.00489		0.00234	<0.00020	0.00049	<0.00020	<0.00020	<0.00020					<0.00020			0.0011		0.00032
Titanium (Ti), total	mg/L		0.0279			0.0222	0.107		0.0408	0.00595	0.00479	0.00298	<0.0020	0.00201					0.002			0.268		0.0782
Uranium (U), total	mg/L		0.016			0.0172	0.0167		0.00196	0.0024	0.0018	0.00154	0.00141	0.00179					0.00186			0.0311		0.00659
Vanadium (V), total	mg/L		0.00272			0.00088	0.007		0.00099	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020					<0.00020			0.0578		0.00844
Zinc (Zn), total	mg/L		0.122			0.0835	0.0934		0.0491	0.0702	0.0458	0.0119	0.0065	0.00354					0.005			0.442		0.0464
Zirconium (Zr), total	mg/L		0.00459			0.0301	0.00364		0.00835	0.00016	0.00126	0.00095	0.00032	0.00124					0.00073			0.00242		0.00019
Aluminum (Al), dissolved	mg/L		0.00105			0.0028	0.00813		0.00098	0.00315	0.00086	<0.00050	<0.00050	0.00136					0.00053			0.00071		0.0009
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.00167			0.00047	0.0012		0.000522	0.00112	0.00012	0.000061	<0.00020	0.000026					0.000055			0.000103		0.000023
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.00173			0.00328	0.00053		0.000605	0.00452	0.000547	0.000296	0.0004	0.000797					0.000465			0.000187		0.000106
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0299			0.0157	0.0808		0.015	0.0126	0.0141	0.00773	0.00997	0.0132					0.0127			0.0829		0.0871
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010			<0.000010	<0.000010		<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010					<0.000010			<0.000010		<0.000010
Bismuth (Bi), dissolved	mg/L		<0.0000050			<0.0000050	<0.0000050		<0.0000050	0.000006	<0.0000050	<0.0000050	<0.0000050	<0.0000050					<0.0000050			<0.0000050		<0.0000050
Boron (B), dissolved	mg/L		<0.010			<0.010	<0.010		<0.010	<0.010	<0.010	<0.010	<0.10	<0.010					<0.010			<0.010		<0.010
Cadmium (Cd), dissolved	mg/L	*	<0.0000050			0.000012	0.000289		0.0000091	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050					<0.0000050			0.000029		0.000034
Calcium (Ca), dissolved	mg/L		166			169	155		128	129	121	121	121	117					118			68.5		62.8
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	<0.00010			<0.00010	0.00022		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010					<0.00010			<0.00010		<0.00010
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	0.000109			0.000024	0.000348		0.0000562	0.0000607	0.000006	<0.0000050	<0.0000050	<0.0000050					0.000005			<0.0000050		<0.0000050
Copper (Cu), dissolved	mg/L	*	<0.000050			<0.000050	0.00298		0.000275	0.000074	0.000054	<0.000050	<0.000050	<0.000050					<0.000050			0.000128		<0.000050
Iron (Fe), dissolved	mg/L		0.0012			1.5	0.0121		1.11	0.982	0.0012	<0.0010	<0.010	1.15					0.0011			<0.0010		<0.0010
Lead (Pb), dissolved	mg/L	*	0.000084			0.000325	0.000071		0.0000133	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050					<0.0000050			0.000008		0.000014
Lithium (Li), dissolved	mg/L		0.0184			0.0149	0.0122		0.0213	0.0234	0.0223	0.0207	0.0223	0.02					0.0218			0.00275		0.0029
Magnesium (Mg), dissolved	mg/L		58.5			61.7	54.3		23	22	21.3	22	23	23.6					23.1			5.69		4.85
Manganese (Mn), dissolved	mg/L		0.153			0.157	0.216		0.0242	0.0508	0.016	0.0182	0.0171	0.146					0.026			<0.000050		0.000639
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020			<0.0000020	<0.0000020		<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020					<0.0000020			<0.0000020		<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.000132			0.000067	0.000806		0.000284	0.000291	0.000221	0.00023	<0.00050	0.000289					0.000249			0.00292		0.00295
Nickel (Ni), dissolved	mg/L	*	0.00039			0.000074	0.00159		0.000661	0.000246	0.000048	0.000029	<0.00020	<0.000020					0.00002			0.000328		0.000246
Phosphorus (P), dissolved	mg/L		0.0292			0.018	0.0247		0.0054	<0.0020	0.003	<0.0020	<0.020	0.401					0.009			0.0054		0.0134
Potassium (K), dissolved	mg/L		4.05			3.89	4.92		2.65	2.36	2.75	2.36	2.31	2.29					2.49			1.72		1.67
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.000042			<0.000040	0.000138		<0.000040	<0.000040	<0.000040	<0.000040	<0.000040	<0.000040					<0.000040			0.00377		0.00311
Silicon (Si), dissolved	mg/L		11.9			9.35	8.1		14.6	14	14.4	14.8	16.4	13					13			3.14		2.79
Silver (Ag), dissolved	mg/L	*	0.000015			0.000021	0.00001		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050					<0.0000050			<0.0000050		<0.0000050
Sodium (Na), dissolved	mg/L		3.05			1.79	15.6		3.31	3.39	3.08	3.23	3.29	4.77					3.3			0.829		0.745
Strontium (Sr), dissolved	mg/L		0.916			0.743	0.721		0.426	0.39	0.438	0.373	0.381	0.608					0.408			0.203		0.185
Sulphur (S), dissolved	mg/L		82.8			83.2	75.8		91.2	86.9	90.8	89.1	92	89.8					83			4.9		4.5
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	0.000002			0.000004	0.000007		<0.0000020	0.0000269	0.000002	<0.0000020	<0.0000020	<0.0000020					<0.0000020			0.000004		0.000003
Tin (Sn), dissolved	mg/L		<0.00020			<0.00020	0.00035		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020					<0.00020			<0.00020		<0.00020
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050			0.00053	0.00091		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050					<0.00050			<0.00050		<0.00050
Uranium (U), dissolved	mg/L	<b>3</b>	0.0122			0.017	0.0156		0.00182	0.00231	0.00155	0.00165	0.00169	0.00172					0.00166			0.0031		0.00316
Vanadium (V), dissolved	mg/L		<0.00020			<0.00020	<0.00020		<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020					<0.00020			<0.00020		<0.00020
Zinc (Zn), dissolved	mg/L	*	0.00155			0.00365	0.0198		0.0103	0.00383	0.00125	0.00059	<0.0010	0.0011					0.00082			0.00094		0.001
Zirconium (Zr), dissolved	mg/L		0.00525			0.0105	0.00277		<0.00010	<0.00010	0.00013	<0.00010	<0.00010	<0.00010					<0.00010			<0.00010		<0.00010

## Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-15D	BH95G-15D	BH95G-15D
		Aquatic Life vs DM	#####	#####	#####
Depth to Water (mbTOC)	m		10.464	9.221	6.136
Well Depth	mbTOC		22.94	22.983	22.889
Total Suspended Solids	mg/L		146	1540	1160
pH (field)	pH units		7.4	7.48	7.69
pH (lab)	pH units		8.01	8.23	7.97
Specific Conductance (field)	µS/cm		354.1	351.8	324.4
Specific Conductance (lab)	µS/cm		349	351	346
Temperature (field)	C		1	6.4	2.7
Dissolved Oxygen (field)	mg/L		8.51	2.46	4
Dissolved Oxygen (field)	%		71.5	19.9	35
ORP (field)	mV		241.6	375.3	88.2
Hardness (from total)	mg/L		194	240	235
Hardness (from dissolved)	mg/L		183	178	178
Total Acidity	mg/L		1.87	7	1.9
Acidity (pH 4.5)	mg/L		<0.50	<0.50	<1.0
Alkalinity, total	mg/L		169	170	175
Alkalinity, bicarbonate HCO3	mg/L		206	207	214
Alkalinity, hydroxide OH	mg/L		<0.50	<0.50	<0.50
Alkalinity, carbonate CO3	mg/L		<0.50	<0.50	<0.50
Alkalinity, PP carbonate CO3	mg/L		<0.50	<0.50	<0.50
Chloride	mg/L		0.59	0.51	0.57
Fluoride	mg/L	*	0.14	0.14	0.14
Sulphate, dissolved	mg/L	1000	15.1	14.4	16
Ammonia (N)	mg/L	*	0.019	0.018	0.01
Nitrite (N)	mg/L	*	<0.0020	<0.0020	<0.0020
Nitrate (N)	mg/L	400	0.597	0.581	0.601
Nitrite & Nitrate, as N	mg/L	400	0.597	0.581	0.601
Phosphorus, total-colourimetric	mg/L		0.106	0.806	0.683
Phosphorus, Total Dissolved	mg/L		0.109	0.0676	0.104
Dissolved Organic Carbon	mg/L		0.8	0.89	0.76
Aluminum (Al), total	mg/L		2.01	13.2	11.1
Antimony (Sb), total	mg/L		0.000058	0.000167	0.000532
Arsenic (As), total	mg/L		0.00106	0.00947	0.00517
Barium (Ba), total	mg/L		0.114	0.444	0.289
Beryllium (Be), total	mg/L		0.000192	0.00212	0.00105
Bismuth (Bi), total	mg/L		0.000062	0.000894	0.0013
Boron (B), total	mg/L		<0.010	0.011	<0.010
Cadmium (Cd), total	mg/L		0.000137	0.00113	0.000694
Calcium (Ca), total	mg/L		68.6	79.2	73.8
Chromium (Cr), total	mg/L		0.0015	0.0132	0.0163
Cobalt (Co), total	mg/L		0.000767	0.0083	0.00492
Copper (Cu), total	mg/L		0.00816	0.0772	0.185
Iron (Fe), total	mg/L		1.82	17.4	15.2
Lead (Pb), total	mg/L		0.0034	0.0461	0.12
Lithium (Li), total	mg/L		0.0042	0.0146	0.0121
Magnesium (Mg), total	mg/L		5.56	10.1	12.2
Manganese (Mn), total	mg/L		0.0454	0.526	0.275
Mercury (Hg), total	mg/L		<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), total	mg/L		0.00193	0.00139	0.0027
Nickel (Ni), total	mg/L		0.00226	0.023	0.0324
Phosphorus (P), total	mg/L		0.0749	0.878	0.641
Potassium (K), total	mg/L		1.99	4.55	4
Selenium (Se), total	mg/L		0.00323	0.00404	0.00427

## Appendix E 2015 to 2017 Groundwater Monitoring Data

		YCSR Schedule 3	BH95G-15D	BH95G-15D	BH95G-15D
		Aquatic Life vs DM	#####	#####	#####
Silicon (Si), total	mg/L		8.06	22.1	21.1
Silver (Ag), total	mg/L		0.000025	0.000433	0.000857
Sodium (Na), total	mg/L		0.83	1.01	1
Strontium (Sr), total	mg/L		0.207	0.319	0.246
Sulphur (S), total	mg/L		5.1	5.1	5.7
Thallium (Tl), total	mg/L		0.000022	0.000245	0.000127
Tin (Sn), total	mg/L		<0.00020	<0.00020	0.00048
Titanium (Ti), total	mg/L		0.0496	0.0678	0.155
Uranium (U), total	mg/L		0.00404	0.0126	0.00825
Vanadium (V), total	mg/L		0.00241	0.02	0.0182
Zinc (Zn), total	mg/L		0.0114	0.125	0.144
Zirconium (Zr), total	mg/L		0.00366	0.00078	0.00087
Aluminum (Al), dissolved	mg/L		<0.00050	<0.00050	0.00108
Antimony (Sb), dissolved	mg/L	<b>0.2</b>	0.000023	0.000047	0.000043
Arsenic (As), dissolved	mg/L	<b>0.05</b>	0.000076	0.000115	0.000064
Barium (Ba), dissolved	mg/L	<b>10</b>	0.0846	0.0797	0.0838
Beryllium (Be), dissolved	mg/L	<b>0.053</b>	<0.000010	<0.000010	<0.000010
Bismuth (Bi), dissolved	mg/L		<0.0000050	<0.0000050	<0.0000050
Boron (B), dissolved	mg/L		<0.010	<0.010	<0.010
Cadmium (Cd), dissolved	mg/L	*	0.000031	0.000053	0.000032
Calcium (Ca), dissolved	mg/L		65.2	62.9	63
Chromium (Cr), dissolved	mg/L	<b>0.01</b>	0.00013	0.00013	0.0001
Cobalt (Co), dissolved	mg/L	<b>0.009</b>	<0.0000050	0.000006	<0.0000050
Copper (Cu), dissolved	mg/L	*	0.000124	0.000377	0.000137
Iron (Fe), dissolved	mg/L		<0.0010	<0.0010	<0.0010
Lead (Pb), dissolved	mg/L	*	0.000008	0.000042	0.000014
Lithium (Li), dissolved	mg/L		0.00266	0.00261	0.00266
Magnesium (Mg), dissolved	mg/L		4.94	5.11	5.13
Manganese (Mn), dissolved	mg/L		0.000638	0.00157	0.000453
Mercury (Hg), dissolved	mg/L	<b>0.001</b>	<0.0000020	<0.0000020	<0.0000020
Molybdenum (Mo), dissolved	mg/L	<b>10</b>	0.00101	0.00297	0.003
Nickel (Ni), dissolved	mg/L	*	0.000269	0.000286	0.000261
Phosphorus (P), dissolved	mg/L		0.0134	0.0143	0.013
Potassium (K), dissolved	mg/L		1.65	1.63	1.66
Selenium (Se), dissolved	mg/L	<b>0.01</b>	0.00303	0.0031	0.00327
Silicon (Si), dissolved	mg/L		2.72	2.63	2.7
Silver (Ag), dissolved	mg/L	*	<0.0000050	<0.0000050	<0.0000050
Sodium (Na), dissolved	mg/L		0.804	0.909	0.827
Strontium (Sr), dissolved	mg/L		0.186	0.175	0.195
Sulphur (S), dissolved	mg/L		4.4	4.7	4.9
Thallium (Tl), dissolved	mg/L	<b>0.003</b>	0.000002	0.000005	0.000002
Tin (Sn), dissolved	mg/L		<0.00020	<0.00020	<0.00020
Titanium (Ti), dissolved	mg/L	<b>1</b>	<0.00050	<0.00050	<0.00050
Uranium (U), dissolved	mg/L	<b>3</b>	0.00329	0.00328	0.00324
Vanadium (V), dissolved	mg/L		<0.00020	<0.00020	<0.00020
Zinc (Zn), dissolved	mg/L	*	0.0009	0.00129	0.00132
Zirconium (Zr), dissolved	mg/L		<0.00010	<0.00010	<0.00010

**APPENDIX F**  
**LABORATORY CERTIFICATES OF ANALYSIS**

Your Project #: BMC-16-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08437331, 08437332

**Attention:** Name REDACTED  
 ALEXCO ENVIRONMENTAL GROUP INC.  
 Unit 3 Calcite Business Centre  
 151 Industrial Road  
 WHITEHORSE, YT  
 Canada Y1A 2V3

**Report Date: 2017/04/05**  
 Report #: R2366062  
 Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B721752**  
**Received: 2017/03/23, 11:50**

Sample Matrix: Water  
 # Samples Received: 19

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	19	N/A	2017/03/25	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	17	2017/03/25	2017/03/25	BBY6SOP-00026	SM 22 2320 B m
Alkalinity - Water	2	2017/03/25	2017/03/26	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	19	N/A	2017/03/27	BBY6SOP-00011	SM 22 4500-Cl- E m
Carbon (DOC) - field filtered/preserved (1)	19	N/A	2017/03/27	BBY6SOP-00003	SM 22 5310 C m
Conductance - water	17	N/A	2017/03/25	BBY6SOP-00026	SM 22 2510 B m
Conductance - water	2	N/A	2017/03/26	BBY6SOP-00026	SM 22 2510 B m
Fluoride	12	N/A	2017/03/27	BBY6SOP-00048	SM 22 4500-F C m
Fluoride	7	N/A	2017/03/28	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	18	N/A	2017/03/29	BBY WI-00033	Auto Calc
Hardness Total (calculated as CaCO3)	1	N/A	2017/03/31	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	19	N/A	2017/03/28	BBY WI-00033	Auto Calc
Mercury (Dissolved-LowLevel) by CVAF	4	N/A	2017/03/27	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Dissolved-LowLevel) by CVAF	15	N/A	2017/03/28	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAF	19	2017/03/28	2017/03/28	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance (as Cations/Anions Ratio)	19	N/A	2017/03/28	BBY WI-00033	Auto Calc
Sum of cations, anions	19	N/A	2017/03/28	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	19	N/A	2017/03/28	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Low Level (dissolved)	19	N/A	2017/03/27	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Digested LL (total)	13	2017/03/28	2017/03/28	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Digested LL (total)	2	2017/03/28	2017/03/29	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Digested LL (total)	1	2017/03/30	2017/03/31	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Na, K, Ca, Mg, S by CRC ICPMS (total)	18	N/A	2017/03/29	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2017/03/31	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Low Level (total)	1	N/A	2017/03/28	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Low Level (total)	2	N/A	2017/03/29	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Ammonia-N (Preserved)	19	N/A	2017/03/25	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	19	N/A	2017/03/25	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	19	N/A	2017/03/25	BBY6SOP-00010	SM 22 4500-NO3- I m



Your Project #: BMC-16-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08437331, 08437332

**Attention:** Name REDACTED  
 ALEXCO ENVIRONMENTAL GROUP INC.  
 Unit 3 Calcite Business Centre  
 151 Industrial Road  
 WHITEHORSE, YT  
 Canada Y1A 2V3

**Report Date: 2017/04/05**  
 Report #: R2366062  
 Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B721752**  
**Received: 2017/03/23, 11:50**

Sample Matrix: Water  
 # Samples Received: 19

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Nitrogen - Nitrate (as N)	19	N/A	2017/03/28	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	18	N/A	2017/03/25	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	18	N/A	2017/03/25	BBY6SOP-00026	SM 22 4500-H+ B m
pH Water (2)	1	N/A	2017/03/26	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate by Automated Colourimetry	19	N/A	2017/03/27	BBY6SOP-00017	SM 22 4500-SO42- E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	10	2017/03/25	2017/03/25	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	7	2017/03/27	2017/03/27	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	2	2017/03/30	2017/03/30	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - Low Level Unpreserved	10	N/A	2017/03/25	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - Low Level Unpreserved	7	N/A	2017/03/27	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - Low Level Unpreserved	2	N/A	2017/03/30	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	19	2017/03/27	2017/03/28	BBY6SOP-00034	SM 22 2540 D

**Remarks:**  
 Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Your Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08437331, 08437332

**Attention:** Name REDACTED  
ALEXCO ENVIRONMENTAL GROUP INC.  
Unit 3 Calcite Business Centre  
151 Industrial Road  
WHITEHORSE, YT  
Canada Y1A 2V3

**Report Date: 2017/04/05**  
Report #: R2366062  
Version: 2 - Revision

### **CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B721752**

**Received: 2017/03/23, 11:50**

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) DOC present in the sample should be considered as non-purgeable DOC.

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

#### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED Project Manager

Email: Email REDACTED

Phone# phone REDACTED

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		QT8718			QT8719			QT8720		
<b>Sampling Date</b>		2017/03/21 16:50			2017/03/20 12:50			2017/03/20 12:30		
<b>COC Number</b>		08437331			08437331			08437331		
	<b>UNITS</b>	<b>BH95G-22</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>										
Anion Sum	meq/L	4.1	N/A	8586855	3.1	N/A	8586855	4.3	N/A	8586855
Cation Sum	meq/L	4.0	N/A	8586855	3.2	N/A	8586855	4.2	N/A	8586855
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.98	0.010	8586748	1.0	0.010	8586748	0.99	0.010	8586748
Nitrate (N)	mg/L	0.278	0.0020	8586856	0.0941	0.0020	8586856	<0.0020	0.0020	8586856

<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.063	0.010	8589370	0.074	0.010	8589743	0.150	0.010	8589743
Dissolved Organic Carbon (C)	mg/L	1.12	0.50	8588397	<0.50	0.50	8588400	1.10	0.50	8588398
Acidity (pH 4.5)	mg/L	<0.50	0.50	8587259	<0.50	0.50	8587260	<0.50	0.50	8587260
Alkalinity (Total as CaCO3)	mg/L	147	0.50	8587276	137	0.50	8587302	189	0.50	8587283
Acidity (pH 8.3)	mg/L	4.19	0.50	8587259	<0.50	0.50	8587260	1.34	0.50	8587260
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8587276	<0.50	0.50	8587302	<0.50	0.50	8587283
Bicarbonate (HCO3)	mg/L	180	0.50	8587276	167	0.50	8587302	231	0.50	8587283
Carbonate (CO3)	mg/L	<0.50	0.50	8587276	<0.50	0.50	8587302	<0.50	0.50	8587283
Hydroxide (OH)	mg/L	<0.50	0.50	8587276	<0.50	0.50	8587302	<0.50	0.50	8587283

<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	51.2	0.50	8589098	19.0	0.50	8589110	23.1	0.50	8589110
Dissolved Chloride (Cl)	mg/L	0.57	0.50	8589097	0.50	0.50	8589108	<0.50	0.50	8589108

<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	3.27 (1)	0.020	8587430	9.24 (1)	0.20	8587657	0.0039 (2)	0.0020	8587657
Total Ammonia (N)	mg/L	0.042	0.0050	8587353	0.053	0.0050	8587353	0.078	0.0050	8587353
Nitrate plus Nitrite (N)	mg/L	0.280 (3)	0.0020	8587507	0.0941 (3)	0.0020	8587509	<0.0020 (3)	0.0020	8587509
Nitrite (N)	mg/L	0.0021 (3)	0.0020	8587508	<0.0020 (3)	0.0020	8587510	<0.0020 (3)	0.0020	8587510
Total Phosphorus (P)	mg/L	4.21 (1)	0.020	8587433	9.38 (1)	0.20	8587658	0.0046 (2)	0.0020	8587658

<b>Physical Properties</b>										
Conductivity	uS/cm	380	1.0	8587277	297	1.0	8587301	394	1.0	8587289
pH	pH	7.76		8587278	8.08		8587299	8.12		8587290

RDL = Reportable Detection Limit  
N/A = Not Applicable  
(1) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample preserved to extend hold time.  
(2) Sample preserved to extend hold time.  
(3) Sample analysed past recommended hold time.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		QT8718			QT8719			QT8720		
<b>Sampling Date</b>		2017/03/21 16:50			2017/03/20 12:50			2017/03/20 12:30		
<b>COC Number</b>		08437331			08437331			08437331		
	<b>UNITS</b>	<b>BH95G-22</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03D</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	1190	1.0	8587819	7090	1.0	8587819	2.6	1.0	8587825
RDL = Reportable Detection Limit										

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		QT8721			QT8722		QT8723		QT8724		
Sampling Date		2017/03/20 14:27			2017/03/20 14:10		2017/03/20 16:32		2017/03/20 17:45		
COC Number		08437331			08437331		08437331		08437331		
	UNITS	MW15-04S	RDL	QC Batch	MW15-04D	RDL	MW15-05D	QC Batch	MW16-15D	RDL	QC Batch

**Calculated Parameters**

Anion Sum	meq/L	2.6	N/A	8586855	3.1	N/A	4.1	8586855	4.0	N/A	8586855
Cation Sum	meq/L	2.6	N/A	8586855	3.2	N/A	4.3	8586855	3.9	N/A	8586855
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		FIELD	ONSITE	FIELD		ONSITE
Ion Balance	N/A	1.0	0.010	8586748	1.0	0.010	1.0	8586748	0.97	0.010	8586748
Nitrate (N)	mg/L	0.218	0.0020	8586856	0.0067	0.0020	0.259	8586856	<0.0020	0.0020	8586856

**Misc. Inorganics**

Fluoride (F)	mg/L	0.087	0.010	8589743	0.220	0.010	0.120	8589743	0.091	0.010	8589741
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8588397	1.13	0.50	1.08	8588398	<0.50	0.50	8588397
Acidity (pH 4.5)	mg/L	<0.50	0.50	8587260	<0.50	0.50	<0.50	8587260	<0.50	0.50	8587260
Alkalinity (Total as CaCO3)	mg/L	118	0.50	8587283	135	0.50	173	8587283	126	0.50	8587283
Acidity (pH 8.3)	mg/L	<0.50	0.50	8587260	0.70	0.50	<0.50	8587260	0.52	0.50	8587260
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8587283	<0.50	0.50	<0.50	8587283	<0.50	0.50	8587283
Bicarbonate (HCO3)	mg/L	144	0.50	8587283	165	0.50	211	8587283	154	0.50	8587283
Carbonate (CO3)	mg/L	<0.50	0.50	8587283	<0.50	0.50	<0.50	8587283	<0.50	0.50	8587283
Hydroxide (OH)	mg/L	<0.50	0.50	8587283	<0.50	0.50	<0.50	8587283	<0.50	0.50	8587283

**Anions**

Dissolved Sulphate (SO4)	mg/L	9.92	0.50	8589110	19.9	0.50	29.7	8589110	71.5	0.50	8589110
Dissolved Chloride (Cl)	mg/L	0.58	0.50	8589108	<0.50	0.50	0.61	8589108	0.70	0.50	8589108

**Nutrients**

Dissolved Phosphorus (P)	mg/L	0.601 (1)	0.020	8587657	0.0042 (2)	0.0020	0.0077 (2)	8587657	0.0181 (2)	0.0020	8587657
Total Ammonia (N)	mg/L	0.045	0.0050	8587353	0.033	0.0050	0.021	8587353	0.046	0.0050	8587353
Nitrate plus Nitrite (N)	mg/L	0.218 (3)	0.0020	8587509	0.0067 (3)	0.0020	0.259 (3)	8587509	<0.0020 (3)	0.0020	8587509
Nitrite (N)	mg/L	<0.0020 (3)	0.0020	8587510	<0.0020 (3)	0.0020	<0.0020 (3)	8587510	0.0041 (3)	0.0020	8587510
Total Phosphorus (P)	mg/L	0.642 (1)	0.020	8587658	0.0081 (2)	0.0020	0.0086 (2)	8587658	0.0219 (2)	0.0020	8587658

**Physical Properties**

Conductivity	uS/cm	240	1.0	8587289	296	1.0	380	8587289	377	1.0	8587289
pH	pH	8.15		8587290	8.11		8.11	8587290	8.04		8587290

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample preserved to extend hold time.

(2) Sample preserved to extend hold time.

(3) Sample analysed past recommended hold time.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		QT8721			QT8722		QT8723		QT8724		
<b>Sampling Date</b>		2017/03/20 14:27			2017/03/20 14:10		2017/03/20 16:32		2017/03/20 17:45		
<b>COC Number</b>		08437331			08437331		08437331		08437331		
	<b>UNITS</b>	<b>MW15-04S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-04D</b>	<b>RDL</b>	<b>MW15-05D</b>	<b>QC Batch</b>	<b>MW16-15D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>											
Total Suspended Solids	mg/L	1020	1.0	8587825	16.8 (1)	1.1	37.3	8587825	38.3	1.0	8587825

RDL = Reportable Detection Limit

(1) RDL raised due to limited initial sample amount.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

### RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		QT8725		QT8726			QT8727		
Sampling Date		2017/03/21 09:15		2017/03/21 10:40			2017/03/21 16:00		
COC Number		08437331		08437331			08437332		
	UNITS	BH95G-2	RDL	BH95G-15D	RDL	QC Batch	BH95G-25S	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	6.5	N/A	3.8	N/A	8586855	10	N/A	8586855
Cation Sum	meq/L	6.4	N/A	3.7	N/A	8586855	10	N/A	8586855
Filter and HNO3 Preservation	N/A	FIELD		FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.99	0.010	0.99	0.010	8586748	0.99	0.010	8586748
Nitrate (N)	mg/L	0.476	0.0020	0.597	0.0020	8586856	0.0029	0.0020	8586856
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.059	0.010	0.140	0.010	8589371	0.130	0.010	8589371
Dissolved Organic Carbon (C)	mg/L	1.08	0.50	0.80	0.50	8588398	2.26	0.50	8588398
Acidity (pH 4.5)	mg/L	<0.50	0.50	<0.50	0.50	8587259	<0.50	0.50	8587259
Alkalinity (Total as CaCO3)	mg/L	262	0.50	169	0.50	8587276	325	0.50	8587276
Acidity (pH 8.3)	mg/L	3.29	0.50	1.87	0.50	8587259	11.4	0.50	8587259
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	<0.50	0.50	8587276	<0.50	0.50	8587276
Bicarbonate (HCO3)	mg/L	320	0.50	206	0.50	8587276	397	0.50	8587276
Carbonate (CO3)	mg/L	<0.50	0.50	<0.50	0.50	8587276	<0.50	0.50	8587276
Hydroxide (OH)	mg/L	<0.50	0.50	<0.50	0.50	8587276	<0.50	0.50	8587276
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	55.5	0.50	15.1	0.50	8589098	167	0.50	8589098
Dissolved Chloride (Cl)	mg/L	0.69	0.50	0.59	0.50	8589097	0.86	0.50	8589097
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	0.0089 (1)	0.0020	0.109 (1)	0.0020	8587425	0.843 (2)	0.020	8591792
Total Ammonia (N)	mg/L	0.028	0.0050	0.019	0.0050	8587353	0.28	0.0050	8587353
Nitrate plus Nitrite (N)	mg/L	0.476 (3)	0.0020	0.597 (3)	0.0020	8587507	0.0029 (3)	0.0020	8587507
Nitrite (N)	mg/L	<0.0020 (3)	0.0020	<0.0020 (3)	0.0020	8587508	<0.0020 (3)	0.0020	8587508
Total Phosphorus (P)	mg/L	0.0106 (1)	0.0020	0.106 (1)	0.0020	8587427	1.15 (2)	0.020	8591793
<b>Physical Properties</b>									
Conductivity	uS/cm	576	1.0	349	1.0	8587277	867	1.0	8587277
pH	pH	8.05		8.01		8587278	7.88		8587278
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample preserved to extend hold time. (2) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample analysed past recommended hold time. (3) Sample analysed past recommended hold time.									

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		QT8725		QT8726			QT8727		
<b>Sampling Date</b>		2017/03/21 09:15		2017/03/21 10:40			2017/03/21 16:00		
<b>COC Number</b>		08437331		08437331			08437332		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>BH95G-15D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	8.0 (1)	1.1	146	1.0	8587825	2730	1.0	8587825
RDL = Reportable Detection Limit (1) RDL raised due to limited initial sample amount.									



Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		QT8728			QT8729		QT8730		
Sampling Date		2017/03/21 15:45			2017/03/21 14:45		2017/03/21 14:00		
COC Number		08437332			08437332		08437332		
	UNITS	BH95G-25D	RDL	QC Batch	BH95G-32	QC Batch	BH95G-33D	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	13	N/A	8586855	4.4	8586855	5.0	N/A	8586855
Cation Sum	meq/L	12	N/A	8586855	4.7	8586855	5.0	N/A	8586855
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD	ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.98	0.010	8586748	1.1	8586748	0.99	0.010	8586748
Nitrate (N)	mg/L	0.0029	0.0020	8586856	0.0606	8586856	0.247	0.0020	8586856
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.092	0.010	8589371	0.038	8589371	0.056	0.010	8589370
Dissolved Organic Carbon (C)	mg/L	2.02	0.50	8588398	1.18	8588398	0.95	0.50	8588398
Acidity (pH 4.5)	mg/L	<0.50	0.50	8587260	<0.50	8587259	<0.50	0.50	8587259
Alkalinity (Total as CaCO3)	mg/L	356	0.50	8587276	180	8587276	177	0.50	8587275
Acidity (pH 8.3)	mg/L	11.4	0.50	8587260	1.75	8587259	2.34	0.50	8587259
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8587276	<0.50	8587276	<0.50	0.50	8587275
Bicarbonate (HCO3)	mg/L	434	0.50	8587276	220	8587276	216	0.50	8587275
Carbonate (CO3)	mg/L	<0.50	0.50	8587276	<0.50	8587276	<0.50	0.50	8587275
Hydroxide (OH)	mg/L	<0.50	0.50	8587276	<0.50	8587276	<0.50	0.50	8587275
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	260 (1)	5.0	8589104	36.8	8589098	69.6	0.50	8589098
Dissolved Chloride (Cl)	mg/L	0.85	0.50	8589100	0.53	8589097	0.51	0.50	8589097
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	0.0900 (2)	0.0020	8587425	0.145 (2)	8587425	0.0178 (2)	0.0020	8587422
Total Ammonia (N)	mg/L	0.092	0.0050	8587353	0.030	8587353	0.030	0.0050	8587353
Nitrate plus Nitrite (N)	mg/L	0.0029 (3)	0.0020	8587509	0.0606 (3)	8587507	0.250 (3)	0.0020	8587507
Nitrite (N)	mg/L	<0.0020 (3)	0.0020	8587510	<0.0020 (3)	8587508	0.0024 (3)	0.0020	8587508
Total Phosphorus (P)	mg/L	0.0858 (2)	0.0020	8587427	0.181 (2)	8587427	0.0186 (2)	0.0020	8587433
<b>Physical Properties</b>									
Conductivity	uS/cm	1080	1.0	8587277	410	8587277	458	1.0	8587274
pH	pH	7.94		8587278	8.05	8587278	7.79		8587273
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range. (2) Sample preserved to extend hold time. (3) Sample analysed past recommended hold time.									

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		QT8728			QT8729		QT8730		
<b>Sampling Date</b>		2017/03/21 15:45			2017/03/21 14:45		2017/03/21 14:00		
<b>COC Number</b>		08437332			08437332		08437332		
	<b>UNITS</b>	<b>BH95G-25D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-32</b>	<b>QC Batch</b>	<b>BH95G-33D</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	238	1.0	8587825	193	8587825	17.2	1.0	8587825
RDL = Reportable Detection Limit									

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		QT8731	QT8740		QT8741		QT8756		
Sampling Date		2017/03/21 12:35	2017/03/21 11:45		2017/03/21 09:40		2017/03/21 14:20		
COC Number		08437332	08437332		08437332		08437332		
	UNITS	MW16-16D	MW16-17	QC Batch	DUP 1	QC Batch	DUP 2	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	4.8	3.9	8586855	6.5	8586855	5.1	N/A	8586855
Cation Sum	meq/L	4.6	4.0	8586855	6.2	8586855	5.1	N/A	8586855
Filter and HNO3 Preservation	N/A	FIELD	FIELD	ONSITE	FIELD	ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.97	1.0	8586748	0.96	8586748	1.0	0.010	8586748
Nitrate (N)	mg/L	<0.0020	<0.0020	8586856	0.472	8586856	0.249	0.0020	8586856
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.180	0.540	8589371	0.059	8589371	0.052	0.010	8589370
Dissolved Organic Carbon (C)	mg/L	1.50	<0.50	8588398	1.69	8588398	<0.50	0.50	8588400
Acidity (pH 4.5)	mg/L	<0.50	<0.50	8587259	<0.50	8587260	<0.50	0.50	8587259
Alkalinity (Total as CaCO3)	mg/L	197	162	8587276	266	8587276	179	0.50	8587276
Acidity (pH 8.3)	mg/L	1.87	0.59	8587259	2.22	8587260	2.21	0.50	8587259
Alkalinity (PP as CaCO3)	mg/L	<0.50	<0.50	8587276	<0.50	8587276	<0.50	0.50	8587276
Bicarbonate (HCO3)	mg/L	240	198	8587276	324	8587276	219	0.50	8587276
Carbonate (CO3)	mg/L	<0.50	<0.50	8587276	<0.50	8587276	<0.50	0.50	8587276
Hydroxide (OH)	mg/L	<0.50	<0.50	8587276	<0.50	8587276	<0.50	0.50	8587276
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	38.9	31.2	8589104	53.6	8589104	69.3	0.50	8589098
Dissolved Chloride (Cl)	mg/L	0.62	0.61	8589100	0.70	8589100	0.50	0.50	8589097
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	0.0908 (1)	0.0427 (1)	8587425	0.216 (1)	8587425	0.0160 (2)	0.0020	8591792
Total Ammonia (N)	mg/L	0.026	0.058	8587354	0.044	8587354	0.024	0.0050	8587354
Nitrate plus Nitrite (N)	mg/L	0.0029 (2)	<0.0020 (2)	8587509	0.472 (2)	8587509	0.249 (2)	0.0020	8587507
Nitrite (N)	mg/L	0.0021 (2)	<0.0020 (2)	8587510	<0.0020 (2)	8587510	<0.0020 (2)	0.0020	8587508
Total Phosphorus (P)	mg/L	0.0959 (1)	0.0380 (1)	8587427	0.203 (1)	8587427	0.0164 (2)	0.0020	8591793
<b>Physical Properties</b>									
Conductivity	uS/cm	438	364	8587277	575	8587277	466	1.0	8587277
pH	pH	8.06	8.12	8587278	8.11	8587278	7.99		8587278
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	72.0	71.5	8587825	187	8587825	18.1	1.0	8587825
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample preserved to extend hold time. (2) Sample analysed past recommended hold time.									

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		QT8757		QT8758		
Sampling Date		2017/03/21 12:45		2017/03/23		
COC Number		08437332		08437332		
	UNITS	FIELD BLANK	QC Batch	TRIP BLANK	RDL	QC Batch
<b>Calculated Parameters</b>						
Anion Sum	meq/L	0.00080	8586855	0.00070	N/A	8586855
Cation Sum	meq/L	0.0048	8586855	0.0054	N/A	8586855
Filter and HNO3 Preservation	N/A	FIELD	ONSITE			ONSITE
Ion Balance	N/A	NC	8586748	NC	0.010	8586748
Nitrate (N)	mg/L	<0.0020	8586856	<0.0020	0.0020	8586856
<b>Misc. Inorganics</b>						
Fluoride (F)	mg/L	0.016	8589370	0.013	0.010	8589743
Dissolved Organic Carbon (C)	mg/L	1.20	8588398	<0.50	0.50	8588398
Acidity (pH 4.5)	mg/L	<0.50	8587259	<0.50	0.50	8587260
Alkalinity (Total as CaCO3)	mg/L	<0.50	8587276	<0.50	0.50	8587302
Acidity (pH 8.3)	mg/L	<0.50	8587259	<0.50	0.50	8587260
Alkalinity (PP as CaCO3)	mg/L	<0.50	8587276	<0.50	0.50	8587302
Bicarbonate (HCO3)	mg/L	<0.50	8587276	<0.50	0.50	8587302
Carbonate (CO3)	mg/L	<0.50	8587276	<0.50	0.50	8587302
Hydroxide (OH)	mg/L	<0.50	8587276	<0.50	0.50	8587302
<b>Anions</b>						
Dissolved Sulphate (SO4)	mg/L	<0.50	8589098	<0.50	0.50	8589110
Dissolved Chloride (Cl)	mg/L	<0.50	8589097	<0.50	0.50	8589108
<b>Nutrients</b>						
Dissolved Phosphorus (P)	mg/L	<0.0020 (1)	8587422	<0.0020 (1)	0.0020	8587657
Total Ammonia (N)	mg/L	<0.0050	8587354	<0.0050	0.0050	8587354
Nitrate plus Nitrite (N)	mg/L	<0.0020 (2)	8587507	<0.0020	0.0020	8587517
Nitrite (N)	mg/L	<0.0020 (2)	8587508	<0.0020	0.0020	8587518
Total Phosphorus (P)	mg/L	<0.0020 (1)	8587423	<0.0020 (1)	0.0020	8587658
<b>Physical Properties</b>						
Conductivity	uS/cm	1.3	8587277	<1.0	1.0	8587301
pH	pH	5.32	8587278	5.27		8587299
<b>Physical Properties</b>						
Total Suspended Solids	mg/L	<1.0	8587825	<1.0	1.0	8587825
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample preserved to extend hold time. (2) Sample analysed past recommended hold time.						

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		QT8718		QT8719		QT8720		
<b>Sampling Date</b>		2017/03/21 16:50		2017/03/20 12:50		2017/03/20 12:30		
<b>COC Number</b>		08437331		08437331		08437331		
	<b>UNITS</b>	<b>BH95G-22</b>	<b>QC Batch</b>	<b>MW15-03S</b>	<b>QC Batch</b>	<b>MW15-03D</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	193	8586339	158	8586339	204	0.50	8586339
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**Elements**

Dissolved Mercury (Hg)	mg/L	0.0000020	8588277	<0.0000020	8588277	<0.0000020	0.0000020	8588277
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00217	8588098	0.00219	8588098	0.00129	0.00050	8588098
Dissolved Antimony (Sb)	mg/L	0.000097	8588098	0.000042	8588098	0.000031	0.000020	8588098
Dissolved Arsenic (As)	mg/L	0.000106	8588098	0.000122	8588098	0.00236	0.000020	8588098
Dissolved Barium (Ba)	mg/L	0.109	8588098	0.0438	8588098	0.0430	0.000020	8588098
Dissolved Beryllium (Be)	mg/L	<0.000010	8588098	<0.000010	8588098	<0.000010	0.000010	8588098
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8588098	<0.0000050	8588098	<0.0000050	0.0000050	8588098
Dissolved Boron (B)	mg/L	<0.010	8588098	<0.010	8588098	<0.010	0.010	8588098
Dissolved Cadmium (Cd)	mg/L	0.000137	8588098	0.0000130	8588098	<0.0000050	0.0000050	8588098
Dissolved Chromium (Cr)	mg/L	<0.00010	8588098	<0.00010	8588098	<0.00010	0.00010	8588098
Dissolved Cobalt (Co)	mg/L	0.0000090	8588098	0.000870	8588098	0.0000470	0.0000050	8588098
Dissolved Copper (Cu)	mg/L	0.000794	8588098	0.000072	8588098	<0.000050	0.000050	8588098
Dissolved Iron (Fe)	mg/L	0.0146	8588098	0.0034	8588098	0.469	0.0010	8588098
Dissolved Lead (Pb)	mg/L	0.0000620	8588098	0.0000050	8588098	<0.0000050	0.0000050	8588098
Dissolved Lithium (Li)	mg/L	0.00215	8588098	0.00095	8588098	0.00615	0.00050	8588098
Dissolved Manganese (Mn)	mg/L	0.000878	8588098	0.0799	8588098	0.0525	0.000050	8588098
Dissolved Molybdenum (Mo)	mg/L	0.000210	8588098	0.00570 (1)	8591003	0.00285	0.000050	8588098
Dissolved Nickel (Ni)	mg/L	0.000270	8588098	0.00234	8588098	0.000149	0.000020	8588098
Dissolved Phosphorus (P)	mg/L	0.0037	8588098	0.0028	8588098	0.0062	0.0020	8588098
Dissolved Selenium (Se)	mg/L	0.000548	8588098	0.000322	8588098	<0.000040	0.000040	8588098
Dissolved Silicon (Si)	mg/L	2.99	8588098	2.51	8588098	4.49	0.050	8588098
Dissolved Silver (Ag)	mg/L	<0.0000050	8588098	<0.0000050	8588098	<0.0000050	0.0000050	8588098
Dissolved Strontium (Sr)	mg/L	0.178	8588098	0.167	8588098	0.238	0.000050	8588098
Dissolved Thallium (Tl)	mg/L	<0.0000020	8588098	0.0000020	8588098	<0.0000020	0.0000020	8588098
Dissolved Tin (Sn)	mg/L	<0.00020	8588098	<0.00020	8588098	<0.00020	0.00020	8588098
Dissolved Titanium (Ti)	mg/L	<0.00050	8588098	<0.00050	8588098	<0.00050	0.00050	8588098
Dissolved Uranium (U)	mg/L	0.00238	8588098	0.000686	8588098	0.00271	0.0000020	8588098

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		QT8718		QT8719		QT8720		
Sampling Date		2017/03/21 16:50		2017/03/20 12:50		2017/03/20 12:30		
COC Number		08437331		08437331		08437331		
	UNITS	BH95G-22	QC Batch	MW15-03S	QC Batch	MW15-03D	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	8588098	<0.00020	8588098	<0.00020	0.00020	8588098
Dissolved Zinc (Zn)	mg/L	0.00649	8588098	0.00022	8588098	0.00014	0.00010	8588098
Dissolved Zirconium (Zr)	mg/L	<0.00010	8588098	<0.00010	8588098	0.00063	0.00010	8588098
Dissolved Calcium (Ca)	mg/L	61.4	8586916	54.7	8586916	55.3	0.050	8586916
Dissolved Magnesium (Mg)	mg/L	9.71	8586916	5.12	8586916	15.9	0.050	8586916
Dissolved Potassium (K)	mg/L	1.46	8586916	1.34	8586916	2.42	0.050	8586916
Dissolved Sodium (Na)	mg/L	1.07	8586916	0.968	8586916	1.63	0.050	8586916
Dissolved Sulphur (S)	mg/L	16.5	8586916	5.3	8586916	7.6	3.0	8586916
RDL = Reportable Detection Limit								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		QT8721		QT8722		QT8723		
<b>Sampling Date</b>		2017/03/20 14:27		2017/03/20 14:10		2017/03/20 16:32		
<b>COC Number</b>		08437331		08437331		08437331		
	<b>UNITS</b>	<b>MW15-04S</b>	<b>QC Batch</b>	<b>MW15-04D</b>	<b>QC Batch</b>	<b>MW15-05D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO <sub>3</sub> )	mg/L	128	8586339	155	8586339	208	0.50	8586339
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.0000020	8588277	<0.0000020	8588282	<0.0000020	0.0000020	8588282
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00160	8588098	0.00078	8588098	0.00053	0.00050	8588098
Dissolved Antimony (Sb)	mg/L	<0.000020	8588098	<0.000020	8588098	<0.000020	0.000020	8588098
Dissolved Arsenic (As)	mg/L	0.000203	8588098	0.00131	8588098	0.000049	0.000020	8588098
Dissolved Barium (Ba)	mg/L	0.0732	8588098	0.0482	8588098	0.0398	0.000020	8588098
Dissolved Beryllium (Be)	mg/L	<0.000010	8588098	<0.000010	8588098	<0.000010	0.000010	8588098
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8588098	<0.0000050	8588098	<0.0000050	0.0000050	8588098
Dissolved Boron (B)	mg/L	<0.010	8588098	<0.010	8588098	<0.010	0.010	8588098
Dissolved Cadmium (Cd)	mg/L	0.0000080	8588098	<0.0000050	8588098	0.0000370	0.0000050	8588098
Dissolved Chromium (Cr)	mg/L	0.00031	8588098	<0.00010	8588098	<0.00010	0.00010	8588098
Dissolved Cobalt (Co)	mg/L	0.0000050	8588098	0.000223	8588098	0.0000230	0.0000050	8588098
Dissolved Copper (Cu)	mg/L	0.000226	8588098	<0.000050	8588098	0.000094	0.000050	8588098
Dissolved Iron (Fe)	mg/L	<0.0010	8588098	0.126	8588098	<0.0010	0.0010	8588098
Dissolved Lead (Pb)	mg/L	0.0000060	8588098	<0.0000050	8588098	0.0000290	0.0000050	8588098
Dissolved Lithium (Li)	mg/L	<0.00050	8588098	0.00084	8588098	0.00138	0.00050	8588098
Dissolved Manganese (Mn)	mg/L	0.000319	8588098	0.160	8588098	0.00326	0.000050	8588098
Dissolved Molybdenum (Mo)	mg/L	0.00126 (1)	8591003	0.00253	8588098	0.000888 (1)	0.000050	8591003
Dissolved Nickel (Ni)	mg/L	0.000085	8588098	0.000320	8588098	0.000156	0.000020	8588098
Dissolved Phosphorus (P)	mg/L	0.0044	8588098	0.0054	8588098	0.0026	0.0020	8588098
Dissolved Selenium (Se)	mg/L	0.000767	8588098	0.000075	8588098	0.00160	0.000040	8588098
Dissolved Silicon (Si)	mg/L	3.24	8588098	2.96	8588098	2.50	0.050	8588098
Dissolved Silver (Ag)	mg/L	<0.0000050	8588098	<0.0000050	8588098	<0.0000050	0.0000050	8588098
Dissolved Strontium (Sr)	mg/L	0.164	8588098	0.200	8588098	0.290	0.000050	8588098
Dissolved Thallium (Tl)	mg/L	<0.0000020	8588098	<0.0000020	8588098	<0.0000020	0.0000020	8588098
Dissolved Tin (Sn)	mg/L	<0.00020	8588098	<0.00020	8588098	<0.00020	0.00020	8588098
Dissolved Titanium (Ti)	mg/L	<0.00050	8588098	<0.00050	8588098	<0.00050	0.00050	8588098
Dissolved Uranium (U)	mg/L	0.000568	8588098	0.000999	8588098	0.00187	0.0000020	8588098

RDL = Reportable Detection Limit  
(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		QT8721		QT8722		QT8723		
Sampling Date		2017/03/20 14:27		2017/03/20 14:10		2017/03/20 16:32		
COC Number		08437331		08437331		08437331		
	UNITS	MW15-04S	QC Batch	MW15-04D	QC Batch	MW15-05D	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	8588098	<0.00020	8588098	<0.00020	0.00020	8588098
Dissolved Zinc (Zn)	mg/L	0.00032	8588098	0.00098	8588098	0.00171	0.00010	8588098
Dissolved Zirconium (Zr)	mg/L	<0.00010	8588098	<0.00010	8588098	<0.00010	0.00010	8588098
Dissolved Calcium (Ca)	mg/L	45.3	8586916	53.4	8586916	71.1	0.050	8586916
Dissolved Magnesium (Mg)	mg/L	3.62	8586916	5.30	8586916	7.39	0.050	8586916
Dissolved Potassium (K)	mg/L	1.31	8586916	2.33	8586916	1.66	0.050	8586916
Dissolved Sodium (Na)	mg/L	1.07	8586916	1.52	8586916	1.66	0.050	8586916
Dissolved Sulphur (S)	mg/L	3.5	8586916	6.8	8586916	9.9	3.0	8586916
RDL = Reportable Detection Limit								



Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		QT8724	QT8725		QT8726	QT8727		
Sampling Date		2017/03/20 17:45	2017/03/21 09:15		2017/03/21 10:40	2017/03/21 16:00		
COC Number		08437331	08437331		08437331	08437332		
	<b>UNITS</b>	<b>MW16-15D</b>	<b>BH95G-2</b>	<b>QC Batch</b>	<b>BH95G-15D</b>	<b>BH95G-25S</b>	<b>RDL</b>	<b>QC Batch</b>

Misc. Inorganics								
Dissolved Hardness (CaCO3)	mg/L	188	318 (1)	8586339	183	474	0.50	8586339
Elements								
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	8588282	<0.000020	<0.000020	0.000020	8588282
Dissolved Metals by ICPMS								
Dissolved Aluminum (Al)	mg/L	0.00262	<0.00050	8588098	<0.00050	<0.00050	0.00050	8588098
Dissolved Antimony (Sb)	mg/L	0.000053	<0.000020	8588098	0.000023	0.000020	0.000020	8588098
Dissolved Arsenic (As)	mg/L	0.0170	0.000069	8588098	0.000076	0.00580	0.000020	8588098
Dissolved Barium (Ba)	mg/L	0.0312	0.0245	8588098	0.0846	0.0577	0.000020	8588098
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	8588098	<0.000010	<0.000010	0.000010	8588098
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	8588098	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Boron (B)	mg/L	<0.010	<0.010	8588098	<0.010	<0.010	0.010	8588098
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.00165	8588098	0.0000310	<0.0000050	0.0000050	8588098
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	8588098	0.00013	<0.00010	0.00010	8588098
Dissolved Cobalt (Co)	mg/L	0.0000430	<0.0000050	8588098	<0.0000050	0.000257	0.0000050	8588098
Dissolved Copper (Cu)	mg/L	<0.000050	0.000266	8588098	0.000124	<0.000050	0.000050	8588098
Dissolved Iron (Fe)	mg/L	0.462	<0.0010	8588098	<0.0010	5.16	0.0010	8588098
Dissolved Lead (Pb)	mg/L	<0.0000050	0.0000130	8588098	0.0000080	0.0000050	0.0000050	8588098
Dissolved Lithium (Li)	mg/L	0.00278	0.00139	8588098	0.00266	0.0107	0.00050	8588098
Dissolved Manganese (Mn)	mg/L	0.118	<0.000050	8588098	0.000638	0.383	0.000050	8588098
Dissolved Molybdenum (Mo)	mg/L	0.000652	0.00182 (1)	8588098	0.00101	0.00108	0.000050	8591003
Dissolved Nickel (Ni)	mg/L	0.000066	0.000428	8588098	0.000269	0.000493	0.000020	8588098
Dissolved Phosphorus (P)	mg/L	0.0036	0.0057	8588098	0.0134	0.0044	0.0020	8588098
Dissolved Selenium (Se)	mg/L	<0.000040	0.00517 (1)	8588098	0.00303	<0.000040	0.000040	8588098
Dissolved Silicon (Si)	mg/L	3.00	2.38	8588098	2.72	6.05	0.050	8588098
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	8588098	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Strontium (Sr)	mg/L	0.175	0.244	8588098	0.186	0.440	0.000050	8588098
Dissolved Thallium (Tl)	mg/L	<0.0000020	<0.0000020	8588098	0.0000020	<0.0000020	0.0000020	8588098
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	8588098	<0.00020	<0.00020	0.00020	8588098
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	8588098	<0.00050	<0.00050	0.00050	8588098
Dissolved Uranium (U)	mg/L	0.00347	0.00306	8588098	0.00329	0.00335	0.0000020	8588098

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		QT8724	QT8725		QT8726	QT8727		
Sampling Date		2017/03/20 17:45	2017/03/21 09:15		2017/03/21 10:40	2017/03/21 16:00		
COC Number		08437331	08437331		08437331	08437332		
	UNITS	MW16-15D	BH95G-2	QC Batch	BH95G-15D	BH95G-25S	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	8588098	<0.00020	<0.00020	0.00020	8588098
Dissolved Zinc (Zn)	mg/L	0.00060	0.0238	8588098	0.00090	0.00051	0.00010	8588098
Dissolved Zirconium (Zr)	mg/L	0.00014	<0.00010	8588098	<0.00010	<0.00010	0.00010	8588098
Dissolved Calcium (Ca)	mg/L	61.5	75.9 (1)	8586916	65.2	129	0.050	8586916
Dissolved Magnesium (Mg)	mg/L	8.42	31.3	8586916	4.94	36.6	0.050	8586916
Dissolved Potassium (K)	mg/L	2.57	0.437 (1)	8586916	1.65	5.89	0.050	8586916
Dissolved Sodium (Na)	mg/L	1.62	0.737 (1)	8586916	0.804	2.60	0.050	8586916
Dissolved Sulphur (S)	mg/L	22.8	18.2	8586916	4.4	56.4	3.0	8586916
RDL = Reportable Detection Limit								
(1) Dissolved greater than total. Reanalysis yields similar results.								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		QT8728	QT8729	QT8730	QT8731	QT8740		
Sampling Date		2017/03/21 15:45	2017/03/21 14:45	2017/03/21 14:00	2017/03/21 12:35	2017/03/21 11:45		
COC Number		08437332	08437332	08437332	08437332	08437332		
	<b>UNITS</b>	<b>BH95G-25D</b>	<b>BH95G-32</b>	<b>BH95G-33D</b>	<b>MW16-16D</b>	<b>MW16-17</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	599	228	245	224	196	0.50	8586339
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8588282
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	<0.00050	0.00183	<0.00050	0.00070	0.00173	0.00050	8588098
Dissolved Antimony (Sb)	mg/L	0.000040	0.000032	<0.000020	<0.000020	<0.000020	0.000020	8588098
Dissolved Arsenic (As)	mg/L	0.00102	0.000232	0.000157	0.000191	0.000180	0.000020	8588098
Dissolved Barium (Ba)	mg/L	0.0211	0.155	0.0839	0.0346	0.0350	0.000020	8588098
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8588098
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8588098
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.0000490	<0.0000050	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	8588098
Dissolved Cobalt (Co)	mg/L	0.000171	0.000236	0.0000090	0.0000120	0.0000480	0.0000050	8588098
Dissolved Copper (Cu)	mg/L	<0.000050	0.000192	0.000109	<0.000050	0.000219	0.000050	8588098
Dissolved Iron (Fe)	mg/L	1.87	0.0290	<0.0010	0.261	0.247	0.0010	8588098
Dissolved Lead (Pb)	mg/L	0.0000060	0.0000110	<0.0000050	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Lithium (Li)	mg/L	0.0126	0.00114	0.00107	0.00413	0.00237	0.00050	8588098
Dissolved Manganese (Mn)	mg/L	0.402	0.0750	0.00294	0.0521	0.0766	0.000050	8588098
Dissolved Molybdenum (Mo)	mg/L	0.000247	0.000624	0.00110	0.000901 (1)	0.000285	0.000050	8588098
Dissolved Nickel (Ni)	mg/L	0.000247	0.000812	0.00104	0.000094	0.000108	0.000020	8588098
Dissolved Phosphorus (P)	mg/L	0.0029	0.0046	0.0024	0.0043	0.0047	0.0020	8588098
Dissolved Selenium (Se)	mg/L	<0.000040	0.000630	0.00464	<0.000040	<0.000040	0.000040	8588098
Dissolved Silicon (Si)	mg/L	5.56	2.46	2.87	3.95	4.29	0.050	8588098
Dissolved Silver (Ag)	mg/L	0.0000080	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Strontium (Sr)	mg/L	0.542	0.309	0.234	0.290	0.177	0.000050	8588098
Dissolved Thallium (Tl)	mg/L	<0.0000020	0.0000040	<0.0000020	<0.0000020	<0.0000020	0.0000020	8588098
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8588098
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	8588098
Dissolved Uranium (U)	mg/L	0.00717	0.00102	0.00425	0.00390	0.00317	0.0000020	8588098

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		QT8728	QT8729	QT8730	QT8731	QT8740		
Sampling Date		2017/03/21 15:45	2017/03/21 14:45	2017/03/21 14:00	2017/03/21 12:35	2017/03/21 11:45		
COC Number		08437332	08437332	08437332	08437332	08437332		
	UNITS	BH95G-25D	BH95G-32	BH95G-33D	MW16-16D	MW16-17	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8588098
Dissolved Zinc (Zn)	mg/L	0.00628	0.00140	0.00036	0.00014	0.00039	0.00010	8588098
Dissolved Zirconium (Zr)	mg/L	0.00435	<0.00010	<0.00010	0.00019	0.00013	0.00010	8588098
Dissolved Calcium (Ca)	mg/L	146	83.5	83.1	76.0	64.1	0.050	8586916
Dissolved Magnesium (Mg)	mg/L	56.8	4.64	9.13	8.22	8.84	0.050	8586916
Dissolved Potassium (K)	mg/L	4.42	5.17	0.969	2.58	1.48	0.050	8586916
Dissolved Sodium (Na)	mg/L	2.16	0.764	0.791	1.85	1.31	0.050	8586916
Dissolved Sulphur (S)	mg/L	94.5	14.0	22.2	13.5	10.5	3.0	8586916
RDL = Reportable Detection Limit								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		QT8741		QT8756	QT8757	QT8758		
Sampling Date		2017/03/21 09:40		2017/03/21 14:20	2017/03/21 12:45	2017/03/23		
COC Number		08437332		08437332	08437332	08437332		
	UNITS	DUP 1	QC Batch	DUP 2	FIELD BLANK	TRIP BLANK	RDL	QC Batch

Misc. Inorganics								
Dissolved Hardness (CaCO3)	mg/L	310	8586339	254	<0.50	<0.50	0.50	8586339

Elements								
Dissolved Mercury (Hg)	mg/L	<0.000020	8588282	<0.000020	<0.000020	<0.000020	0.000020	8588282

Dissolved Metals by ICPMS								
Dissolved Aluminum (Al)	mg/L	<0.00050	8588098	<0.00050	<0.00050	<0.00050	0.00050	8588098
Dissolved Antimony (Sb)	mg/L	0.000035	8588098	0.000032	<0.000020	<0.000020	0.000020	8588098
Dissolved Arsenic (As)	mg/L	0.000056	8588098	0.000123	<0.000020	<0.000020	0.000020	8588098
Dissolved Barium (Ba)	mg/L	0.0256	8588098	0.0844	<0.000020	<0.000020	0.000020	8588098
Dissolved Beryllium (Be)	mg/L	<0.000010	8588098	<0.000010	<0.000010	<0.000010	0.000010	8588098
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8588098	<0.0000050	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Boron (B)	mg/L	<0.010	8588098	<0.010	<0.010	<0.010	0.010	8588098
Dissolved Cadmium (Cd)	mg/L	0.00160	8588098	<0.0000050	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Chromium (Cr)	mg/L	0.00011	8588098	<0.00010	<0.00010	<0.00010	0.00010	8588098
Dissolved Cobalt (Co)	mg/L	0.0000070	8588098	0.0000130	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Copper (Cu)	mg/L	0.000431	8588098	0.000131	<0.000050	<0.000050	0.000050	8588098
Dissolved Iron (Fe)	mg/L	<0.0010	8588098	<0.0010	<0.0010	<0.0010	0.0010	8588098
Dissolved Lead (Pb)	mg/L	0.0000200	8588098	<0.0000050	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Lithium (Li)	mg/L	0.00145	8588098	0.00102	<0.00050	<0.00050	0.00050	8588098
Dissolved Manganese (Mn)	mg/L	0.000229	8588098	0.00325	<0.000050	<0.000050	0.000050	8588098
Dissolved Molybdenum (Mo)	mg/L	0.00195 (1)	8591003	0.00113	<0.000050	<0.000050	0.000050	8588098
Dissolved Nickel (Ni)	mg/L	0.000422	8588098	0.000873	<0.000020	<0.000020	0.000020	8588098
Dissolved Phosphorus (P)	mg/L	0.0025	8588098	0.0024	<0.0020	<0.0020	0.0020	8588098
Dissolved Selenium (Se)	mg/L	0.00525	8588098	0.00453	<0.000040	<0.000040	0.000040	8588098
Dissolved Silicon (Si)	mg/L	2.30	8588098	3.28	<0.050	<0.050	0.050	8588098
Dissolved Silver (Ag)	mg/L	<0.0000050	8588098	<0.0000050	<0.0000050	<0.0000050	0.0000050	8588098
Dissolved Strontium (Sr)	mg/L	0.225	8588098	0.236	<0.000050	<0.000050	0.000050	8588098
Dissolved Thallium (Tl)	mg/L	<0.0000020	8588098	<0.0000020	<0.0000020	<0.0000020	0.0000020	8588098
Dissolved Tin (Sn)	mg/L	<0.00020	8588098	<0.00020	<0.00020	<0.00020	0.00020	8588098
Dissolved Titanium (Ti)	mg/L	<0.00050	8588098	<0.00050	<0.00050	<0.00050	0.00050	8588098
Dissolved Uranium (U)	mg/L	0.00313	8588098	0.00417	<0.0000020	<0.0000020	0.0000020	8588098

RDL = Reportable Detection Limit  
(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		QT8741		QT8756	QT8757	QT8758		
Sampling Date		2017/03/21 09:40		2017/03/21 14:20	2017/03/21 12:45	2017/03/23		
COC Number		08437332		08437332	08437332	08437332		
	UNITS	DUP 1	QC Batch	DUP 2	FIELD BLANK	TRIP BLANK	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	8588098	<0.00020	<0.00020	<0.00020	0.00020	8588098
Dissolved Zinc (Zn)	mg/L	0.0218	8588098	0.00041	<0.00010	0.00010	0.00010	8588098
Dissolved Zirconium (Zr)	mg/L	<0.00010	8588098	<0.00010	<0.00010	<0.00010	0.00010	8588098
Dissolved Calcium (Ca)	mg/L	76.0	8586916	86.6	<0.050	<0.050	0.050	8586916
Dissolved Magnesium (Mg)	mg/L	29.1	8586916	9.16	<0.050	<0.050	0.050	8586916
Dissolved Potassium (K)	mg/L	0.401	8586916	0.946	<0.050	<0.050	0.050	8586916
Dissolved Sodium (Na)	mg/L	0.705	8586916	0.774	<0.050	<0.050	0.050	8586916
Dissolved Sulphur (S)	mg/L	15.4	8586916	21.4	<3.0	<3.0	3.0	8586916
RDL = Reportable Detection Limit								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		QT8720		QT8757	QT8758		
Sampling Date		2017/03/20 12:30		2017/03/21 12:45	2017/03/23		
COC Number		08437331		08437332	08437332		
	UNITS	MW15-03D	QC Batch	FIELD BLANK	TRIP BLANK	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	210	8586237	<0.50	<0.50	0.50	8586237
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.000020	8588895	<0.000020	<0.000020	0.000020	8588898
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	0.00928	8588888	<0.00050	<0.00050	0.00050	8588888
Total Antimony (Sb)	mg/L	0.000040	8588888	<0.000020	<0.000020	0.000020	8588888
Total Arsenic (As)	mg/L	0.00246	8588888	<0.000020	<0.000020	0.000020	8588888
Total Barium (Ba)	mg/L	0.0451	8588888	<0.000020	<0.000020	0.000020	8588888
Total Beryllium (Be)	mg/L	<0.000010	8588888	<0.000010	<0.000010	0.000010	8588888
Total Bismuth (Bi)	mg/L	<0.0000050	8588888	<0.0000050	<0.0000050	0.0000050	8588888
Total Boron (B)	mg/L	<0.010	8588888	<0.010	<0.010	0.010	8588888
Total Cadmium (Cd)	mg/L	<0.0000050	8588888	<0.0000050	<0.0000050	0.0000050	8588888
Total Chromium (Cr)	mg/L	<0.00010	8588888	<0.00010	<0.00010	0.00010	8588888
Total Cobalt (Co)	mg/L	0.0000530	8588888	<0.0000050	<0.0000050	0.0000050	8588888
Total Copper (Cu)	mg/L	<0.000050	8588888	0.000050	<0.000050	0.000050	8588888
Total Iron (Fe)	mg/L	0.687	8588888	<0.0010	<0.0010	0.0010	8588888
Total Lead (Pb)	mg/L	0.0000210	8588888	0.0000060	0.0000520 (1)	0.0000050	8588888
Total Lithium (Li)	mg/L	0.00625	8588888	<0.00050	<0.00050	0.00050	8588888
Total Manganese (Mn)	mg/L	0.0549	8588888	<0.000050	<0.000050	0.000050	8588888
Total Molybdenum (Mo)	mg/L	0.00284	8588888	<0.000050	<0.000050	0.000050	8588888
Total Nickel (Ni)	mg/L	0.000142	8588888	<0.000020	<0.000020	0.000020	8588888
Total Phosphorus (P)	mg/L	0.0078	8588888	0.0026	<0.0020	0.0020	8588888
Total Selenium (Se)	mg/L	<0.000040	8588888	<0.000040	<0.000040	0.000040	8588888
Total Silicon (Si)	mg/L	4.80	8588888	<0.050	<0.050	0.050	8588888
Total Silver (Ag)	mg/L	<0.0000050	8588888	<0.0000050	<0.0000050	0.0000050	8588888
Total Strontium (Sr)	mg/L	0.278	8588888	0.000054	<0.000050	0.000050	8588888
Total Thallium (Tl)	mg/L	<0.0000020	8588888	<0.0000020	<0.0000020	0.0000020	8588888
Total Tin (Sn)	mg/L	<0.00020	8588888	<0.00020	<0.00020	0.00020	8588888
Total Titanium (Ti)	mg/L	0.00066	8588888	<0.00050	<0.00050	0.00050	8588888
Total Uranium (U)	mg/L	0.00257	8588888	0.0000030	<0.0000020	0.0000020	8588888
RDL = Reportable Detection Limit							
(1) Result has been confirmed by re-analysis.							

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		QT8720		QT8757	QT8758		
Sampling Date		2017/03/20 12:30		2017/03/21 12:45	2017/03/23		
COC Number		08437331		08437332	08437332		
	UNITS	MW15-03D	QC Batch	FIELD BLANK	TRIP BLANK	RDL	QC Batch
Total Vanadium (V)	mg/L	<0.00020	8588888	<0.00020	<0.00020	0.00020	8588888
Total Zinc (Zn)	mg/L	0.00035	8588888	0.00011	<0.00010	0.00010	8588888
Total Zirconium (Zr)	mg/L	0.00086	8588888	<0.00010	<0.00010	0.00010	8588888
Total Calcium (Ca)	mg/L	57.8	8586917	<0.050	<0.050	0.050	8586917
Total Magnesium (Mg)	mg/L	15.8	8586917	<0.050	<0.050	0.050	8586917
Total Potassium (K)	mg/L	2.51	8586917	<0.050	<0.050	0.050	8586917
Total Sodium (Na)	mg/L	1.54	8586917	<0.050	<0.050	0.050	8586917
Total Sulphur (S)	mg/L	8.9	8586917	<3.0	<3.0	3.0	8586917
RDL = Reportable Detection Limit							



Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		QT8718		QT8719		QT8721		
Sampling Date		2017/03/21 16:50		2017/03/20 12:50		2017/03/20 14:27		
COC Number		08437331		08437331		08437331		
	UNITS	BH95G-22	RDL	MW15-03S	RDL	MW15-04S	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	268	0.50	263	0.50	145	0.50	8586237
<b>Elements</b>								
Total Mercury (Hg)	mg/L	0.0000196	0.0000020	<0.0000020	0.0000020	0.0000020	0.0000020	8588895
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	14.7	0.0030	18.9	0.015	6.88	0.0030	8589155
Total Antimony (Sb)	mg/L	0.000769	0.000020	0.00015	0.00010	0.000042	0.000020	8589155
Total Arsenic (As)	mg/L	0.0262	0.000020	0.0158	0.00010	0.00451	0.000020	8589155
Total Barium (Ba)	mg/L	0.562	0.000050	0.483	0.00025	0.216	0.000050	8589155
Total Beryllium (Be)	mg/L	0.000894	0.000010	0.00111	0.000050	0.000215	0.000010	8589155
Total Bismuth (Bi)	mg/L	0.000433	0.000010	0.000177	0.000050	0.000087	0.000010	8589155
Total Boron (B)	mg/L	<0.010	0.010	<0.050	0.050	<0.010	0.010	8589155
Total Cadmium (Cd)	mg/L	0.00865	0.0000050	0.00177	0.000025	0.000249	0.0000050	8589155
Total Chromium (Cr)	mg/L	0.0241	0.00010	0.0823	0.00050	0.0150	0.00010	8589155
Total Cobalt (Co)	mg/L	0.0325	0.000010	0.0427	0.000050	0.00802	0.000010	8589155
Total Copper (Cu)	mg/L	0.213	0.00010	0.158	0.00050	0.0260	0.00010	8589155
Total Iron (Fe)	mg/L	34.9	0.0050	48.4	0.025	11.2	0.0050	8589155
Total Lead (Pb)	mg/L	0.237	0.000020	0.0824	0.00010	0.0130	0.000020	8589155
Total Lithium (Li)	mg/L	0.0194	0.00050	0.0253	0.0025	0.00478	0.00050	8589155
Total Manganese (Mn)	mg/L	3.38	0.00010	1.93	0.00050	0.315	0.00010	8589155
Total Molybdenum (Mo)	mg/L	0.000457	0.000050	0.00219	0.00025	0.000409	0.000050	8589155
Total Nickel (Ni)	mg/L	0.0496	0.00010	0.0966	0.00050	0.0157	0.00010	8589155
Total Phosphorus (P)	mg/L	4.87	0.0050	2.30	0.025	0.362	0.0050	8589155
Total Selenium (Se)	mg/L	0.000635	0.000040	0.00031	0.00020	0.000761	0.000040	8589155
Total Silicon (Si)	mg/L	22.7	0.050	27.4	0.25	11.7	0.050	8589155
Total Silver (Ag)	mg/L	0.00437	0.000010	0.00434	0.000050	0.000585	0.000010	8589155
Total Strontium (Sr)	mg/L	0.255	0.000050	0.251	0.00025	0.181	0.000050	8589155
Total Thallium (Tl)	mg/L	0.000390	0.0000020	0.000393	0.000010	0.000142	0.0000020	8589155
Total Tin (Sn)	mg/L	0.00031	0.00020	<0.0010	0.0010	<0.00020	0.00020	8589155
Total Titanium (Ti)	mg/L	0.433	0.0020	0.663	0.010	0.282	0.0020	8589155
Total Uranium (U)	mg/L	0.00619	0.0000050	0.00248	0.000025	0.000889	0.0000050	8589155
Total Vanadium (V)	mg/L	0.0416	0.00020	0.0600	0.0010	0.0222	0.00020	8589155
RDL = Reportable Detection Limit								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		QT8718		QT8719		QT8721		
Sampling Date		2017/03/21 16:50		2017/03/20 12:50		2017/03/20 14:27		
COC Number		08437331		08437331		08437331		
	UNITS	BH95G-22	RDL	MW15-03S	RDL	MW15-04S	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.735	0.0010	0.225	0.0050	0.0448	0.0010	8589155
Total Zirconium (Zr)	mg/L	0.00329	0.00010	0.00744	0.00050	0.00171	0.00010	8589155
Total Calcium (Ca)	mg/L	80.2	0.25	77.8	1.3	46.9	0.25	8586917
Total Magnesium (Mg)	mg/L	16.5	0.25	16.7	1.3	6.68	0.25	8586917
Total Potassium (K)	mg/L	5.04	0.25	5.8	1.3	3.22	0.25	8586917
Total Sodium (Na)	mg/L	1.22	0.25	<1.3	1.3	0.97	0.25	8586917
Total Sulphur (S)	mg/L	16.6	3.0	<15	15	<3.0	3.0	8586917
RDL = Reportable Detection Limit								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		QT8722	QT8723	QT8724		QT8725		
<b>Sampling Date</b>		2017/03/20 14:10	2017/03/20 16:32	2017/03/20 17:45		2017/03/21 09:15		
<b>COC Number</b>		08437331	08437331	08437331		08437331		
	<b>UNITS</b>	<b>MW15-04D</b>	<b>MW15-05D</b>	<b>MW16-15D</b>	<b>QC Batch</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	155	201	187	8586237	253	0.50	8589991
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**Elements**

Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	8588898	<0.0000020	0.0000020	8588898
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	0.0719	0.543	0.420	8589155	0.0377	0.0030	8591334
Total Antimony (Sb)	mg/L	<0.000020	<0.000020	0.000093	8589155	<0.000020	0.000020	8591334
Total Arsenic (As)	mg/L	0.00158	0.000142	0.0194	8589155	0.000071	0.000020	8591334
Total Barium (Ba)	mg/L	0.0585	0.0551	0.0412	8589155	0.0224	0.000050	8591334
Total Beryllium (Be)	mg/L	0.000014	0.000059	0.000030	8589155	<0.000010	0.000010	8591334
Total Bismuth (Bi)	mg/L	<0.000010	0.000012	0.000038	8589155	<0.000010	0.000010	8591334
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	8589155	<0.010	0.010	8591334
Total Cadmium (Cd)	mg/L	0.0000610	0.000118	0.000604	8589155	0.00144	0.0000050	8591334
Total Chromium (Cr)	mg/L	0.00034	0.00030	0.00058	8589155	<0.00010	0.00010	8591334
Total Cobalt (Co)	mg/L	0.000275	0.000376	0.000281	8589155	0.000062	0.000010	8591334
Total Copper (Cu)	mg/L	0.00072	0.00087	0.00271	8589155	0.00076	0.00010	8591334
Total Iron (Fe)	mg/L	0.339	0.369	1.46	8589155	0.0805	0.0050	8591334
Total Lead (Pb)	mg/L	0.000329	0.00250	0.00349	8589155	0.000333	0.000020	8591334
Total Lithium (Li)	mg/L	0.00102	0.00180	0.00350	8589155	0.00126	0.00050	8591334
Total Manganese (Mn)	mg/L	0.162	0.0372	0.142	8589155	0.00185	0.00010	8591334
Total Molybdenum (Mo)	mg/L	0.00254	0.000597	0.000563	8589155	0.00145	0.000050	8591334
Total Nickel (Ni)	mg/L	0.00055	0.00075	0.00052	8589155	0.00067	0.00010	8591334
Total Phosphorus (P)	mg/L	0.0132	0.0080	0.0269	8589155	0.0152	0.0050	8591334
Total Selenium (Se)	mg/L	0.000067	0.00155	<0.000040	8589155	0.00418	0.000040	8591334
Total Silicon (Si)	mg/L	3.22	4.17	3.98	8589155	2.08	0.050	8591334
Total Silver (Ag)	mg/L	<0.000010	0.000020	0.000052	8589155	<0.000010	0.000010	8591334
Total Strontium (Sr)	mg/L	0.209	0.293	0.188	8589155	0.210	0.000050	8591334
Total Thallium (Tl)	mg/L	0.0000040	0.0000070	0.0000160	8589155	<0.0000020	0.0000020	8591334
Total Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	8589155	<0.00020	0.00020	8591334
Total Titanium (Ti)	mg/L	0.0020	0.0090	0.0237	8589155	<0.0020	0.0020	8591334
Total Uranium (U)	mg/L	0.00106	0.00202	0.00375	8589155	0.00253	0.0000050	8591334
Total Vanadium (V)	mg/L	<0.00020	0.00048	0.00084	8589155	0.00021	0.00020	8591334

RDL = Reportable Detection Limit

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		QT8722	QT8723	QT8724		QT8725		
Sampling Date		2017/03/20 14:10	2017/03/20 16:32	2017/03/20 17:45		2017/03/21 09:15		
COC Number		08437331	08437331	08437331		08437331		
	UNITS	MW15-04D	MW15-05D	MW16-15D	QC Batch	BH95G-2	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0021	0.0093	0.0656	8589155	0.0253	0.0010	8591334
Total Zirconium (Zr)	mg/L	0.00017	0.00092	0.00240	8589155	<0.00010	0.00010	8591334
Total Calcium (Ca)	mg/L	53.6	68.9	60.9	8586917	60.6	0.25	8590454
Total Magnesium (Mg)	mg/L	5.01	7.02	8.54	8586917	24.7	0.25	8590454
Total Potassium (K)	mg/L	2.35	1.67	2.72	8586917	0.36	0.25	8590454
Total Sodium (Na)	mg/L	1.41	1.46	1.49	8586917	0.56	0.25	8590454
Total Sulphur (S)	mg/L	6.4	9.6	23.1	8586917	14.9	3.0	8590454
RDL = Reportable Detection Limit								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		QT8726		QT8727		QT8728		
Sampling Date		2017/03/21 10:40		2017/03/21 16:00		2017/03/21 15:45		
COC Number		08437331		08437332		08437332		
	UNITS	BH95G-15D	RDL	BH95G-25S	RDL	BH95G-25D	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	194	0.50	579	0.50	631	0.50	8586237
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.000020	0.000020	<0.000020	0.000020	<0.000020	0.000020	8588898
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	2.01	0.0030	17.8	0.015	2.13	0.0030	8589155
Total Antimony (Sb)	mg/L	0.000058	0.000020	0.00016	0.00010	0.000153	0.000020	8589155
Total Arsenic (As)	mg/L	0.00106	0.000020	0.0208	0.00010	0.00186	0.000020	8589155
Total Barium (Ba)	mg/L	0.114	0.000050	0.399	0.00025	0.164	0.000050	8589155
Total Beryllium (Be)	mg/L	0.000192	0.000010	0.00195	0.000050	0.000139	0.000010	8589155
Total Bismuth (Bi)	mg/L	0.000062	0.000010	0.000392	0.000050	0.000066	0.000010	8589155
Total Boron (B)	mg/L	<0.010	0.010	<0.050	0.050	<0.010	0.010	8589155
Total Cadmium (Cd)	mg/L	0.000137	0.000050	0.00103	0.000025	0.0000860	0.000050	8589155
Total Chromium (Cr)	mg/L	0.00150	0.00010	0.0357	0.00050	0.00150	0.00010	8589155
Total Cobalt (Co)	mg/L	0.000767	0.000010	0.0172	0.000050	0.00105	0.000010	8589155
Total Copper (Cu)	mg/L	0.00816	0.00010	0.0417	0.00050	0.00346	0.00010	8589155
Total Iron (Fe)	mg/L	1.82	0.0050	44.0	0.025	5.71	0.0050	8589155
Total Lead (Pb)	mg/L	0.00340	0.000020	0.0705	0.00010	0.00487	0.000020	8589155
Total Lithium (Li)	mg/L	0.00420	0.00050	0.0367	0.0025	0.0157	0.00050	8589155
Total Manganese (Mn)	mg/L	0.0454	0.00010	0.883	0.00050	0.470	0.00010	8589155
Total Molybdenum (Mo)	mg/L	0.00193	0.000050	0.00123	0.00025	0.000269	0.000050	8589155
Total Nickel (Ni)	mg/L	0.00226	0.00010	0.0358	0.00050	0.00174	0.00010	8589155
Total Phosphorus (P)	mg/L	0.0749	0.0050	2.38	0.025	0.106	0.0050	8589155
Total Selenium (Se)	mg/L	0.00323	0.000040	<0.00020	0.00020	<0.000040	0.000040	8589155
Total Silicon (Si)	mg/L	8.06	0.050	31.1	0.25	9.95	0.050	8589155
Total Silver (Ag)	mg/L	0.000025	0.000010	0.000273	0.000050	0.000025	0.000010	8589155
Total Strontium (Sr)	mg/L	0.207	0.000050	0.496	0.00025	0.562	0.000050	8589155
Total Thallium (Tl)	mg/L	0.0000220	0.0000020	0.000385	0.000010	0.0000260	0.0000020	8589155
Total Tin (Sn)	mg/L	<0.00020	0.00020	<0.0010	0.0010	<0.00020	0.00020	8589155
Total Titanium (Ti)	mg/L	0.0496	0.0020	0.213	0.010	0.0512	0.0020	8589155
Total Uranium (U)	mg/L	0.00404	0.0000050	0.00883	0.000025	0.00840	0.0000050	8589155
Total Vanadium (V)	mg/L	0.00241	0.00020	0.0481	0.0010	0.00285	0.00020	8589155
RDL = Reportable Detection Limit								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		QT8726		QT8727		QT8728		
Sampling Date		2017/03/21 10:40		2017/03/21 16:00		2017/03/21 15:45		
COC Number		08437331		08437332		08437332		
	UNITS	BH95G-15D	RDL	BH95G-25S	RDL	BH95G-25D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0114	0.0010	0.155	0.0050	0.0872	0.0010	8589155
Total Zirconium (Zr)	mg/L	0.00366	0.00010	0.00210	0.00050	0.00516	0.00010	8589155
Total Calcium (Ca)	mg/L	68.6	0.25	149	1.3	155	0.25	8586917
Total Magnesium (Mg)	mg/L	5.56	0.25	50.2	1.3	59.5	0.25	8586917
Total Potassium (K)	mg/L	1.99	0.25	12.1	1.3	4.98	0.25	8586917
Total Sodium (Na)	mg/L	0.83	0.25	2.7	1.3	2.14	0.25	8586917
Total Sulphur (S)	mg/L	5.1	3.0	59	15	95.7	3.0	8586917
RDL = Reportable Detection Limit								

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		QT8729	QT8730	QT8731	QT8740	QT8741		
<b>Sampling Date</b>		2017/03/21 14:45	2017/03/21 14:00	2017/03/21 12:35	2017/03/21 11:45	2017/03/21 09:40		
<b>COC Number</b>		08437332	08437332	08437332	08437332	08437332		
	<b>UNITS</b>	<b>BH95G-32</b>	<b>BH95G-33D</b>	<b>MW16-16D</b>	<b>MW16-17</b>	<b>DUP 1</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	227	259	243	197	319	0.50	8586237
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**Elements**

Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8588898
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	3.38	0.275	1.04	1.26	0.536	0.0030	8589155
Total Antimony (Sb)	mg/L	0.000146	0.000023	0.000072	<0.000020	0.000049	0.000020	8589155
Total Arsenic (As)	mg/L	0.00347	0.000875	0.000442	0.000229	0.00102	0.000020	8589155
Total Barium (Ba)	mg/L	0.326	0.102	0.0482	0.106	0.0361	0.000050	8589155
Total Beryllium (Be)	mg/L	0.000300	0.000023	0.000040	0.000095	0.000029	0.000010	8589155
Total Bismuth (Bi)	mg/L	0.000104	<0.000010	0.000014	0.000015	<0.000010	0.000010	8589155
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8589155
Total Cadmium (Cd)	mg/L	0.000318	0.0000110	0.0000440	0.0000240	0.00273	0.0000050	8589155
Total Chromium (Cr)	mg/L	0.00673	0.00033	0.00284	0.00159	0.00141	0.00010	8589155
Total Cobalt (Co)	mg/L	0.00409	0.000488	0.000983	0.000589	0.00138	0.000010	8589155
Total Copper (Cu)	mg/L	0.0171	0.00111	0.00488	0.00107	0.0104	0.00010	8589155
Total Iron (Fe)	mg/L	8.58	0.496	2.96	2.91	1.22	0.0050	8589155
Total Lead (Pb)	mg/L	0.0162	0.000297	0.00200	0.000840	0.00538	0.000020	8589155
Total Lithium (Li)	mg/L	0.00312	0.00137	0.00548	0.00334	0.00204	0.00050	8589155
Total Manganese (Mn)	mg/L	0.358	0.0552	0.0899	0.133	0.0268	0.00010	8589155
Total Molybdenum (Mo)	mg/L	0.000752	0.00111	0.000668	0.000303	0.00122	0.000050	8589155
Total Nickel (Ni)	mg/L	0.00681	0.00297	0.00254	0.00153	0.00560	0.00010	8589155
Total Phosphorus (P)	mg/L	0.154	0.0182	0.101	0.0381	0.189	0.0050	8589155
Total Selenium (Se)	mg/L	0.000870	0.00471	<0.000040	0.000046	0.00483	0.000040	8589155
Total Silicon (Si)	mg/L	9.09	3.65	5.51	7.07	3.38	0.050	8589155
Total Silver (Ag)	mg/L	0.000126	<0.000010	0.000020	0.000074	0.000083	0.000010	8589155
Total Strontium (Sr)	mg/L	0.308	0.255	0.291	0.191	0.246	0.000050	8589155
Total Thallium (Tl)	mg/L	0.0000400	0.0000030	0.0000100	0.0000130	0.0000150	0.0000020	8589155
Total Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8589155
Total Titanium (Ti)	mg/L	0.388	0.0095	0.0269	0.0213	0.0136	0.0020	8589155
Total Uranium (U)	mg/L	0.00167	0.00477	0.00440	0.00368	0.00316	0.0000050	8589155
Total Vanadium (V)	mg/L	0.0205	0.00059	0.00258	0.00217	0.00292	0.00020	8589155

RDL = Reportable Detection Limit

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		QT8729	QT8730	QT8731	QT8740	QT8741		
Sampling Date		2017/03/21 14:45	2017/03/21 14:00	2017/03/21 12:35	2017/03/21 11:45	2017/03/21 09:40		
COC Number		08437332	08437332	08437332	08437332	08437332		
	UNITS	BH95G-32	BH95G-33D	MW16-16D	MW16-17	DUP 1	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0359	0.0027	0.0241	0.0139	0.127	0.0010	8589155
Total Zirconium (Zr)	mg/L	0.00205	0.00022	0.00267	0.00286	0.00033	0.00010	8589155
Total Calcium (Ca)	mg/L	81.5	87.9	83.7	63.2	75.9	0.25	8586917
Total Magnesium (Mg)	mg/L	5.74	9.62	8.32	9.38	31.4	0.25	8586917
Total Potassium (K)	mg/L	5.50	1.05	2.62	1.74	0.60	0.25	8586917
Total Sodium (Na)	mg/L	0.87	0.82	1.72	1.22	0.71	0.25	8586917
Total Sulphur (S)	mg/L	12.8	24.3	13.6	11.5	18.5	3.0	8586917
RDL = Reportable Detection Limit								



Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		QT8756		
<b>Sampling Date</b>		2017/03/21 14:20		
<b>COC Number</b>		08437332		
	<b>UNITS</b>	<b>DUP 2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	251	0.50	8586237
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8588898
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	0.427	0.0030	8589155
Total Antimony (Sb)	mg/L	0.000022	0.000020	8589155
Total Arsenic (As)	mg/L	0.00100	0.000020	8589155
Total Barium (Ba)	mg/L	0.0971	0.000050	8589155
Total Beryllium (Be)	mg/L	0.000032	0.000010	8589155
Total Bismuth (Bi)	mg/L	<0.000010	0.000010	8589155
Total Boron (B)	mg/L	<0.010	0.010	8589155
Total Cadmium (Cd)	mg/L	0.0000090	0.0000050	8589155
Total Chromium (Cr)	mg/L	0.00222	0.00010	8589155
Total Cobalt (Co)	mg/L	0.000669	0.000010	8589155
Total Copper (Cu)	mg/L	0.00179	0.00010	8589155
Total Iron (Fe)	mg/L	0.820	0.0050	8589155
Total Lead (Pb)	mg/L	0.000435	0.000020	8589155
Total Lithium (Li)	mg/L	0.00162	0.00050	8589155
Total Manganese (Mn)	mg/L	0.0778	0.00010	8589155
Total Molybdenum (Mo)	mg/L	0.00100	0.000050	8589155
Total Nickel (Ni)	mg/L	0.00408	0.00010	8589155
Total Phosphorus (P)	mg/L	0.0207	0.0050	8589155
Total Selenium (Se)	mg/L	0.00430	0.000040	8589155
Total Silicon (Si)	mg/L	4.00	0.050	8589155
Total Silver (Ag)	mg/L	<0.000010	0.000010	8589155
Total Strontium (Sr)	mg/L	0.235	0.000050	8589155
Total Thallium (Tl)	mg/L	0.0000040	0.0000020	8589155
Total Tin (Sn)	mg/L	<0.00020	0.00020	8589155
Total Titanium (Ti)	mg/L	0.0174	0.0020	8589155
Total Uranium (U)	mg/L	0.00468	0.0000050	8589155
Total Vanadium (V)	mg/L	0.00116	0.00020	8589155
RDL = Reportable Detection Limit				

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		QT8756		
<b>Sampling Date</b>		2017/03/21 14:20		
<b>COC Number</b>		08437332		
	<b>UNITS</b>	<b>DUP 2</b>	<b>RDL</b>	<b>QC Batch</b>
Total Zinc (Zn)	mg/L	0.0043	0.0010	8589155
Total Zirconium (Zr)	mg/L	0.00055	0.00010	8589155
Total Calcium (Ca)	mg/L	84.9	0.25	8586917
Total Magnesium (Mg)	mg/L	9.41	0.25	8586917
Total Potassium (K)	mg/L	1.01	0.25	8586917
Total Sodium (Na)	mg/L	0.76	0.25	8586917
Total Sulphur (S)	mg/L	22.9	3.0	8586917
RDL = Reportable Detection Limit				

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8718  
**Sample ID:** BH95G-22  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588397	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589370	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588277	N/A	2017/03/27	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588895	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587430	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587433	N/A	2017/03/25	
Total Suspended Solids-Low Level	BAL/BAL	8587819	2017/03/27	2017/03/28	

**Maxxam ID:** QT8718 Dup  
**Sample ID:** BH95G-22  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587430	2017/03/25	2017/03/25	Name REDACTED

**Maxxam ID:** QT8719  
**Sample ID:** MW15-03S  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587302	2017/03/25	2017/03/26	
Chloride by Automated Colourimetry	KONE/COL	8589108	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588400	N/A	2017/03/27	
Conductance - water	AT/ALK	8587301	N/A	2017/03/26	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8719  
**Sample ID:** MW15-03S  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE/ISE	8589743	N/A	2017/03/28	Name REDACTED
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588277	N/A	2017/03/27	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588895	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587299	N/A	2017/03/26	
Sulphate by Automated Colourimetry	KONE/COL	8589110	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587657	2017/03/27	2017/03/27	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587658	N/A	2017/03/27	
Total Suspended Solids-Low Level	BAL/BAL	8587819	2017/03/27	2017/03/28	

**Maxxam ID:** QT8719 Dup  
**Sample ID:** MW15-03S  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588400	N/A	2017/03/27	Name REDACTED

**Maxxam ID:** QT8720  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587283	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589108	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587289	N/A	2017/03/25	
Fluoride	ISE/ISE	8589743	N/A	2017/03/28	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588277	N/A	2017/03/27	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588895	2017/03/28	2017/03/28	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8720  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	Name REDACTED
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Elements by ICPMS Low Level (total)	ICP/CRCM	8588888	N/A	2017/03/28	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587290	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589110	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587657	2017/03/27	2017/03/27	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587658	N/A	2017/03/27	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8721  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587283	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589108	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588397	N/A	2017/03/27	
Conductance - water	AT/ALK	8587289	N/A	2017/03/25	
Fluoride	ISE/ISE	8589743	N/A	2017/03/28	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588277	N/A	2017/03/27	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588895	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587290	N/A	2017/03/25	

Maxxam Job #: B721752  
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ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8721  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate by Automated Colourimetry	KONE/COL	8589110	N/A	2017/03/27	Name REDACTED
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587657	2017/03/27	2017/03/27	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587658	N/A	2017/03/27	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8722  
**Sample ID:** MW15-04D  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587283	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589108	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587289	N/A	2017/03/25	
Fluoride	ISE/ISE	8589743	N/A	2017/03/28	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/29	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587290	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589110	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587657	2017/03/27	2017/03/27	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587658	N/A	2017/03/27	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8722 Dup  
**Sample ID:** MW15-04D  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	Name REDACTED

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8723  
**Sample ID:** MW15-05D  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587283	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589108	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587289	N/A	2017/03/25	
Fluoride	ISE/ISE	8589743	N/A	2017/03/28	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587290	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589110	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587657	2017/03/27	2017/03/27	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587658	N/A	2017/03/27	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	Name REDACTED

**Maxxam ID:** QT8724  
**Sample ID:** MW16-15D  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587283	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589108	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588397	N/A	2017/03/27	
Conductance - water	AT/ALK	8587289	N/A	2017/03/25	
Fluoride	ISE/ISE	8589741	N/A	2017/03/28	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	



Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8724  
**Sample ID:** MW16-15D  
**Matrix:** Water

**Collected:** 2017/03/20  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	Name REDACTED
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587290	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589110	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587657	2017/03/27	2017/03/27	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587658	N/A	2017/03/27	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8725  
**Sample ID:** BH95G-2  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8589991	N/A	2017/03/31	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8591334	2017/03/30	2017/03/31	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8590454	N/A	2017/03/31	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587425	2017/03/25	2017/03/25	



Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8725  
**Sample ID:** BH95G-2  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587427	N/A	2017/03/25	Name REDACTED
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8726  
**Sample ID:** BH95G-15D  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587425	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587427	N/A	2017/03/25	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8726 Dup  
**Sample ID:** BH95G-15D  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	Name REDACTED
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
pH Water	AT/ALK	8587278	N/A	2017/03/25	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8727  
**Sample ID:** BH95G-25S  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8591792	2017/03/30	2017/03/30	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8591793	N/A	2017/03/30	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8728  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589100	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8728  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	Name REDACTED
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589104	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587425	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587427	N/A	2017/03/25	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8729  
**Sample ID:** BH95G-32  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587425	2017/03/25	2017/03/25	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8729  
**Sample ID:** BH95G-32  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587427	N/A	2017/03/25	Name REDACTED
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8729 Dup  
**Sample ID:** BH95G-32  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	Name REDACTED
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	

**Maxxam ID:** QT8730  
**Sample ID:** BH95G-33D  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587275	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587274	N/A	2017/03/25	
Fluoride	ISE/ISE	8589370	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/29	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587353	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587273	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587422	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587433	N/A	2017/03/25	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8730 Dup  
**Sample ID:** BH95G-33D  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Fluoride	ISE/ISE	8589370	N/A	2017/03/27	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587422	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587433	N/A	2017/03/25	

**Maxxam ID:** QT8731  
**Sample ID:** MW16-16D  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589100	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587354	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589104	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587425	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587427	N/A	2017/03/25	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8731 Dup  
**Sample ID:** MW16-16D  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	Name REDACTED

**Maxxam ID:** QT8740  
**Sample ID:** MW16-17  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589100	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAF	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587354	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589104	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587425	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587427	N/A	2017/03/25	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8741  
**Sample ID:** DUP 1  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589100	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	



Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8741  
**Sample ID:** DUP 1  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	Name REDACTED
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587354	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589104	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587425	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587427	N/A	2017/03/25	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8741 Dup  
**Sample ID:** DUP 1  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Fluoride	ISE/ISE	8589371	N/A	2017/03/27	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587509	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587510	N/A	2017/03/25	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587425	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587427	N/A	2017/03/25	

**Maxxam ID:** QT8756  
**Sample ID:** DUP 2  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588400	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8756  
**Sample ID:** DUP 2  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride	ISE/ISE	8589370	N/A	2017/03/27	Name REDACTED
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8589155	2017/03/28	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587354	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8591792	2017/03/30	2017/03/30	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8591793	N/A	2017/03/30	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8757  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587259	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587276	2017/03/25	2017/03/25	
Chloride by Automated Colourimetry	KONE/COL	8589097	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587277	N/A	2017/03/25	
Fluoride	ISE/ISE	8589370	N/A	2017/03/27	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Elements by ICPMS Low Level (total)	ICP/CRCM	8588888	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587354	N/A	2017/03/25	



Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8757  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587507	N/A	2017/03/25	Name REDACTED
Nitrite (N) (low level)	TRAA/COL	8587508	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/03/27	
pH Water	AT/ALK	8587278	N/A	2017/03/25	
Sulphate by Automated Colourimetry	KONE/COL	8589098	N/A	2017/03/27	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587422	2017/03/25	2017/03/25	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587423	N/A	2017/03/25	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8757 Dup  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/03/21  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	Name REDACTED
Elements by ICPMS Low Level (total)	ICP/CRCM	8588888	N/A	2017/03/29	

**Maxxam ID:** QT8758  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/03/23  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8587260	N/A	2017/03/25	Name REDACTED
Alkalinity - Water	AT/ALK	8587302	2017/03/25	2017/03/26	
Chloride by Automated Colourimetry	KONE/COL	8589108	N/A	2017/03/27	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8588398	N/A	2017/03/27	
Conductance - water	AT/ALK	8587301	N/A	2017/03/26	
Fluoride	ISE/ISE	8589743	N/A	2017/03/28	
Hardness Total (calculated as CaCO3)	CALC	8586237	N/A	2017/03/29	
Hardness (calculated as CaCO3)	CALC	8586339	N/A	2017/03/28	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8588282	N/A	2017/03/28	
Mercury (Total-LowLevel) by CVAf	CV/AF	8588898	2017/03/28	2017/03/28	
Ion Balance (as Cations/Anions Ratio)	CALC	8586748	N/A	2017/03/28	
Sum of cations, anions	CALC	8586855	N/A	2017/03/28	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8586916	N/A	2017/03/28	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8586917	N/A	2017/03/29	
Elements by ICPMS Low Level (total)	ICP/CRCM	8588888	N/A	2017/03/29	
Ammonia-N (Preserved)	KONE/COL	8587354	N/A	2017/03/25	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8587517	N/A	2017/03/25	
Nitrite (N) (low level)	TRAA/COL	8587518	N/A	2017/03/25	
Nitrogen - Nitrate (as N)	CALC	8586856	N/A	2017/03/28	
pH Water	AT/ALK	8587299	N/A	2017/03/25	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**TEST SUMMARY**

**Maxxam ID:** QT8758  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/03/23  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Sulphate by Automated Colourimetry	KONE/COL	8589110	N/A	2017/03/27	Name REDACTED
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8587657	2017/03/27	2017/03/27	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8587658	N/A	2017/03/27	
Total Suspended Solids-Low Level	BAL/BAL	8587825	2017/03/27	2017/03/28	

**Maxxam ID:** QT8758 Dup  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/03/23  
**Shipped:**  
**Received:** 2017/03/23

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Name REDACTED
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8588098	N/A	2017/03/27	
Elements by ICPMS Low Level (total)	ICP/CRCM	8588888	N/A	2017/03/29	

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.0°C
Package 2	6.0°C
Package 3	1.7°C
Package 4	1.0°C
Package 5	1.0°C
Package 6	1.0°C
Package 7	1.0°C

Revised Report V2 (M\_S, 2017/04/05): Sample comment added for Trip Blank Total Lead result.

All samples were received at analytical lab past recommended hold time or on day of expiry for nitrate and nitrite.

Sample QT8718 [BH95G-22] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8719 [MW15-03S] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8721 [MW15-04S] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8722 [MW15-04D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8723 [MW15-05D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8724 [MW16-15D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8725 [BH95G-2] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8726 [BH95G-15D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8727 [BH95G-25S] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8728 [BH95G-25D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8729 [BH95G-32] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8730 [BH95G-33D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8731 [MW16-16D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

Sample QT8740 [MW16-17] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8741 [DUP 1] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8756 [DUP 2] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample QT8757 [FIELD BLANK] : Ion Balance: NC = Not Calculable due to low ion sum [ $< 0.4$  meq/L].

Sample QT8758 [TRIP BLANK] : Ion Balance: NC = Not Calculable due to low ion sum [ $< 0.4$  meq/L].

**LL TOTAL METALS (DIGESTED) WITH CV HG Comments**

Sample QT8719 [MW15-03S] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample QT8727 [BH95G-25S] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample QT8719, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample QT8721, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample QT8723, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample QT8726, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample QT8727, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample QT8741, Elements by ICPMS Low Level (dissolved): Test repeated.

**Results relate only to the items tested.**

Maxxam Job #: B721752  
Report Date: 2017/04/05

**QUALITY ASSURANCE REPORT**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8587259	Acidity (pH 4.5)	2017/03/25					<0.50	mg/L	NC	20
8587259	Acidity (pH 8.3)	2017/03/25			97	80 - 120	<0.50	mg/L	3.0	20
8587260	Acidity (pH 4.5)	2017/03/25					<0.50	mg/L	NC	20
8587260	Acidity (pH 8.3)	2017/03/25			96	80 - 120	<0.50	mg/L	4.6	20
8587273	pH	2017/03/25			102	97 - 103			0.13	N/A
8587274	Conductivity	2017/03/25			99	80 - 120	<1.0	uS/cm	0.67	20
8587275	Alkalinity (PP as CaCO3)	2017/03/25					<0.50	mg/L	NC	20
8587275	Alkalinity (Total as CaCO3)	2017/03/25	NC	80 - 120	96	80 - 120	<0.50	mg/L	0.38	20
8587275	Bicarbonate (HCO3)	2017/03/25					<0.50	mg/L	0.38	20
8587275	Carbonate (CO3)	2017/03/25					<0.50	mg/L	NC	20
8587275	Hydroxide (OH)	2017/03/25					<0.50	mg/L	NC	20
8587276	Alkalinity (PP as CaCO3)	2017/03/25					<0.50	mg/L	NC	20
8587276	Alkalinity (Total as CaCO3)	2017/03/25	NC	80 - 120	97	80 - 120	<0.50	mg/L	0.15	20
8587276	Bicarbonate (HCO3)	2017/03/25					<0.50	mg/L	0.15	20
8587276	Carbonate (CO3)	2017/03/25					<0.50	mg/L	NC	20
8587276	Hydroxide (OH)	2017/03/25					<0.50	mg/L	NC	20
8587277	Conductivity	2017/03/25			100	80 - 120	<1.0	uS/cm	0	20
8587278	pH	2017/03/25			102	97 - 103			0.12	N/A
8587283	Alkalinity (PP as CaCO3)	2017/03/25					<0.50	mg/L	NC	20
8587283	Alkalinity (Total as CaCO3)	2017/03/25	NC	80 - 120	97	80 - 120	<0.50	mg/L	0.30	20
8587283	Bicarbonate (HCO3)	2017/03/25					<0.50	mg/L	0.30	20
8587283	Carbonate (CO3)	2017/03/25					<0.50	mg/L	NC	20
8587283	Hydroxide (OH)	2017/03/25					<0.50	mg/L	NC	20
8587289	Conductivity	2017/03/25			100	80 - 120	<1.0	uS/cm	0.41	20
8587290	pH	2017/03/25			102	97 - 103				
8587299	pH	2017/03/25			102	97 - 103				
8587301	Conductivity	2017/03/25			102	80 - 120	<1.0	uS/cm		
8587302	Alkalinity (PP as CaCO3)	2017/03/25					<0.50	mg/L		
8587302	Alkalinity (Total as CaCO3)	2017/03/25			99	80 - 120	<0.50	mg/L		
8587302	Bicarbonate (HCO3)	2017/03/25					<0.50	mg/L		
8587302	Carbonate (CO3)	2017/03/25					<0.50	mg/L		

Maxxam Job #: B721752  
Report Date: 2017/04/05

**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8587302	Hydroxide (OH)	2017/03/25					<0.50	mg/L		
8587353	Total Ammonia (N)	2017/03/25	NC	80 - 120	104	80 - 120	<0.0050	mg/L	2.1	20
8587354	Total Ammonia (N)	2017/03/25	111	80 - 120	109	80 - 120	<0.0050	mg/L	16	20
8587422	Dissolved Phosphorus (P)	2017/03/25	95	80 - 120	92	80 - 120	<0.0020	mg/L	14	20
8587423	Total Phosphorus (P)	2017/03/25	97	80 - 120	92	80 - 120	<0.0020	mg/L	NC	20
8587425	Dissolved Phosphorus (P)	2017/03/25	NC	80 - 120	93	80 - 120	<0.0020	mg/L	0.83	20
8587427	Total Phosphorus (P)	2017/03/25	NC	80 - 120	93	80 - 120	<0.0020	mg/L	0.59	20
8587430	Dissolved Phosphorus (P)	2017/03/25	NC	80 - 120	98	80 - 120	<0.0020	mg/L	1.1	20
8587433	Total Phosphorus (P)	2017/03/25	96	80 - 120	98	80 - 120	<0.0020	mg/L	0.73	20
8587507	Nitrate plus Nitrite (N)	2017/03/25	104	80 - 120	104	80 - 120	<0.0020	mg/L	0.88	25
8587508	Nitrite (N)	2017/03/25	99	80 - 120	99	80 - 120	<0.0020	mg/L	18	25
8587509	Nitrate plus Nitrite (N)	2017/03/25	NC	80 - 120	104	80 - 120	<0.0020	mg/L	0.51	25
8587510	Nitrite (N)	2017/03/25	99	80 - 120	101	80 - 120	<0.0020	mg/L	NC	25
8587517	Nitrate plus Nitrite (N)	2017/03/25			102	80 - 120	<0.0020	mg/L		
8587518	Nitrite (N)	2017/03/25			98	80 - 120	<0.0020	mg/L		
8587657	Dissolved Phosphorus (P)	2017/03/27	115	80 - 120	96	80 - 120	<0.0020	mg/L	NC	20
8587658	Total Phosphorus (P)	2017/03/27	102	80 - 120	96	80 - 120	<0.0020	mg/L	1.2	20
8587819	Total Suspended Solids	2017/03/28			102	80 - 120	<1.0	mg/L		
8587825	Total Suspended Solids	2017/03/28			99	80 - 120	<1.0	mg/L		
8588098	Dissolved Aluminum (Al)	2017/03/27	97	80 - 120	101	80 - 120	<0.00050	mg/L	NC	20
8588098	Dissolved Antimony (Sb)	2017/03/27	100	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8588098	Dissolved Arsenic (As)	2017/03/27	103	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8588098	Dissolved Barium (Ba)	2017/03/27	97	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8588098	Dissolved Beryllium (Be)	2017/03/27	97	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
8588098	Dissolved Bismuth (Bi)	2017/03/27	95	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8588098	Dissolved Boron (B)	2017/03/27	97	80 - 120	97	80 - 120	<0.010	mg/L	NC	20
8588098	Dissolved Cadmium (Cd)	2017/03/27	102	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8588098	Dissolved Chromium (Cr)	2017/03/27	107	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8588098	Dissolved Cobalt (Co)	2017/03/27	109	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8588098	Dissolved Copper (Cu)	2017/03/27	108	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8588098	Dissolved Iron (Fe)	2017/03/27	109	80 - 120	106	80 - 120	<0.0010	mg/L	NC	20

Maxxam Job #: B721752  
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**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8588098	Dissolved Lead (Pb)	2017/03/27	97	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8588098	Dissolved Lithium (Li)	2017/03/27	99	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20
8588098	Dissolved Manganese (Mn)	2017/03/27	104	80 - 120	100	80 - 120	<0.000050	mg/L	NC	20
8588098	Dissolved Molybdenum (Mo)	2017/03/27	99	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8588098	Dissolved Nickel (Ni)	2017/03/27	109	80 - 120	105	80 - 120	<0.000020	mg/L	NC	20
8588098	Dissolved Phosphorus (P)	2017/03/27					<0.0020	mg/L	NC	20
8588098	Dissolved Selenium (Se)	2017/03/27	104	80 - 120	100	80 - 120	<0.000040	mg/L	NC	20
8588098	Dissolved Silicon (Si)	2017/03/27					<0.050	mg/L	NC	20
8588098	Dissolved Silver (Ag)	2017/03/27	100	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8588098	Dissolved Strontium (Sr)	2017/03/27	101	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8588098	Dissolved Thallium (Tl)	2017/03/27	98	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8588098	Dissolved Tin (Sn)	2017/03/27	101	80 - 120	103	80 - 120	<0.00020	mg/L	NC	20
8588098	Dissolved Titanium (Ti)	2017/03/27	118	80 - 120	104	80 - 120	<0.00050	mg/L	NC	20
8588098	Dissolved Uranium (U)	2017/03/27	97	80 - 120	100	80 - 120	<0.0000020	mg/L	NC	20
8588098	Dissolved Vanadium (V)	2017/03/27	106	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8588098	Dissolved Zinc (Zn)	2017/03/27	106	80 - 120	102	80 - 120	<0.00010	mg/L	3.9	20
8588098	Dissolved Zirconium (Zr)	2017/03/27					<0.00010	mg/L	NC	20
8588277	Dissolved Mercury (Hg)	2017/03/27	94	80 - 120	96	80 - 120	<0.0000020	mg/L	NC	20
8588282	Dissolved Mercury (Hg)	2017/03/28	99	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
8588397	Dissolved Organic Carbon (C)	2017/03/27	115	80 - 120	110	80 - 120	<0.50	mg/L	0.33	20
8588398	Dissolved Organic Carbon (C)	2017/03/27	106	80 - 120	108	80 - 120	<0.50	mg/L	8.9	20
8588400	Dissolved Organic Carbon (C)	2017/03/27	106	80 - 120	105	80 - 120	<0.50	mg/L	NC	20
8588888	Total Aluminum (Al)	2017/03/29	100	80 - 120	96	80 - 120	<0.00050	mg/L	12	20
8588888	Total Antimony (Sb)	2017/03/29	101	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8588888	Total Arsenic (As)	2017/03/29	102	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8588888	Total Barium (Ba)	2017/03/29	103	80 - 120	96	80 - 120	<0.000020	mg/L	NC	20
8588888	Total Beryllium (Be)	2017/03/29	92	80 - 120	89	80 - 120	<0.000010	mg/L	NC	20
8588888	Total Bismuth (Bi)	2017/03/29	102	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8588888	Total Boron (B)	2017/03/29	92	80 - 120	88	80 - 120	<0.010	mg/L	NC	20
8588888	Total Cadmium (Cd)	2017/03/29	100	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8588888	Total Chromium (Cr)	2017/03/29	99	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20

Maxxam Job #: B721752  
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**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8588888	Total Cobalt (Co)	2017/03/29	98	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8588888	Total Copper (Cu)	2017/03/29	97	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8588888	Total Iron (Fe)	2017/03/29	106	80 - 120	103	80 - 120	<0.0010	mg/L	NC	20
8588888	Total Lead (Pb)	2017/03/29	96	80 - 120	92	80 - 120	<0.0000050	mg/L	11	20
8588888	Total Lithium (Li)	2017/03/29	91	80 - 120	87	80 - 120	<0.00050	mg/L	NC	20
8588888	Total Manganese (Mn)	2017/03/29	102	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8588888	Total Molybdenum (Mo)	2017/03/29	100	80 - 120	98	80 - 120	<0.000050	mg/L	NC	20
8588888	Total Nickel (Ni)	2017/03/29	99	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8588888	Total Phosphorus (P)	2017/03/29					<0.0020	mg/L	NC	20
8588888	Total Selenium (Se)	2017/03/29	103	80 - 120	104	80 - 120	<0.000040	mg/L	NC	20
8588888	Total Silicon (Si)	2017/03/29					<0.050	mg/L	NC	20
8588888	Total Silver (Ag)	2017/03/29	99	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8588888	Total Strontium (Sr)	2017/03/29	102	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8588888	Total Thallium (Tl)	2017/03/29	99	80 - 120	96	80 - 120	<0.0000020	mg/L	NC	20
8588888	Total Tin (Sn)	2017/03/29	102	80 - 120	96	80 - 120	<0.00020	mg/L	NC	20
8588888	Total Titanium (Ti)	2017/03/29	108	80 - 120	95	80 - 120	<0.00050	mg/L	NC	20
8588888	Total Uranium (U)	2017/03/29	95	80 - 120	93	80 - 120	<0.0000020	mg/L	NC	20
8588888	Total Vanadium (V)	2017/03/29	96	80 - 120	99	80 - 120	<0.00020	mg/L	NC	20
8588888	Total Zinc (Zn)	2017/03/29	103	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8588888	Total Zirconium (Zr)	2017/03/29					<0.00010	mg/L	NC	20
8588895	Total Mercury (Hg)	2017/03/28	91	80 - 120	92	80 - 120	<0.0000020	mg/L	NC	20
8588898	Total Mercury (Hg)	2017/03/28	94	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
8589097	Dissolved Chloride (Cl)	2017/03/27	103	80 - 120	105	80 - 120	<0.50	mg/L	2.1	20
8589098	Dissolved Sulphate (SO4)	2017/03/27	NC	80 - 120	103	80 - 120	0.52, RDL=0.50	mg/L	1.3	20
8589100	Dissolved Chloride (Cl)	2017/03/27	109	80 - 120	99	80 - 120	<0.50	mg/L	4.4	20
8589104	Dissolved Sulphate (SO4)	2017/03/27	107	80 - 120	98	80 - 120	<0.50	mg/L	NC	20
8589108	Dissolved Chloride (Cl)	2017/03/27	114	80 - 120	101	80 - 120	<0.50	mg/L	0.38	20
8589110	Dissolved Sulphate (SO4)	2017/03/27	NC	80 - 120	99	80 - 120	<0.50	mg/L	1.1	20
8589155	Total Aluminum (Al)	2017/03/28	97	80 - 120	96	80 - 120	<0.0030	mg/L		
8589155	Total Antimony (Sb)	2017/03/28	98	80 - 120	96	80 - 120	<0.000020	mg/L		
8589155	Total Arsenic (As)	2017/03/28	99	80 - 120	98	80 - 120	<0.000020	mg/L		



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**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8589155	Total Barium (Ba)	2017/03/28	NC	80 - 120	96	80 - 120	<0.000050	mg/L		
8589155	Total Beryllium (Be)	2017/03/28	97	80 - 120	93	80 - 120	<0.000010	mg/L		
8589155	Total Bismuth (Bi)	2017/03/28	94	80 - 120	98	80 - 120	<0.000010	mg/L		
8589155	Total Boron (B)	2017/03/28	91	80 - 120	92	80 - 120	<0.010	mg/L		
8589155	Total Cadmium (Cd)	2017/03/28	97	80 - 120	95	80 - 120	<0.0000050	mg/L		
8589155	Total Chromium (Cr)	2017/03/28	99	80 - 120	99	80 - 120	<0.00010	mg/L		
8589155	Total Cobalt (Co)	2017/03/28	95	80 - 120	99	80 - 120	<0.000010	mg/L		
8589155	Total Copper (Cu)	2017/03/28	91	80 - 120	100	80 - 120	<0.00010	mg/L		
8589155	Total Iron (Fe)	2017/03/28	86	80 - 120	104	80 - 120	<0.0050	mg/L		
8589155	Total Lead (Pb)	2017/03/28	96	80 - 120	97	80 - 120	<0.000020	mg/L		
8589155	Total Lithium (Li)	2017/03/28	92	80 - 120	91	80 - 120	<0.00050	mg/L		
8589155	Total Manganese (Mn)	2017/03/28	97	80 - 120	94	80 - 120	<0.00010	mg/L		
8589155	Total Molybdenum (Mo)	2017/03/28	NC	80 - 120	97	80 - 120	<0.000050	mg/L		
8589155	Total Nickel (Ni)	2017/03/28	94	80 - 120	102	80 - 120	<0.00010	mg/L		
8589155	Total Phosphorus (P)	2017/03/28					<0.0050	mg/L		
8589155	Total Selenium (Se)	2017/03/28	85	80 - 120	98	80 - 120	<0.000040	mg/L		
8589155	Total Silicon (Si)	2017/03/28					<0.050	mg/L		
8589155	Total Silver (Ag)	2017/03/28	99	80 - 120	99	80 - 120	<0.000010	mg/L		
8589155	Total Strontium (Sr)	2017/03/28	NC	80 - 120	92	80 - 120	<0.000050	mg/L		
8589155	Total Thallium (Tl)	2017/03/28	99	80 - 120	98	80 - 120	<0.0000020	mg/L		
8589155	Total Tin (Sn)	2017/03/28	95	80 - 120	98	80 - 120	<0.00020	mg/L		
8589155	Total Titanium (Ti)	2017/03/28	97	80 - 120	99	80 - 120	<0.0020	mg/L		
8589155	Total Uranium (U)	2017/03/28	100	80 - 120	98	80 - 120	<0.0000050	mg/L		
8589155	Total Vanadium (V)	2017/03/28	100	80 - 120	99	80 - 120	<0.00020	mg/L		
8589155	Total Zinc (Zn)	2017/03/28	NC	80 - 120	100	80 - 120	<0.0010	mg/L		
8589155	Total Zirconium (Zr)	2017/03/28					<0.00010	mg/L		
8589370	Fluoride (F)	2017/03/27	99	80 - 120	100	80 - 120	0.014, RDL=0.010	mg/L	5.5	20
8589371	Fluoride (F)	2017/03/27	102	80 - 120	100	80 - 120	0.012, RDL=0.010	mg/L	5.2	20

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**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8589741	Fluoride (F)	2017/03/28	100	80 - 120	102	80 - 120	0.019, RDL=0.010	mg/L	13	20
8589743	Fluoride (F)	2017/03/28	96	80 - 120	100	80 - 120	0.014, RDL=0.010	mg/L	0	20
8591003	Dissolved Molybdenum (Mo)	2017/03/30			104	80 - 120	<0.000050	mg/L		
8591334	Total Aluminum (Al)	2017/03/31	NC	80 - 120	103	80 - 120	<0.0030	mg/L	6.0	20
8591334	Total Antimony (Sb)	2017/03/31	NC	80 - 120	103	80 - 120	<0.000020	mg/L	1.7	20
8591334	Total Arsenic (As)	2017/03/31	NC	80 - 120	101	80 - 120	<0.000020	mg/L	0.33	20
8591334	Total Barium (Ba)	2017/03/31	NC	80 - 120	103	80 - 120	<0.000050	mg/L	2.8	20
8591334	Total Beryllium (Be)	2017/03/31	119	80 - 120	103	80 - 120	<0.000010	mg/L	1.2	20
8591334	Total Bismuth (Bi)	2017/03/31	110	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
8591334	Total Boron (B)	2017/03/31	101	80 - 120	104	80 - 120	<0.010	mg/L	3.5	20
8591334	Total Cadmium (Cd)	2017/03/31	106	80 - 120	97	80 - 120	<0.0000050	mg/L	3.3	20
8591334	Total Chromium (Cr)	2017/03/31	103	80 - 120	99	80 - 120	<0.00010	mg/L	1.9	20
8591334	Total Cobalt (Co)	2017/03/31	NC	80 - 120	99	80 - 120	<0.000010	mg/L	0.13	20
8591334	Total Copper (Cu)	2017/03/31	NC	80 - 120	98	80 - 120	<0.00010	mg/L	1.9	20
8591334	Total Iron (Fe)	2017/03/31	NC	80 - 120	102	80 - 120	<0.0050	mg/L	0.78	20
8591334	Total Lead (Pb)	2017/03/31	110	80 - 120	102	80 - 120	<0.000020	mg/L	23 (1)	20
8591334	Total Lithium (Li)	2017/03/31	NC	80 - 120	106	80 - 120	<0.00050	mg/L	3.8	20
8591334	Total Manganese (Mn)	2017/03/31	NC	80 - 120	98	80 - 120	<0.00010	mg/L	1.6	20
8591334	Total Molybdenum (Mo)	2017/03/31	NC	80 - 120	104	80 - 120	<0.000050	mg/L	0.97	20
8591334	Total Nickel (Ni)	2017/03/31	NC	80 - 120	98	80 - 120	<0.00010	mg/L	0.31	20
8591334	Total Phosphorus (P)	2017/03/31					<0.0050	mg/L	2.3	20
8591334	Total Selenium (Se)	2017/03/31	98	80 - 120	101	80 - 120	<0.000040	mg/L	10	20
8591334	Total Silicon (Si)	2017/03/31					<0.050	mg/L	4.4	20
8591334	Total Silver (Ag)	2017/03/31	114	80 - 120	108	80 - 120	<0.000010	mg/L	NC	20
8591334	Total Strontium (Sr)	2017/03/31	NC	80 - 120	100	80 - 120	<0.000050	mg/L	1.6	20
8591334	Total Thallium (Tl)	2017/03/31	113	80 - 120	101	80 - 120	<0.0000020	mg/L	8.1	20
8591334	Total Tin (Sn)	2017/03/31	111	80 - 120	105	80 - 120	<0.00020	mg/L	NC	20
8591334	Total Titanium (Ti)	2017/03/31	NC	80 - 120	92	80 - 120	<0.0020	mg/L	5.5	20
8591334	Total Uranium (U)	2017/03/31	NC	80 - 120	101	80 - 120	<0.0000050	mg/L	0.094	20

Maxxam Job #: B721752  
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**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8591334	Total Vanadium (V)	2017/03/31	NC	80 - 120	96	80 - 120	<0.00020	mg/L	5.5	20
8591334	Total Zinc (Zn)	2017/03/31	NC	80 - 120	99	80 - 120	<0.0010	mg/L	0.36	20
8591334	Total Zirconium (Zr)	2017/03/31					<0.00010	mg/L	NC	20
8591792	Dissolved Phosphorus (P)	2017/03/30			89	80 - 120	<0.0020	mg/L		
8591793	Total Phosphorus (P)	2017/03/30			89	80 - 120	<0.0020	mg/L		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

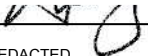
Maxxam Job #: B721752  
Report Date: 2017/04/05

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-16-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: MH

**VALIDATION SIGNATURE PAGE**

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Signature REDACTED

  
Name REDACTED M.Sc., P.Chem., QP, Scientific Services Manager

Signature REDACTED

Name REDACTED B.Sc., Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

**CHAIN OF CUSTODY RECORD**

BBY FCD-00077/05

Burnaby: 4606 Canada Way, Burnaby, BC V5G 1K5. Toll Free (800) 665-8566

COC #: **08437331**

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Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Turnaround Time (TAT) Required							
Company Name: <b>BMC MINERALS LTD.</b>		Company Name: <b>ALEXCO ENVIRONMENTAL</b> Name REDACTED				Quotation #: <b>B60751</b>				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)							
Contact Name:		Contact Name:				P.O. # / A/E/R:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS							
Address: <b>530-1130 WEST PENDER ST</b> Vancouver, BC PC V6E 4A4		Address: <b>UNIT 3 151 INDUSTRIAL RD</b> Whitehorse, YK PC V1A 2V3				Project #: <b>BMC-16-01</b>				Rush TAT (Surcharges will be applied)							
Phone:		Phone: <b>(867) 668-6463</b>				Site Location: <b>Kudz Za Kayah</b>				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days							
Email:		Email: <b>Email REDACTED</b>				Site #: <b>Name REDACTED</b>				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days							
Regulatory Criteria		Special Instructions		Analysis Requested				Rush Confirmation #:									
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify) USE SCENARIO # 12185		IONIC LOW LEVEL METALS (VCL, MERCURY) DISSOLVED LOW LEVEL METALS (BCL, MERCURY) LOW LEVEL TSS HARMFUL I.C.F., SO4, NO3, NH3 AMALGAM CONDUCTIVITY pH ALKALINITY & ACIDITY DOC TOTAL PHOSPHORUS - LOW LEVEL DISSOLVED PHOSPHORUS - LOW LEVEL				LABORATORY USE ONLY CUSTODY Y/N Present Intact COOLER TEMPERATURES RECEIVED BY WHITEHORSE									
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																	
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	IONIC LOW LEVEL METALS (VCL, MERCURY)	DISSOLVED LOW LEVEL METALS (BCL, MERCURY)	LOW LEVEL TSS	HARMFUL I.C.F., SO4, NO3, NH3	AMALGAM	CONDUCTIVITY	pH	ALKALINITY & ACIDITY	DOC	TOTAL PHOSPHORUS - LOW LEVEL	DISSOLVED PHOSPHORUS - LOW LEVEL	# OF CONTAINERS SUBMITTED	WORLD - DO NOT ANALYZE
1	BH95G-22	21-Mar-17	16:50	Water	X	X	X	X	X	X	X	X	X	X	X	11	RECEIVED BY: <b>Name REDACTED</b> 2017-03-23 TEMP: 0-1-1 3-3-3 3-3-3
3	MW15-03s	20-Mar-17	12:50	Water	X	X	X	X	X	X	X	X	X	X	11		
4	MW15-03d	20-Mar-17	12:30	Water	X	X	X	X	X	X	X	X	X	X	11		
5	MW15-04s	20-Mar-17	14:27	Water	X	X	X	X	X	X	X	X	X	X	11		
6	MW15-04d	20-Mar-17	14:10	Water	X	X	X	X	X	X	X	X	X	X	11		
7	MW15-05d	20-Mar-17	16:32	Water	X	X	X	X	X	X	X	X	X	X	11		
8	MW16-15d	20-Mar-17	17:45	Water	X	X	X	X	X	X	X	X	X	X	11		
9	BH95G-2	21-Mar-17	9:15	Water	X	X	X	X	X	X	X	X	X	X	11		
10	BH95G-15d	21-Mar-17	10:40	Water	X	X	X	X	X	X	X	X	X	X	11		
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)				DATE: (YYYY/MM/DD)	TIME: (HH:MM)								
Name REDACTED		23/03/2017	12:00	Signature REDACTED				2017/03/24	13:45								





Your Project #: BMC-15-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08439312

**Attention:** Name REDACTED  
 ALEXCO ENVIRONMENTAL GROUP INC.  
 Unit 3 Calcite Business Centre  
 151 Industrial Road  
 WHITEHORSE, YT  
 Canada Y1A 2V3

**Report Date: 2017/06/17**  
 Report #: R2399100  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B746271**  
**Received: 2017/06/10, 15:29**

Sample Matrix: Water  
 # Samples Received: 28

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO <sub>3</sub> )	28	N/A	2017/06/12	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	6	2017/06/13	2017/06/13	BBY6SOP-00026	SM 22 2320 B m
Alkalinity - Water	21	2017/06/13	2017/06/14	BBY6SOP-00026	SM 22 2320 B m
Alkalinity - Water	1	2017/06/14	2017/06/14	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	28	N/A	2017/06/13	BBY6SOP-00011	SM 22 4500-Cl- E m
Carbon (DOC) - field filtered/preserved (1)	28	N/A	2017/06/12	BBY6SOP-00003	SM 22 5310 C m
Conductance - water	6	N/A	2017/06/13	BBY6SOP-00026	SM 22 2510 B m
Conductance - water	22	N/A	2017/06/14	BBY6SOP-00026	SM 22 2510 B m
Fluoride	28	N/A	2017/06/14	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> )	28	N/A	2017/06/14	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO <sub>3</sub> )	28	N/A	2017/06/14	BBY WI-00033	Auto Calc
Mercury (Dissolved-LowLevel) by CVAF	28	N/A	2017/06/14	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAF	28	2017/06/14	2017/06/14	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance (as Cations/Anions Ratio)	28	N/A	2017/06/14	BBY WI-00033	Auto Calc
Ion Balance	28	N/A	2017/06/14	BBY WI-00033	SM 22 1030E
Sum of cations, anions	28	N/A	2017/06/14	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	28	N/A	2017/06/14	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Low Level (dissolved)	28	N/A	2017/06/14	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Digested LL (total)	22	2017/06/13	2017/06/14	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Na, K, Ca, Mg, S by CRC ICPMS (total)	28	N/A	2017/06/14	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Low Level (total)	6	N/A	2017/06/14	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Ammonia-N (Preserved)	28	N/A	2017/06/13	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	28	N/A	2017/06/13	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	28	N/A	2017/06/13	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N) Low Level Calc	28	N/A	2017/06/14	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO <sub>3</sub> Preserve for Metals	27	N/A	2017/06/14	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	6	N/A	2017/06/13	BBY6SOP-00026	SM 22 4500-H+ B m
pH Water (2)	22	N/A	2017/06/14	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate by Automated Colourimetry	23	N/A	2017/06/13	BBY6SOP-00017	SM 22 4500-SO42- E m



Your Project #: BMC-15-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08439312

**Attention:** Name REDACTED  
 ALEXCO ENVIRONMENTAL GROUP INC.  
 Unit 3 Calcite Business Centre  
 151 Industrial Road  
 WHITEHORSE, YT  
 Canada Y1A 2V3

**Report Date: 2017/06/17**  
 Report #: R2399100  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B746271**  
**Received: 2017/06/10, 15:29**

Sample Matrix: Water  
 # Samples Received: 28

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Sulphate by Automated Colourimetry	5	N/A	2017/06/14	BBY6SOP-00017	SM 22 4500-SO42- E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	28	2017/06/13	2017/06/13	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - Low Level Unpreserved	28	N/A	2017/06/13	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	28	2017/06/13	2017/06/14	BBY6SOP-00034	SM 22 2540 D

**Remarks:**  
 Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) DOC present in the sample should be considered as non-purgeable DOC.

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.



Your Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08439312

**Attention:** Name REDACTED  
ALEXCO ENVIRONMENTAL GROUP INC.  
Unit 3 Calcite Business Centre  
151 Industrial Road  
WHITEHORSE, YT  
Canada Y1A 2V3

**Report Date: 2017/06/17**  
Report #: R2399100  
Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B746271**  
**Received: 2017/06/10, 15:29**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Name REDACTED Manager  
Email: Email REDACTED  
Phone REDACTED

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5766			RG5767			RG5768		
Sampling Date		2017/06/05 12:42			2017/06/05 13:30			2017/06/05 14:40		
COC Number		08439312			08439312			08439312		
	UNITS	MW15-03S	RDL	QC Batch	MW15-03D	RDL	QC Batch	MW15-04S	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	3.2	N/A	8660151	4.2	N/A	8660151	2.6	N/A	8660151
Cation Sum	meq/L	3.1	N/A	8660151	4.1	N/A	8660151	2.6	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.95	0.010	8660399	0.98	0.010	8660399	1.0	0.010	8660399
Ion Balance (% Difference)	%	2.7	N/A	8660149	1.1	N/A	8660149	0.020	N/A	8660149
Nitrate (N)	mg/L	0.235	0.0020	8660154	0.0033	0.0020	8660154	0.173	0.0020	8660154
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.054	0.010	8663806	0.150	0.010	8663812	0.086	0.010	8663812
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8661128	1.71	0.50	8661128	0.66	0.50	8661129
Acidity (pH 4.5)	mg/L	<0.50	0.50	8660672	<0.50	0.50	8660672	<0.50	0.50	8661108
Alkalinity (Total as CaCO3)	mg/L	147	0.50	8662473	188	0.50	8662500	117	0.50	8662500
Acidity (pH 8.3)	mg/L	1.37	0.50	8660672	4.07	0.50	8660672	0.71	0.50	8661108
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662473	2.94	0.50	8662500	<0.50	0.50	8662500
Bicarbonate (HCO3)	mg/L	180	0.50	8662473	222	0.50	8662500	143	0.50	8662500
Carbonate (CO3)	mg/L	<0.50	0.50	8662473	3.53	0.50	8662500	<0.50	0.50	8662500
Hydroxide (OH)	mg/L	<0.50	0.50	8662473	<0.50	0.50	8662500	<0.50	0.50	8662500
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	13.5	0.50	8663070	21.2	0.50	8663070	9.57	0.50	8663077
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8663067	<0.50	0.50	8663067	<0.50	0.50	8663073
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0492 (1)	0.0020	8663209	0.0101 (1)	0.0020	8663212	0.0720 (1)	0.0020	8663212
Total Ammonia (N)	mg/L	0.029	0.0050	8661444	0.066	0.0050	8661444	0.062	0.0050	8661444
Nitrate plus Nitrite (N)	mg/L	0.241 (1)	0.0020	8663443	0.0033 (1)	0.0020	8663443	0.181 (1)	0.0020	8663446
Nitrite (N)	mg/L	0.0059 (1)	0.0020	8663445	<0.0020 (1)	0.0020	8663445	0.0088 (1)	0.0020	8663447
Total Phosphorus (P)	mg/L	0.747 (2)	0.020	8663215	0.0151 (1)	0.0020	8663218	1.26 (2)	0.020	8663218
<b>Physical Properties</b>										
Conductivity	uS/cm	299	1.0	8662472	386	1.0	8662510	244	1.0	8662510
pH	pH	8.27		8662458	8.36		8662511	8.20		8662511
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time. (2) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample arrived to laboratory past recommended hold time.										

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5766			RG5767			RG5768		
Sampling Date		2017/06/05 12:42			2017/06/05 13:30			2017/06/05 14:40		
COC Number		08439312			08439312			08439312		
	UNITS	MW15-03S	RDL	QC Batch	MW15-03D	RDL	QC Batch	MW15-04S	RDL	QC Batch
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	1400 (1)	10	8661599	32.6 (1)	1.0	8661599	5130 (1)	10	8661599
RDL = Reportable Detection Limit (1) Sample analysed past recommended hold time.RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5769			RG5770		RG5771		
Sampling Date		2017/06/05 15:10			2017/06/05 16:15		2017/06/05 16:30		
COC Number		08439312			08439312		08439312		
	UNITS	MW15-04D	RDL	QC Batch	MW15-07D	RDL	MW15-07S	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	3.0	N/A	8660151	4.2	N/A	3.9	N/A	8660151
Cation Sum	meq/L	3.0	N/A	8660151	4.2	N/A	4.2	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		FIELD		ONSITE
Ion Balance	N/A	1.0	0.010	8660399	1.0	0.010	1.1	0.010	8660399
Ion Balance (% Difference)	%	0.69	N/A	8660149	0.13	N/A	3.1	N/A	8660149
Nitrate (N)	mg/L	<0.0020	0.0020	8660154	<0.0020	0.0020	0.0023	0.0020	8660154
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.210	0.010	8663814	0.340	0.010	0.290	0.010	8663812
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8661128	<0.50	0.50	<0.50	0.50	8661129
Acidity (pH 4.5)	mg/L	<0.50	0.50	8661108	<0.50	0.50	<0.50	0.50	8660672
Alkalinity (Total as CaCO3)	mg/L	129	0.50	8662500	178	0.50	164	0.50	8662500
Acidity (pH 8.3)	mg/L	0.94	0.50	8661108	4.52	0.50	4.15	0.50	8660672
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662500	<0.50	0.50	<0.50	0.50	8662500
Bicarbonate (HCO3)	mg/L	157	0.50	8662500	217	0.50	201	0.50	8662500
Carbonate (CO3)	mg/L	<0.50	0.50	8662500	<0.50	0.50	<0.50	0.50	8662500
Hydroxide (OH)	mg/L	<0.50	0.50	8662500	<0.50	0.50	<0.50	0.50	8662500
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	18.6	0.50	8663077	29.8	0.50	30.4	0.50	8663070
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8663073	<0.50	0.50	<0.50	0.50	8663067
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	0.0227 (1)	0.0020	8663212	0.0253 (1)	0.0020	0.0442 (1)	0.0020	8663212
Total Ammonia (N)	mg/L	0.034	0.0050	8661443	0.048	0.0050	0.034	0.0050	8661444
Nitrate plus Nitrite (N)	mg/L	0.0044 (1)	0.0020	8663446	<0.0020 (1)	0.0020	0.0056 (1)	0.0020	8663443
Nitrite (N)	mg/L	0.0049 (1)	0.0020	8663447	<0.0020 (1)	0.0020	0.0033 (1)	0.0020	8663445
Total Phosphorus (P)	mg/L	0.258 (1)	0.0020	8663221	0.0215 (1)	0.0020	0.0615 (1)	0.0020	8663218
<b>Physical Properties</b>									
Conductivity	uS/cm	280	1.0	8662510	391	1.0	373	1.0	8662510
pH	pH	8.21		8662511	8.27		8.09		8662511
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.									

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5769			RG5770		RG5771		
<b>Sampling Date</b>		2017/06/05 15:10			2017/06/05 16:15		2017/06/05 16:30		
<b>COC Number</b>		08439312			08439312		08439312		
	<b>UNITS</b>	<b>MW15-04D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-07D</b>	<b>RDL</b>	<b>MW15-07S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>									
Total Suspended Solids	mg/L	336 (1)	4.0	8661599	25.5 (2)	1.0	90.3 (2)	1.4	8661599

RDL = Reportable Detection Limit

- (1) Sample analysed past recommended hold time.RDL raised due to high concentration of solids in the sample.
- (2) Sample analysed past recommended hold time.RDL raised due to sample matrix interference.

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5772			RG5773			RG5774		
<b>Sampling Date</b>		2017/06/05 17:39			2017/06/06 09:39			2017/06/06 10:04		
<b>COC Number</b>		08439312			08439312			08439312		
	<b>UNITS</b>	<b>MW15-09S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP-1</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Anion Sum	meq/L	4.6	N/A	8660151	34	N/A	8660151	33	N/A	8660151
Cation Sum	meq/L	4.7	N/A	8660151	38	N/A	8660151	40	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	1.0	0.010	8660399	1.1	0.010	8660399	1.2	0.010	8660399
Ion Balance (% Difference)	%	0.75	N/A	8660149	6.3	N/A	8660149	9.0	N/A	8660149
Nitrate (N)	mg/L	0.128	0.0020	8660154	<0.0020	0.0020	8660154	<0.0020	0.0020	8660154

**Misc. Inorganics**

Fluoride (F)	mg/L	0.220	0.010	8663812	1.20	0.010	8663812	1.20	0.010	8663814
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8661129	<0.50	0.50	8661129	0.58	0.50	8661130
Acidity (pH 4.5)	mg/L	<0.50	0.50	8661108	<0.50	0.50	8660672	<0.50	0.50	8661108
Alkalinity (Total as CaCO3)	mg/L	211	0.50	8662444	1670	0.50	8662473	1630	0.50	8662500
Acidity (pH 8.3)	mg/L	9.46	0.50	8661108	646	0.50	8660672	799	0.50	8661108
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662444	<0.50	0.50	8662473	<0.50	0.50	8662500
Bicarbonate (HCO3)	mg/L	257	0.50	8662444	2040	0.50	8662473	1990	0.50	8662500
Carbonate (CO3)	mg/L	<0.50	0.50	8662444	<0.50	0.50	8662473	<0.50	0.50	8662500
Hydroxide (OH)	mg/L	<0.50	0.50	8662444	<0.50	0.50	8662473	<0.50	0.50	8662500

**Anions**

Dissolved Sulphate (SO4)	mg/L	17.3	0.50	8663077	9.94	0.50	8663987	11.3	0.50	8663987
Dissolved Chloride (Cl)	mg/L	0.63	0.50	8663073	1.1	0.50	8663067	1.0	0.50	8663073

**Nutrients**

Dissolved Phosphorus (P)	mg/L	0.0103 (1)	0.0020	8663212	0.0183 (1)	0.0020	8663209	0.0112 (1)	0.0020	8663212
Total Ammonia (N)	mg/L	0.32	0.0050	8661443	0.24	0.0050	8661443	0.25	0.0050	8661444
Nitrate plus Nitrite (N)	mg/L	0.133 (1)	0.0020	8663446	<0.0020 (1)	0.0020	8663443	<0.0020 (1)	0.0020	8663446
Nitrite (N)	mg/L	0.0047 (1)	0.0020	8663447	<0.0020 (1)	0.0020	8663445	<0.0020 (1)	0.0020	8663447
Total Phosphorus (P)	mg/L	1.19 (2)	0.020	8663218	0.0860 (1)	0.0020	8663218	0.0652 (1)	0.0020	8663221

**Physical Properties**

Conductivity	uS/cm	422	1.0	8662443	2830	1.0	8662472	2660	1.0	8662510
pH	pH	8.13		8662434	6.84		8662458	7.09		8662511

RDL = Reportable Detection Limit  
 N/A = Not Applicable  
 (1) Sample arrived to laboratory past recommended hold time.  
 (2) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5772			RG5773			RG5774		
<b>Sampling Date</b>		2017/06/05 17:39			2017/06/06 09:39			2017/06/06 10:04		
<b>COC Number</b>		08439312			08439312			08439312		
	<b>UNITS</b>	<b>MW15-09S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP-1</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	5400 (1)	20	8661599	106 (2)	2.5	8661599	99.1	1.0	8661599

RDL = Reportable Detection Limit

- (1) Sample analysed past recommended hold time.RDL raised due to high concentration of solids in the sample.
- (2) RDL raised due to high concentration of solids in the sample.

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5775			RG5776		RG5777		
Sampling Date		2017/06/06 10:26			2017/06/06 11:47		2017/06/06 13:10		
COC Number		08439312			08439312		08439312		
	UNITS	MW16-14D	RDL	QC Batch	MW16-12D	QC Batch	MW16-16D	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	5.2	N/A	8660151	18	8660151	4.3	N/A	8660151
Cation Sum	meq/L	5.1	N/A	8660151	18	8660151	4.6	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD	ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.97	0.010	8660399	1.0	8660399	1.1	0.010	8660399
Ion Balance (% Difference)	%	1.5	N/A	8660149	0.36	8660149	3.1	N/A	8660149
Nitrate (N)	mg/L	<0.0020	0.0020	8660154	<0.0020	8660154	<0.0020	0.0020	8660154
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.240	0.010	8663814	0.012	8663812	0.170	0.010	8663806
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8661129	<0.50	8661129	0.75	0.50	8661129
Acidity (pH 4.5)	mg/L	<0.50	0.50	8661108	<0.50	8660672	<0.50	0.50	8660672
Alkalinity (Total as CaCO3)	mg/L	163	0.50	8662500	904	8662500	181	0.50	8662473
Acidity (pH 8.3)	mg/L	5.53	0.50	8661108	191	8660672	2.10	0.50	8660672
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662500	<0.50	8662500	<0.50	0.50	8662473
Bicarbonate (HCO3)	mg/L	199	0.50	8662500	1100	8662500	220	0.50	8662473
Carbonate (CO3)	mg/L	<0.50	0.50	8662500	<0.50	8662500	<0.50	0.50	8662473
Hydroxide (OH)	mg/L	<0.50	0.50	8662500	<0.50	8662500	<0.50	0.50	8662473
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	92.8	0.50	8663077	<0.50	8663070	35.0	0.50	8663070
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8663073	0.71	8663067	<0.50	0.50	8663067
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	0.0413 (1)	0.0020	8663212	0.0151 (1)	8663212	0.0080 (1)	0.0020	8663209
Total Ammonia (N)	mg/L	0.056	0.0050	8661444	0.27	8661444	0.016	0.0050	8661444
Nitrate plus Nitrite (N)	mg/L	0.0046 (1)	0.0020	8663446	<0.0020 (1)	8663443	<0.0020 (1)	0.0020	8663443
Nitrite (N)	mg/L	0.0053 (1)	0.0020	8663447	<0.0020 (1)	8663445	<0.0020 (1)	0.0020	8663445
Total Phosphorus (P)	mg/L	0.220 (1)	0.0020	8663221	0.0452 (1)	8663218	0.0417 (1)	0.0020	8663215
<b>Physical Properties</b>									
Conductivity	uS/cm	448	1.0	8662510	1510	8662510	414	1.0	8662472
pH	pH	7.98		8662511	7.51	8662511	8.11		8662458
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.									



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5775			RG5776		RG5777		
<b>Sampling Date</b>		2017/06/06 10:26			2017/06/06 11:47		2017/06/06 13:10		
<b>COC Number</b>		08439312			08439312		08439312		
	<b>UNITS</b>	<b>MW16-14D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW16-12D</b>	<b>QC Batch</b>	<b>MW16-16D</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	455 (1)	5.7	8661599	84.7	8661599	40.4	1.0	8661599
RDL = Reportable Detection Limit									
(1) RDL raised due to high concentration of solids in the sample.									

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5778		RG5779		RG5780		
Sampling Date		2017/06/06 14:00		2017/06/06 16:00		2017/06/06 16:27		
COC Number		08439312		08439312		08439312		
	<b>UNITS</b>	<b>MW16-17</b>	<b>QC Batch</b>	<b>MW16-15D</b>	<b>QC Batch</b>	<b>DUP-3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>								
Anion Sum	meq/L	3.0	8660151	4.1	8660151	4.1	N/A	8660151
Cation Sum	meq/L	4.2	8660151	3.9	8660151	3.9	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD	ONSITE	FIELD	ONSITE	FIELD		ONSITE
Ion Balance	N/A	1.4	8660399	0.95	8660399	0.95	0.010	8660399
Ion Balance (% Difference)	%	17	8660149	2.4	8660149	2.7	N/A	8660149
Nitrate (N)	mg/L	0.0283	8660154	<0.0020	8660154	<0.0020	0.0020	8660154
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.540	8663812	0.094	8663812	0.090	0.010	8663812
Dissolved Organic Carbon (C)	mg/L	<0.50	8661129	0.51	8661129	<0.50	0.50	8661129
Acidity (pH 4.5)	mg/L	<0.50	8660672	<0.50	8660672	<0.50	0.50	8661108
Alkalinity (Total as CaCO3)	mg/L	121	8662473	127	8662473	128	0.50	8662500
Acidity (pH 8.3)	mg/L	<0.50	8660672	0.93	8660672	2.07	0.50	8661108
Alkalinity (PP as CaCO3)	mg/L	<0.50	8662473	<0.50	8662473	<0.50	0.50	8662500
Bicarbonate (HCO3)	mg/L	147	8662473	155	8662473	157	0.50	8662500
Carbonate (CO3)	mg/L	<0.50	8662473	<0.50	8662473	<0.50	0.50	8662500
Hydroxide (OH)	mg/L	<0.50	8662473	<0.50	8662473	<0.50	0.50	8662500
<b>Anions</b>								
Dissolved Sulphate (SO4)	mg/L	28.7	8663070	72.8	8663987	73.1	0.50	8663987
Dissolved Chloride (Cl)	mg/L	<0.50	8663067	<0.50	8663067	0.56	0.50	8663067
<b>Nutrients</b>								
Dissolved Phosphorus (P)	mg/L	0.0156 (1)	8663209	0.0383 (1)	8663209	0.0137 (2)	0.0020	8663212
Total Ammonia (N)	mg/L	0.050	8661444	0.026	8661443	0.042	0.0050	8661443
Nitrate plus Nitrite (N)	mg/L	0.0350 (1)	8663443	<0.0020 (1)	8663443	0.0034 (1)	0.0020	8663446
Nitrite (N)	mg/L	0.0067 (1)	8663445	0.0025 (1)	8663445	0.0043 (1)	0.0020	8663447
Total Phosphorus (P)	mg/L	0.0812 (1)	8663215	0.109 (1)	8663215	0.136 (1)	0.0020	8663218
<b>Physical Properties</b>								
Conductivity	uS/cm	271	8662472	373	8662472	375	1.0	8662510
pH	pH	8.26	8662458	8.23	8662458	8.20		8662511
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time. (2) Sample analysed past recommended hold time.								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5778		RG5779		RG5780		
<b>Sampling Date</b>		2017/06/06 14:00		2017/06/06 16:00		2017/06/06 16:27		
<b>COC Number</b>		08439312		08439312		08439312		
	<b>UNITS</b>	<b>MW16-17</b>	<b>QC Batch</b>	<b>MW16-15D</b>	<b>QC Batch</b>	<b>DUP-3</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>								
Total Suspended Solids	mg/L	151 (1)	8661599	226 (1)	8661599	251 (1)	4.0	8661599
RDL = Reportable Detection Limit								
(1) RDL raised due to high concentration of solids in the sample.								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5781			RG5782			RG5783		
<b>Sampling Date</b>		2017/06/06 16:22			2017/06/07 11:40			2017/06/07 12:39		
<b>COC Number</b>		08439312			08439312			08439312		
	<b>UNITS</b>	<b>MW16-15S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-01</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-02</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>										
Anion Sum	meq/L	2.6	N/A	8660151	3.2	N/A	8660151	5.2	N/A	8660151
Cation Sum	meq/L	2.3	N/A	8660151	3.0	N/A	8660151	5.0	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.87	0.010	8660399	0.95	0.010	8660399	0.96	0.010	8660399
Ion Balance (% Difference)	%	6.9	N/A	8660149	2.4	N/A	8660149	1.9	N/A	8660149
Nitrate (N)	mg/L	0.621	0.0020	8660154	0.247	0.0020	8660154	0.423	0.0020	8660154

<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.054	0.010	8663812	0.096	0.010	8663814	0.055	0.010	8663814
Dissolved Organic Carbon (C)	mg/L	1.42	0.50	8661128	1.42	0.50	8661130	2.47	0.50	8661129
Acidity (pH 4.5)	mg/L	<0.50	0.50	8660672	<0.50	0.50	8661108	<0.50	0.50	8661108
Alkalinity (Total as CaCO3)	mg/L	92.1	0.50	8662500	109	0.50	8662500	223	0.50	8662500
Acidity (pH 8.3)	mg/L	7.46	0.50	8660672	<0.50	0.50	8661108	4.30	0.50	8661108
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662500	<0.50	0.50	8662500	5.47	0.50	8662500
Bicarbonate (HCO3)	mg/L	112	0.50	8662500	132	0.50	8662500	259	0.50	8662500
Carbonate (CO3)	mg/L	<0.50	0.50	8662500	<0.50	0.50	8662500	6.56	0.50	8662500
Hydroxide (OH)	mg/L	<0.50	0.50	8662500	<0.50	0.50	8662500	<0.50	0.50	8662500

<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	32.6	0.50	8663070	47.9	0.50	8663077	32.2	0.50	8663077
Dissolved Chloride (Cl)	mg/L	0.75	0.50	8663067	<0.50	0.50	8663073	0.60	0.50	8663073

<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0599 (1)	0.0020	8663212	0.0997 (2)	0.0020	8663212	0.0372 (2)	0.0020	8663212
Total Ammonia (N)	mg/L	0.012	0.0050	8661443	0.014	0.0050	8661443	0.13	0.0050	8661443
Nitrate plus Nitrite (N)	mg/L	0.621 (1)	0.0020	8663443	0.255 (2)	0.0020	8663446	0.431 (2)	0.0020	8663446
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8663445	0.0078 (2)	0.0020	8663447	0.0085 (2)	0.0020	8663447
Total Phosphorus (P)	mg/L	0.809 (3)	0.020	8663218	0.467 (2)	0.0020	8663221	0.626 (4)	0.020	8663221

RDL = Reportable Detection Limit  
N/A = Not Applicable  
(1) Sample arrived to laboratory past recommended hold time.  
(2) Sample analysed past recommended hold time.  
(3) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample arrived to laboratory past recommended hold time.  
(4) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample analysed past recommended hold time.

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5781			RG5782			RG5783		
Sampling Date		2017/06/06 16:22			2017/06/07 11:40			2017/06/07 12:39		
COC Number		08439312			08439312			08439312		
	UNITS	MW16-15S	RDL	QC Batch	MW15-01	RDL	QC Batch	BH95G-02	RDL	QC Batch
<b>Physical Properties</b>										
Conductivity	uS/cm	256	1.0	8662510	307	1.0	8662510	460	1.0	8662510
pH	pH	7.96		8662511	8.21		8662511	8.45		8662511
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	2630 (1)	20	8661599	318 (1)	3.3	8661599	192 (1)	4.0	8661599
RDL = Reportable Detection Limit										
(1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5784			RG5785			RG5786		
Sampling Date		2017/06/07 14:00			2017/06/07 15:05			2017/06/07 17:20		
COC Number		08439312			08439312			08439312		
	<b>UNITS</b>	<b>BH95G-15D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-32</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>										
Anion Sum	meq/L	3.8	N/A	8660151	12	N/A	8660151	3.7	N/A	8660151
Cation Sum	meq/L	3.6	N/A	8660151	12	N/A	8660151	4.1	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.97	0.010	8660399	1.1	0.010	8660399	1.1	0.010	8660399
Ion Balance (% Difference)	%	1.5	N/A	8660149	2.8	N/A	8660149	5.0	N/A	8660149
Nitrate (N)	mg/L	0.581	0.0020	8660154	<0.0020	0.0020	8660154	0.0703	0.0020	8660154
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.140	0.010	8663812	0.093	0.010	8663812	0.036	0.010	8663814
Dissolved Organic Carbon (C)	mg/L	0.89	0.50	8661129	2.01	0.50	8661129	1.05	0.50	8661130
Acidity (pH 4.5)	mg/L	<0.50	0.50	8660672	<0.50	0.50	8660672	<0.50	0.50	8661108
Alkalinity (Total as CaCO3)	mg/L	170	0.50	8662500	347	0.50	8662473	151	0.50	8662500
Acidity (pH 8.3)	mg/L	7.00	0.50	8660672	18.9	0.50	8660672	3.99	0.50	8661108
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662500	<0.50	0.50	8662473	<0.50	0.50	8662500
Bicarbonate (HCO3)	mg/L	207	0.50	8662500	423	0.50	8662473	185	0.50	8662500
Carbonate (CO3)	mg/L	<0.50	0.50	8662500	<0.50	0.50	8662473	<0.50	0.50	8662500
Hydroxide (OH)	mg/L	<0.50	0.50	8662500	<0.50	0.50	8662473	<0.50	0.50	8662500
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	14.4	0.50	8663070	223 (1)	5.0	8663070	34.0	0.50	8663077
Dissolved Chloride (Cl)	mg/L	0.51	0.50	8663067	<0.50	0.50	8663067	<0.50	0.50	8663073
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0676 (2)	0.0020	8663212	0.0213 (2)	0.0020	8663209	0.0321 (2)	0.0020	8663212
Total Ammonia (N)	mg/L	0.018	0.0050	8661443	0.065	0.0050	8661443	0.0062	0.0050	8661443
Nitrate plus Nitrite (N)	mg/L	0.581 (2)	0.0020	8663443	0.0020 (2)	0.0020	8663443	0.0741 (2)	0.0020	8663446
Nitrite (N)	mg/L	<0.0020 (2)	0.0020	8663445	0.0040 (2)	0.0020	8663445	0.0038 (2)	0.0020	8663447
Total Phosphorus (P)	mg/L	0.806 (3)	0.020	8663218	0.159 (2)	0.0020	8663218	0.542 (3)	0.020	8663221
<b>Physical Properties</b>										
Conductivity	uS/cm	351	1.0	8662510	1050	1.0	8662472	352	1.0	8662510
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range. (2) Sample analysed past recommended hold time. (3) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample analysed past recommended hold time.										

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5784			RG5785			RG5786		
Sampling Date		2017/06/07 14:00			2017/06/07 15:05			2017/06/07 17:20		
COC Number		08439312			08439312			08439312		
	UNITS	BH95G-15D	RDL	QC Batch	BH95G-25D	RDL	QC Batch	BH95G-32	RDL	QC Batch
pH	pH	8.23		8662511	8.05		8662458	8.04		8662511
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	1540 (1)	5.7	8661615	621 (1)	6.7	8661615	309 (1)	6.7	8661615
RDL = Reportable Detection Limit (1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

### RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		RG5787			RG5788		RG5789		
Sampling Date		2017/06/08 10:33			2017/06/08 11:15		2017/06/08 13:40		
COC Number		08439312			08439312		08439312		
	UNITS	BH95G-131	RDL	QC Batch	BH95G-22	QC Batch	BH95G-31	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	13	N/A	8660151	3.6	8660151	3.1	N/A	8660151
Cation Sum	meq/L	14	N/A	8660151	3.4	8660151	3.1	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD	ONSITE	FIELD		ONSITE
Ion Balance	N/A	1.1	0.010	8660399	0.95	8660399	1.0	0.010	8660399
Ion Balance (% Difference)	%	4.2	N/A	8660149	2.8	8660149	0.027	N/A	8660149
Nitrate (N)	mg/L	0.0031	0.0020	8660154	0.712	8660154	0.209	0.0020	8660154
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.085	0.010	8663812	0.054	8663812	0.011	0.010	8663812
Dissolved Organic Carbon (C)	mg/L	1.15	0.50	8661129	1.45	8661129	0.52	0.50	8661128
Acidity (pH 4.5)	mg/L	<0.50	0.50	8661108	<0.50	8660672	<0.50	0.50	8660672
Alkalinity (Total as CaCO3)	mg/L	400	0.50	8662500	138	8662473	131	0.50	8662473
Acidity (pH 8.3)	mg/L	38.1	0.50	8661108	8.32	8660672	2.95	0.50	8660672
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662500	<0.50	8662473	<0.50	0.50	8662473
Bicarbonate (HCO3)	mg/L	488	0.50	8662500	168	8662473	159	0.50	8662473
Carbonate (CO3)	mg/L	<0.50	0.50	8662500	<0.50	8662473	<0.50	0.50	8662473
Hydroxide (OH)	mg/L	<0.50	0.50	8662500	<0.50	8662473	<0.50	0.50	8662473
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	222 (1)	5.0	8663070	38.4	8663070	22.8	0.50	8663070
Dissolved Chloride (Cl)	mg/L	0.63	0.50	8663067	0.71	8663067	0.52	0.50	8663067
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	0.0075 (2)	0.0020	8663212	0.152 (3)	8663209	0.0253 (3)	0.0020	8663209
Total Ammonia (N)	mg/L	0.031	0.0050	8661443	0.022	8661443	0.017	0.0050	8661443
Nitrate plus Nitrite (N)	mg/L	0.0031 (3)	0.0020	8663443	0.719 (3)	8663443	0.215 (3)	0.0020	8663443
Nitrite (N)	mg/L	<0.0020 (3)	0.0020	8663445	0.0067 (3)	8663445	0.0051 (3)	0.0020	8663445
Total Phosphorus (P)	mg/L	0.0503 (3)	0.0020	8663218	1.29 (4)	8663218	0.777 (4)	0.020	8663218
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range. (2) Sample arrived to laboratory past recommended hold time. (3) Sample analysed past recommended hold time. (4) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample analysed past recommended hold time.									



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5787			RG5788		RG5789		
<b>Sampling Date</b>		2017/06/08 10:33			2017/06/08 11:15		2017/06/08 13:40		
<b>COC Number</b>		08439312			08439312		08439312		
	<b>UNITS</b>	<b>BH95G-131</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-22</b>	<b>QC Batch</b>	<b>BH95G-31</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>									
Conductivity	uS/cm	1130	1.0	8662510	340	8662472	296	1.0	8662472
pH	pH	8.05		8662511	7.67	8662458	8.03		8662458
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	42.7	1.0	8662082	1110 (1)	8662082	564 (1)	10	8662082
RDL = Reportable Detection Limit (1) RDL raised due to high concentration of solids in the sample.									

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

### RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		RG5790			RG5791			RG5792		
Sampling Date		2017/06/08 13:45			2017/06/08 13:00			2017/06/08 14:00		
COC Number		08439312			08439312			08439312		
	UNITS	FIELD BLANK	RDL	QC Batch	BH95G-33D	RDL	QC Batch	DUP-2	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	0.017	N/A	8660151	4.8	N/A	8660151	3.1	N/A	8660151
Cation Sum	meq/L	0.0040	N/A	8660151	5.2	N/A	8660151	3.1	N/A	8660151
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.23 (1)	0.010	8660399	1.1	0.010	8660399	1.0	0.010	8660399
Ion Balance (% Difference)	%	63	N/A	8660149	4.2	N/A	8660149	0.081	N/A	8660149
Nitrate (N)	mg/L	0.0061	0.0020	8660154	0.252	0.0020	8660154	0.198	0.0020	8660154
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.010	0.010	8663812	0.051	0.010	8663812	0.092	0.010	8663812
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8661128	1.26	0.50	8661129	0.53	0.50	8661130
Acidity (pH 4.5)	mg/L	<0.50	0.50	8660672	<0.50	0.50	8660672	<0.50	0.50	8661108
Alkalinity (Total as CaCO3)	mg/L	0.82	0.50	8662427	168	0.50	8662473	129	0.50	8662500
Acidity (pH 8.3)	mg/L	0.79	0.50	8660672	7.60	0.50	8660672	1.83	0.50	8661108
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662427	<0.50	0.50	8662473	<0.50	0.50	8662500
Bicarbonate (HCO3)	mg/L	1.00	0.50	8662427	205	0.50	8662473	158	0.50	8662500
Carbonate (CO3)	mg/L	<0.50	0.50	8662427	<0.50	0.50	8662473	<0.50	0.50	8662500
Hydroxide (OH)	mg/L	<0.50	0.50	8662427	<0.50	0.50	8662473	<0.50	0.50	8662500
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	<0.50	0.50	8663070	67.6	0.50	8663070	24.3	0.50	8663987
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8663067	<0.50	0.50	8663067	0.62	0.50	8663067
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0021 (2)	0.0020	8663209	0.0417 (2)	0.0020	8663209	0.135 (2)	0.0020	8663212
Total Ammonia (N)	mg/L	<0.0050	0.0050	8661443	0.015	0.0050	8661443	0.029	0.0050	8661443
Nitrate plus Nitrite (N)	mg/L	0.0061 (2)	0.0020	8663443	0.252 (2)	0.0020	8663443	0.203 (2)	0.0020	8663443
Nitrite (N)	mg/L	<0.0020 (2)	0.0020	8663445	<0.0020 (2)	0.0020	8663445	0.0054 (2)	0.0020	8663445
Total Phosphorus (P)	mg/L	<0.0020 (2)	0.0020	8663218	0.494 (2)	0.0020	8663218	0.818 (3)	0.020	8663218
RDL = Reportable Detection Limit N/A = Not Applicable (1) Ion balance out of optimal range due to high measurement uncertainty at this level (Ion Sum < 0.4 meq/L for both cations and anions). (2) Sample analysed past recommended hold time. (3) Detection limits raised due to dilution to bring analyte within the calibrated range. Sample analysed past recommended hold time.										

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RG5790			RG5791			RG5792		
Sampling Date		2017/06/08 13:45			2017/06/08 13:00			2017/06/08 14:00		
COC Number		08439312			08439312			08439312		
	UNITS	FIELD BLANK	RDL	QC Batch	BH95G-33D	RDL	QC Batch	DUP-2	RDL	QC Batch
<b>Physical Properties</b>										
Conductivity	uS/cm	1.1	1.0	8662426	448	1.0	8662472	294	1.0	8662510
pH	pH	5.40		8662423	8.05		8662458	8.22		8662511
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	<1.0	1.0	8662082	340 (1)	10	8662082	558 (1)	4.0	8662082
RDL = Reportable Detection Limit										
(1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5793		
<b>Sampling Date</b>		2017/06/10 15:29		
<b>COC Number</b>		08439312		
	<b>UNITS</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Anion Sum	meq/L	0.019	N/A	8660151
Cation Sum	meq/L	0.0017	N/A	8660151
Ion Balance	N/A	0.089 (1)	0.010	8660399
Ion Balance (% Difference)	%	84	N/A	8660149
Nitrate (N)	mg/L	<0.0020	0.0020	8660154
<b>Misc. Inorganics</b>				
Fluoride (F)	mg/L	<0.010	0.010	8663812
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8661130
Acidity (pH 4.5)	mg/L	<0.50	0.50	8661108
Alkalinity (Total as CaCO3)	mg/L	0.95	0.50	8662427
Acidity (pH 8.3)	mg/L	<0.50	0.50	8661108
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8662427
Bicarbonate (HCO3)	mg/L	1.16	0.50	8662427
Carbonate (CO3)	mg/L	<0.50	0.50	8662427
Hydroxide (OH)	mg/L	<0.50	0.50	8662427
<b>Anions</b>				
Dissolved Sulphate (SO4)	mg/L	<0.50	0.50	8663077
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8663073
<b>Nutrients</b>				
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0020	8663212
Total Ammonia (N)	mg/L	<0.0050	0.0050	8661443
Nitrate plus Nitrite (N)	mg/L	<0.0020	0.0020	8663446
Nitrite (N)	mg/L	<0.0020	0.0020	8663447
Total Phosphorus (P)	mg/L	<0.0020	0.0020	8663218
<b>Physical Properties</b>				
Conductivity	uS/cm	1.0	1.0	8662426
pH	pH	5.76		8662423
RDL = Reportable Detection Limit N/A = Not Applicable (1) Ion balance out of optimal range due to high measurement uncertainty at this level (Ion Sum < 0.4 meq/L for both cations and anions).				

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RG5793		
<b>Sampling Date</b>		2017/06/10 15:29		
<b>COC Number</b>		08439312		
	<b>UNITS</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>				
Total Suspended Solids	mg/L	<1.0	1.0	8662082
RDL = Reportable Detection Limit				

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5766		RG5767	RG5768	RG5769		
Sampling Date		2017/06/05 12:42		2017/06/05 13:30	2017/06/05 14:40	2017/06/05 15:10		
COC Number		08439312		08439312	08439312	08439312		
	<b>UNITS</b>	<b>MW15-03S</b>	<b>QC Batch</b>	<b>MW15-03D</b>	<b>MW15-04S</b>	<b>MW15-04D</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	151	8660147	198	124	143	0.50	8660147
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.000020	8662931	<0.000020	<0.000020	<0.000020	0.000020	8662931
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00885	8660659	0.00980	0.00456	0.00216	0.00050	8660659
Dissolved Antimony (Sb)	mg/L	0.000026	8660659	0.000064	0.000021	<0.000020	0.000020	8660659
Dissolved Arsenic (As)	mg/L	0.000150	8660659	0.00210	0.000210	0.00141	0.000020	8660659
Dissolved Barium (Ba)	mg/L	0.0510	8660659	0.0436	0.0740	0.0477	0.000020	8660659
Dissolved Beryllium (Be)	mg/L	<0.000010	8660659	<0.000010	<0.000010	<0.000010	0.000010	8660659
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8660659	<0.0000050	<0.0000050	<0.0000050	0.0000050	8660659
Dissolved Boron (B)	mg/L	<0.010	8660659	<0.010	<0.010	<0.010	0.010	8660659
Dissolved Cadmium (Cd)	mg/L	0.0000120	8660659	<0.0000050	0.0000090	0.0000120	0.0000050	8660659
Dissolved Chromium (Cr)	mg/L	0.00011	8660659	<0.00010	0.00027	<0.00010	0.00010	8660659
Dissolved Cobalt (Co)	mg/L	0.0000340	8660659	0.0000380	0.0000050	0.000222	0.0000050	8660659
Dissolved Copper (Cu)	mg/L	0.000346	8660659	<0.000050	0.000842	<0.000050	0.000050	8660659
Dissolved Iron (Fe)	mg/L	0.0107	8660659	0.594	0.0019	0.222	0.0010	8660659
Dissolved Lead (Pb)	mg/L	0.0000140	8660659	0.0000150	0.0000150	0.0000090	0.0000050	8660659
Dissolved Lithium (Li)	mg/L	0.00131	8660659	0.00630	<0.00050	0.00077	0.00050	8660659
Dissolved Manganese (Mn)	mg/L	0.00471	8660659	0.0516	0.00121	0.138	0.000050	8660659
Dissolved Molybdenum (Mo)	mg/L	0.000761	8660659	0.00275 (1)	0.00106 (1)	0.00387 (1)	0.000050	8665539
Dissolved Nickel (Ni)	mg/L	0.000804	8660659	0.000132	0.000074	0.000454	0.000020	8660659
Dissolved Phosphorus (P)	mg/L	0.0043	8660659	0.0069	0.0046	0.0099	0.0020	8660659
Dissolved Selenium (Se)	mg/L	0.000321	8660659	<0.000040	0.000796	0.000047	0.000040	8660659
Dissolved Silicon (Si)	mg/L	2.95	8660659	4.38	3.12	2.66	0.050	8660659
Dissolved Silver (Ag)	mg/L	0.0000050	8660659	<0.0000050	<0.0000050	<0.0000050	0.0000050	8660659
Dissolved Strontium (Sr)	mg/L	0.155	8660659	0.238	0.151	0.186	0.000050	8660659
Dissolved Thallium (Tl)	mg/L	0.0000060	8660659	<0.0000020	<0.0000020	<0.0000020	0.0000020	8660659
Dissolved Tin (Sn)	mg/L	<0.00020	8660659	<0.00020	<0.00020	<0.00020	0.00020	8660659
Dissolved Titanium (Ti)	mg/L	<0.00050	8660659	<0.00050	<0.00050	<0.00050	0.00050	8660659
Dissolved Uranium (U)	mg/L	0.000844	8660659	0.00268	0.000620	0.00132	0.0000020	8660659

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5766		RG5767	RG5768	RG5769		
Sampling Date		2017/06/05 12:42		2017/06/05 13:30	2017/06/05 14:40	2017/06/05 15:10		
COC Number		08439312		08439312	08439312	08439312		
	UNITS	MW15-03S	QC Batch	MW15-03D	MW15-04S	MW15-04D	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	8660659	<0.00020	<0.00020	<0.00020	0.00020	8660659
Dissolved Zinc (Zn)	mg/L	0.00037	8660659	0.00058	0.00045	0.00072	0.00010	8660659
Dissolved Zirconium (Zr)	mg/L	<0.00010	8660659	0.00064	<0.00010	<0.00010	0.00010	8660659
Dissolved Calcium (Ca)	mg/L	52.2	8660152	52.8	43.7	48.9	0.050	8660152
Dissolved Magnesium (Mg)	mg/L	5.06	8660152	16.1	3.60	5.17	0.050	8660152
Dissolved Potassium (K)	mg/L	1.05	8660152	2.52	1.24	2.48	0.050	8660152
Dissolved Sodium (Na)	mg/L	0.610	8660152	1.59	1.06	1.57	0.050	8660152
Dissolved Sulphur (S)	mg/L	4.2	8660152	6.9	3.2	5.9	3.0	8660152
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5770		RG5771	RG5772		
Sampling Date		2017/06/05 16:15		2017/06/05 16:30	2017/06/05 17:39		
COC Number		08439312		08439312	08439312		
	UNITS	MW15-07D	QC Batch	MW15-07S	MW15-09S	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	197	8660147	198	226	0.50	8660147
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.000020	8662931	<0.000020	<0.000020	0.000020	8662939
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00143	8660659	0.00997	0.00845	0.00050	8660659
Dissolved Antimony (Sb)	mg/L	<0.000020	8660659	<0.000020	0.000192	0.000020	8660659
Dissolved Arsenic (As)	mg/L	0.000028	8660659	0.00167	0.000309	0.000020	8660659
Dissolved Barium (Ba)	mg/L	0.0349	8660659	0.0310	0.191	0.000020	8660659
Dissolved Beryllium (Be)	mg/L	<0.000010	8660659	<0.000010	<0.000010	0.000010	8660659
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8660659	<0.0000050	<0.0000050	0.0000050	8660659
Dissolved Boron (B)	mg/L	<0.010	8660659	<0.010	<0.010	0.010	8660659
Dissolved Cadmium (Cd)	mg/L	<0.0000050	8660659	0.0000100	0.0000400	0.0000050	8660659
Dissolved Chromium (Cr)	mg/L	<0.000010	8660659	<0.000010	<0.000010	0.000010	8660659
Dissolved Cobalt (Co)	mg/L	<0.0000050	8660659	0.0000810	0.000141	0.0000050	8660659
Dissolved Copper (Cu)	mg/L	<0.000050	8660659	0.000096	0.000083	0.000050	8660659
Dissolved Iron (Fe)	mg/L	0.423	8660659	0.398	0.0136	0.0010	8660659
Dissolved Lead (Pb)	mg/L	0.0000050	8660659	0.0000330	0.0000220	0.0000050	8660659
Dissolved Lithium (Li)	mg/L	0.0117	8660659	0.00653	0.00318	0.00050	8660659
Dissolved Manganese (Mn)	mg/L	0.0515	8660659	0.160	0.0383	0.000050	8660659
Dissolved Molybdenum (Mo)	mg/L	<0.000050	8660659	0.000238	0.00461	0.000050	8660659
Dissolved Nickel (Ni)	mg/L	<0.000020	8660659	0.000209	0.000659	0.000020	8660659
Dissolved Phosphorus (P)	mg/L	0.0034	8660659	0.0073	0.0021	0.0020	8660659
Dissolved Selenium (Se)	mg/L	<0.000040	8660659	<0.000040	0.00202	0.000040	8660659
Dissolved Silicon (Si)	mg/L	7.22	8660659	6.37	4.00	0.050	8660659
Dissolved Silver (Ag)	mg/L	<0.0000050	8660659	<0.0000050	<0.0000050	0.0000050	8660659
Dissolved Strontium (Sr)	mg/L	0.288	8660659	0.269	0.257	0.000050	8660659
Dissolved Thallium (Tl)	mg/L	<0.0000020	8660659	<0.0000020	<0.0000020	0.0000020	8660659
Dissolved Tin (Sn)	mg/L	<0.000020	8660659	<0.000020	<0.000020	0.000020	8660659
Dissolved Titanium (Ti)	mg/L	<0.000050	8660659	<0.000050	<0.000050	0.000050	8660659
Dissolved Uranium (U)	mg/L	0.00113	8660659	0.00175	0.00431	0.0000020	8660659
Dissolved Vanadium (V)	mg/L	<0.000020	8660659	<0.000020	<0.000020	0.000020	8660659
RDL = Reportable Detection Limit							



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5770		RG5771	RG5772		
Sampling Date		2017/06/05 16:15		2017/06/05 16:30	2017/06/05 17:39		
COC Number		08439312		08439312	08439312		
	UNITS	MW15-07D	QC Batch	MW15-07S	MW15-09S	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00023	8660659	0.00103	0.00097	0.00010	8660659
Dissolved Zirconium (Zr)	mg/L	0.00015	8660659	<0.00010	<0.00010	0.00010	8660659
Dissolved Calcium (Ca)	mg/L	57.9	8660152	60.2	72.5	0.050	8660152
Dissolved Magnesium (Mg)	mg/L	12.8	8660152	11.5	10.9	0.050	8660152
Dissolved Potassium (K)	mg/L	1.46	8660152	1.49	1.75	0.050	8660152
Dissolved Sodium (Na)	mg/L	4.12	8660152	3.98	2.18	0.050	8660152
Dissolved Sulphur (S)	mg/L	9.8	8660152	12.0	5.8	3.0	8660152
RDL = Reportable Detection Limit							

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5773	RG5774		RG5775	RG5776		
Sampling Date		2017/06/06 09:39	2017/06/06 10:04		2017/06/06 10:26	2017/06/06 11:47		
COC Number		08439312	08439312		08439312	08439312		
	UNITS	MW15-10D	DUP-1	RDL	MW16-14D	MW16-12D	RDL	QC Batch

Misc. Inorganics								
Dissolved Hardness (CaCO3)	mg/L	1800	1860	0.50	243	820	0.50	8660147

Elements								
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	0.000020	<0.000020	<0.000020	0.000020	8662939

Dissolved Metals by ICPMS								
Dissolved Aluminum (Al)	mg/L	0.254	0.271	0.0025	0.00445	0.00215	0.00050	8660659
Dissolved Antimony (Sb)	mg/L	<0.00010	<0.00010	0.00010	<0.000020	<0.000020	0.000020	8660659
Dissolved Arsenic (As)	mg/L	0.00043	0.00037	0.00010	0.00371	0.000032	0.000020	8660659
Dissolved Barium (Ba)	mg/L	0.356	0.367	0.00010	0.0173	2.48	0.000020	8660659
Dissolved Beryllium (Be)	mg/L	0.00115	0.00116	0.000050	<0.000010	0.000096	0.000010	8660659
Dissolved Bismuth (Bi)	mg/L	<0.000025	<0.000025	0.000025	<0.0000050	<0.0000050	0.0000050	8660659
Dissolved Boron (B)	mg/L	<0.050	<0.050	0.050	<0.010	0.012	0.010	8660659
Dissolved Cadmium (Cd)	mg/L	<0.000025	<0.000025	0.000025	0.0000220	0.0000280	0.0000050	8660659
Dissolved Chromium (Cr)	mg/L	<0.00050	<0.00050	0.00050	<0.00010	<0.00010	0.00010	8660659
Dissolved Cobalt (Co)	mg/L	0.000138	0.000137	0.000025	0.000156	<0.0000050	0.0000050	8660659
Dissolved Copper (Cu)	mg/L	<0.00025	<0.00025	0.00025	0.000068	<0.000050	0.000050	8660659
Dissolved Iron (Fe)	mg/L	25.5	26.1	0.0050	0.0306	3.57	0.0010	8660659
Dissolved Lead (Pb)	mg/L	0.000213	0.000184	0.000025	0.0000130	0.0000090	0.0000050	8660659
Dissolved Lithium (Li)	mg/L	0.246	0.259	0.0025	0.00272	0.408	0.00050	8660659
Dissolved Manganese (Mn)	mg/L	4.68	4.69	0.00025	0.305	0.248	0.000050	8660659
Dissolved Molybdenum (Mo)	mg/L	<0.00025	<0.00025	0.00025	0.000315	<0.000050	0.000050	8660659
Dissolved Nickel (Ni)	mg/L	0.00040	0.00046	0.00010	0.000677	<0.000020	0.000020	8660659
Dissolved Phosphorus (P)	mg/L	<0.010	<0.010	0.010	0.0024	0.0052	0.0020	8660659
Dissolved Selenium (Se)	mg/L	<0.00020	<0.00020	0.00020	<0.000040	<0.000040	0.000040	8660659
Dissolved Silicon (Si)	mg/L	34.5	35.9	0.25	4.45	15.4	0.050	8660659
Dissolved Silver (Ag)	mg/L	<0.000025	<0.000025	0.000025	<0.0000050	0.0000630	0.0000050	8660659
Dissolved Strontium (Sr)	mg/L	2.41	2.43	0.00025	0.329	1.91	0.000050	8660659
Dissolved Thallium (Tl)	mg/L	<0.000010	<0.000010	0.000010	<0.0000020	<0.0000020	0.0000020	8660659
Dissolved Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	<0.00020	<0.00020	0.00020	8660659
Dissolved Titanium (Ti)	mg/L	<0.0025	<0.0025	0.0025	<0.00050	0.00100	0.00050	8660659
Dissolved Uranium (U)	mg/L	0.000265	0.000262	0.000010	0.00447	0.000273	0.0000020	8660659
Dissolved Vanadium (V)	mg/L	0.0019	0.0019	0.0010	<0.00020	<0.00020	0.00020	8660659

RDL = Reportable Detection Limit

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5773	RG5774		RG5775	RG5776		
Sampling Date		2017/06/06 09:39	2017/06/06 10:04		2017/06/06 10:26	2017/06/06 11:47		
COC Number		08439312	08439312		08439312	08439312		
	UNITS	MW15-10D	DUP-1	RDL	MW16-14D	MW16-12D	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00345	0.00285	0.00050	0.00174	0.00117	0.00010	8660659
Dissolved Zirconium (Zr)	mg/L	0.00168	0.00168	0.00050	<0.00010	0.0351	0.00010	8660659
Dissolved Calcium (Ca)	mg/L	597	622	0.25	86.9	178	0.050	8660152
Dissolved Magnesium (Mg)	mg/L	74.8	74.9	0.25	6.32	91.4	0.050	8660152
Dissolved Potassium (K)	mg/L	7.73	7.74	0.25	2.12	10.8	0.050	8660152
Dissolved Sodium (Na)	mg/L	21.4	21.1	0.25	2.79	31.0	0.050	8660152
Dissolved Sulphur (S)	mg/L	<15	<15	15	29.8	<3.0	3.0	8660152
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5777	RG5778	RG5779	RG5780	RG5781		
Sampling Date		2017/06/06 13:10	2017/06/06 14:00	2017/06/06 16:00	2017/06/06 16:27	2017/06/06 16:22		
COC Number		08439312	08439312	08439312	08439312	08439312		
	<b>UNITS</b>	<b>MW16-16D</b>	<b>MW16-17</b>	<b>MW16-15D</b>	<b>DUP-3</b>	<b>MW16-15S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	222	202	186	187	108	0.50	8660147
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000085	0.0000020	8662939
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00276	0.0188	0.00325	0.00833	0.00511	0.00050	8660659
Dissolved Antimony (Sb)	mg/L	0.000022	0.000227	0.000062	0.000070	0.000112	0.000020	8660659
Dissolved Arsenic (As)	mg/L	0.000103	0.00131	0.0169	0.0169	0.000182	0.000020	8660659
Dissolved Barium (Ba)	mg/L	0.0368	0.0824	0.0318	0.0331	0.0591	0.000020	8660659
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8660659
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8660659
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8660659
Dissolved Cadmium (Cd)	mg/L	0.0000050	<0.0000050	<0.0000050	0.0000060	0.00170	0.0000050	8660659
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00064	<0.00010	<0.00010	<0.00010	0.00010	8660659
Dissolved Cobalt (Co)	mg/L	0.0000080	0.000194	0.0000440	0.0000480	0.0000440	0.0000050	8660659
Dissolved Copper (Cu)	mg/L	<0.000050	0.000924	<0.000050	0.000090	0.00327	0.000050	8660659
Dissolved Iron (Fe)	mg/L	0.580	0.0092	0.531	0.519	0.0155	0.0010	8660659
Dissolved Lead (Pb)	mg/L	0.0000250	0.0000060	<0.0000050	0.0000350	0.000387	0.0000050	8660659
Dissolved Lithium (Li)	mg/L	0.00542	0.00225	0.00289	0.00299	0.00182	0.00050	8660659
Dissolved Manganese (Mn)	mg/L	0.0473	0.0496	0.115	0.117	0.00396	0.000050	8660659
Dissolved Molybdenum (Mo)	mg/L	0.000877	0.00285	0.000610	0.000639	0.000319	0.000050	8660659
Dissolved Nickel (Ni)	mg/L	0.000042	0.000719	0.000086	0.000139	0.00203	0.000020	8660659
Dissolved Phosphorus (P)	mg/L	0.0033	0.0209	0.0042	0.0045	0.0037	0.0020	8660659
Dissolved Selenium (Se)	mg/L	<0.000040	0.000292	<0.000040	<0.000040	0.00225	0.000040	8660659
Dissolved Silicon (Si)	mg/L	3.86	3.63	2.73	3.02	2.87	0.050	8660659
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000210	0.0000050	8660659
Dissolved Strontium (Sr)	mg/L	0.272	0.265	0.170	0.174	0.0989	0.000050	8660659
Dissolved Thallium (Tl)	mg/L	<0.0000020	0.0000020	<0.0000020	<0.0000020	0.0000060	0.0000020	8660659
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8660659
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	0.00079	<0.00050	0.00050	8660659
Dissolved Uranium (U)	mg/L	0.00365	0.00310	0.00341	0.00348	0.00194	0.0000020	8660659
Dissolved Vanadium (V)	mg/L	<0.00020	0.00059	<0.00020	<0.00020	<0.00020	0.00020	8660659
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5777	RG5778	RG5779	RG5780	RG5781		
Sampling Date		2017/06/06 13:10	2017/06/06 14:00	2017/06/06 16:00	2017/06/06 16:27	2017/06/06 16:22		
COC Number		08439312	08439312	08439312	08439312	08439312		
	UNITS	MW16-16D	MW16-17	MW16-15D	DUP-3	MW16-15S	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00105	0.00027	0.00058	0.00190	0.110	0.00010	8660659
Dissolved Zirconium (Zr)	mg/L	0.00023	0.00012	0.00014	0.00016	<0.00010	0.00010	8660659
Dissolved Calcium (Ca)	mg/L	76.1	69.8	60.9	60.6	34.8	0.050	8660152
Dissolved Magnesium (Mg)	mg/L	7.65	6.78	8.25	8.68	5.19	0.050	8660152
Dissolved Potassium (K)	mg/L	2.62	1.72	2.47	2.58	1.97	0.050	8660152
Dissolved Sodium (Na)	mg/L	2.44	3.56	1.57	1.57	0.807	0.050	8660152
Dissolved Sulphur (S)	mg/L	11.9	9.7	21.1	22.8	11.2	3.0	8660152
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		RG5782	RG5783		RG5784		
<b>Sampling Date</b>		2017/06/07 11:40	2017/06/07 12:39		2017/06/07 14:00		
<b>COC Number</b>		08439312	08439312		08439312		
	<b>UNITS</b>	<b>MW15-01</b>	<b>BH95G-02</b>	<b>QC Batch</b>	<b>BH95G-15D</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	150	247	8660147	178	0.50	8660147
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	8662939	<0.0000020	0.0000020	8662939
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.0129	0.00294	8660673	<0.00050	0.00050	8660673
Dissolved Antimony (Sb)	mg/L	0.000033	0.000022	8660673	0.000047	0.000020	8660673
Dissolved Arsenic (As)	mg/L	0.000237	0.000091	8660673	0.000115	0.000020	8660673
Dissolved Barium (Ba)	mg/L	0.0146	0.0258	8660673	0.0797	0.000020	8660673
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	8660673	<0.000010	0.000010	8660673
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	8660673	<0.0000050	0.0000050	8660673
Dissolved Boron (B)	mg/L	<0.010	<0.010	8660673	<0.010	0.010	8660673
Dissolved Cadmium (Cd)	mg/L	0.0000130	0.00149	8660673	0.0000530	0.0000050	8660673
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	8660673	0.00013	0.00010	8660673
Dissolved Cobalt (Co)	mg/L	0.0000280	0.0000160	8660673	0.0000060	0.0000050	8660673
Dissolved Copper (Cu)	mg/L	0.000694	0.00153	8660673	0.000377	0.000050	8660673
Dissolved Iron (Fe)	mg/L	0.0236	0.0079	8660673	<0.0010	0.0010	8660673
Dissolved Lead (Pb)	mg/L	0.000241	0.0000520	8660673	0.0000420	0.0000050	8660673
Dissolved Lithium (Li)	mg/L	0.00143	0.00137	8660673	0.00261	0.00050	8660673
Dissolved Manganese (Mn)	mg/L	0.00112	0.000684	8660673	0.00157	0.000050	8660673
Dissolved Molybdenum (Mo)	mg/L	0.000679	0.00140	8660673	0.00297 (1)	0.000050	8665539
Dissolved Nickel (Ni)	mg/L	0.000325	0.000609	8660673	0.000286	0.000020	8660673
Dissolved Phosphorus (P)	mg/L	0.0032	0.0065	8660673	0.0143	0.0020	8660673
Dissolved Selenium (Se)	mg/L	0.000417	0.00384	8660673	0.00310	0.000040	8660673
Dissolved Silicon (Si)	mg/L	1.64	2.38	8660673	2.63	0.050	8660673
Dissolved Silver (Ag)	mg/L	0.0000110	0.0000070	8660673	<0.0000050	0.0000050	8660673
Dissolved Strontium (Sr)	mg/L	0.131	0.189	8660673	0.175	0.000050	8660673
Dissolved Thallium (Tl)	mg/L	0.0000020	<0.0000020	8660673	0.0000050	0.0000020	8660673
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	8660673	<0.00020	0.00020	8660673
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	8660673	<0.00050	0.00050	8660673
Dissolved Uranium (U)	mg/L	0.00135	0.00191	8660673	0.00328	0.0000020	8660673

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5782	RG5783		RG5784		
Sampling Date		2017/06/07 11:40	2017/06/07 12:39		2017/06/07 14:00		
COC Number		08439312	08439312		08439312		
	UNITS	MW15-01	BH95G-02	QC Batch	BH95G-15D	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	8660673	<0.00020	0.00020	8660673
Dissolved Zinc (Zn)	mg/L	0.00124	0.0205	8660673	0.00129	0.00010	8660673
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	8660673	<0.00010	0.00010	8660673
Dissolved Calcium (Ca)	mg/L	50.0	57.7	8660152	62.9	0.050	8660152
Dissolved Magnesium (Mg)	mg/L	6.02	25.0	8660152	5.11	0.050	8660152
Dissolved Potassium (K)	mg/L	0.468	0.366	8660152	1.63	0.050	8660152
Dissolved Sodium (Na)	mg/L	0.816	0.614	8660152	0.909	0.050	8660152
Dissolved Sulphur (S)	mg/L	16.3	10.5	8660152	4.7	3.0	8660152
RDL = Reportable Detection Limit							

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5785	RG5786	RG5787	RG5788	RG5789		
Sampling Date		2017/06/07 15:05	2017/06/07 17:20	2017/06/08 10:33	2017/06/08 11:15	2017/06/08 13:40		
COC Number		08439312	08439312	08439312	08439312	08439312		
	<b>UNITS</b>	<b>BH95G-25D</b>	<b>BH95G-32</b>	<b>BH95G-131</b>	<b>BH95G-22</b>	<b>BH95G-31</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	599	199	676	168	150	0.50	8660147
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8662939
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00118	0.00175	0.00280	0.00373	0.00235	0.00050	8660673
Dissolved Antimony (Sb)	mg/L	0.000104	0.000029	0.000470	0.000102	0.000035	0.000020	8660673
Dissolved Arsenic (As)	mg/L	0.00102	0.000216	0.00328	0.000073	0.000072	0.000020	8660673
Dissolved Barium (Ba)	mg/L	0.0214	0.165	0.0157	0.109	0.124	0.000020	8660673
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8660673
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8660673
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8660673
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.0000210	0.0000120	0.000117	0.0000210	0.0000050	8660673
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	8660673
Dissolved Cobalt (Co)	mg/L	0.000290	0.000160	0.0000240	0.0000180	0.0000140	0.0000050	8660673
Dissolved Copper (Cu)	mg/L	<0.000050	0.000151	<0.000050	0.000681	0.000593	0.000050	8660673
Dissolved Iron (Fe)	mg/L	0.971	0.0952	1.50	0.0110	0.0023	0.0010	8660673
Dissolved Lead (Pb)	mg/L	0.0000070	0.0000110	0.000325	0.0000410	0.0000470	0.0000050	8660673
Dissolved Lithium (Li)	mg/L	0.0132	0.00146	0.0149	0.00179	0.00119	0.00050	8660673
Dissolved Manganese (Mn)	mg/L	0.415	0.0750	0.157	0.00141	0.000506	0.000050	8660673
Dissolved Molybdenum (Mo)	mg/L	0.000285	0.000625	0.000067	0.000200	0.00146	0.000050	8660673
Dissolved Nickel (Ni)	mg/L	0.000400	0.000431	0.000074	0.000185	0.000348	0.000020	8660673
Dissolved Phosphorus (P)	mg/L	0.0026	<0.0020	0.0180	0.0030	0.0032	0.0020	8660673
Dissolved Selenium (Se)	mg/L	<0.000040	0.000304	<0.000040	0.000556	0.00175	0.000040	8660673
Dissolved Silicon (Si)	mg/L	5.18	2.42	9.35	2.81	2.68	0.050	8660673
Dissolved Silver (Ag)	mg/L	0.0000050	<0.0000050	0.0000210	0.0000060	<0.0000050	0.0000050	8660673
Dissolved Strontium (Sr)	mg/L	0.521	0.273	0.743	0.146	0.170	0.000050	8660673
Dissolved Thallium (Tl)	mg/L	<0.0000020	0.0000030	0.0000040	<0.0000020	<0.0000020	0.0000020	8660673
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8660673
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	0.00053	<0.00050	<0.00050	0.00050	8660673
Dissolved Uranium (U)	mg/L	0.00706	0.00117	0.0170	0.00219	0.000991	0.0000020	8660673
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8660673

RDL = Reportable Detection Limit



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5785	RG5786	RG5787	RG5788	RG5789		
Sampling Date		2017/06/07 15:05	2017/06/07 17:20	2017/06/08 10:33	2017/06/08 11:15	2017/06/08 13:40		
COC Number		08439312	08439312	08439312	08439312	08439312		
	UNITS	BH95G-25D	BH95G-32	BH95G-131	BH95G-22	BH95G-31	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00743	0.00056	0.00365	0.00582	0.00110	0.00010	8660673
Dissolved Zirconium (Zr)	mg/L	0.00257	<0.00010	0.0105	<0.00010	<0.00010	0.00010	8660673
Dissolved Calcium (Ca)	mg/L	146	72.7	169	52.3	55.3	0.050	8660152
Dissolved Magnesium (Mg)	mg/L	56.8	4.34	61.7	9.02	2.99	0.050	8660152
Dissolved Potassium (K)	mg/L	4.28	4.56	3.89	1.26	2.69	0.050	8660152
Dissolved Sodium (Na)	mg/L	2.12	0.727	1.79	0.955	0.965	0.050	8660152
Dissolved Sulphur (S)	mg/L	84.4	11.4	83.2	13.0	7.4	3.0	8660152
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5790		RG5791	RG5792	RG5793		
Sampling Date		2017/06/08 13:45		2017/06/08 13:00	2017/06/08 14:00	2017/06/10 15:29		
COC Number		08439312		08439312	08439312	08439312		
	UNITS	FIELD BLANK	QC Batch	BH95G-33D	DUP-2	TRIP BLANK	RDL	QC Batch
<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	<0.50	8660147	258	151	<0.50	0.50	8660147
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.000020	8662939	<0.000020	<0.000020	<0.000020	0.000020	8663261
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	<0.00050	8660659	0.00112	0.00576	<0.00050	0.00050	8660659
Dissolved Antimony (Sb)	mg/L	<0.000020	8660659	0.000044	0.000027	<0.000020	0.000020	8660659
Dissolved Arsenic (As)	mg/L	<0.000020	8660659	0.000211	0.000078	<0.000020	0.000020	8660659
Dissolved Barium (Ba)	mg/L	<0.000020	8660659	0.0900	0.125	<0.000020	0.000020	8660659
Dissolved Beryllium (Be)	mg/L	<0.000010	8660659	<0.000010	<0.000010	<0.000010	0.000010	8660659
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8660659	<0.0000050	<0.0000050	<0.0000050	0.0000050	8660659
Dissolved Boron (B)	mg/L	<0.010	8660659	<0.010	<0.010	<0.010	0.010	8660659
Dissolved Cadmium (Cd)	mg/L	<0.0000050	8660659	0.0000100	0.0000210	<0.0000050	0.0000050	8660659
Dissolved Chromium (Cr)	mg/L	<0.00010	8660659	<0.00010	0.00010	<0.00010	0.00010	8660659
Dissolved Cobalt (Co)	mg/L	<0.0000050	8660659	0.0000060	0.0000170	<0.0000050	0.0000050	8660659
Dissolved Copper (Cu)	mg/L	<0.000050	8660659	0.000156	0.000445	<0.000050	0.000050	8660659
Dissolved Iron (Fe)	mg/L	<0.0010	8660659	0.0012	0.0031	<0.0010	0.0010	8660659
Dissolved Lead (Pb)	mg/L	<0.0000050	8660659	0.0000080	0.0000340	<0.0000050	0.0000050	8660659
Dissolved Lithium (Li)	mg/L	<0.00050	8660659	0.00134	0.00116	<0.00050	0.00050	8660659
Dissolved Manganese (Mn)	mg/L	<0.000050	8660659	0.00182	0.000468	<0.000050	0.000050	8660659
Dissolved Molybdenum (Mo)	mg/L	<0.000050	8660659	0.00134	0.00146	<0.000050	0.000050	8660659
Dissolved Nickel (Ni)	mg/L	<0.000020	8660659	0.00115	0.000364	<0.000020	0.000020	8660659
Dissolved Phosphorus (P)	mg/L	<0.0020	8660659	0.0029	0.0233	<0.0020	0.0020	8660659
Dissolved Selenium (Se)	mg/L	<0.000040	8660659	0.00496	0.00167	<0.000040	0.000040	8660659
Dissolved Silicon (Si)	mg/L	<0.050	8660659	2.88	2.76	<0.050	0.050	8660659
Dissolved Silver (Ag)	mg/L	<0.0000050	8660659	<0.0000050	<0.0000050	<0.0000050	0.0000050	8660659
Dissolved Strontium (Sr)	mg/L	0.000073	8660659	0.236	0.171	<0.000050	0.000050	8660659
Dissolved Thallium (Tl)	mg/L	<0.0000020	8660659	<0.0000020	<0.0000020	<0.0000020	0.0000020	8660659
Dissolved Tin (Sn)	mg/L	<0.00020	8660659	<0.00020	<0.00020	<0.00020	0.00020	8660659
Dissolved Titanium (Ti)	mg/L	<0.00050	8660659	<0.00050	<0.00050	<0.00050	0.00050	8660659
Dissolved Uranium (U)	mg/L	<0.0000020	8660659	0.00469	0.00100	<0.0000020	0.0000020	8660659
Dissolved Vanadium (V)	mg/L	<0.00020	8660659	<0.00020	<0.00020	<0.00020	0.00020	8660659
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RG5790		RG5791	RG5792	RG5793		
Sampling Date		2017/06/08 13:45		2017/06/08 13:00	2017/06/08 14:00	2017/06/10 15:29		
COC Number		08439312		08439312	08439312	08439312		
	UNITS	FIELD BLANK	QC Batch	BH95G-33D	DUP-2	TRIP BLANK	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	<0.00010	8660659	0.00057	0.00116	<0.00010	0.00010	8660659
Dissolved Zirconium (Zr)	mg/L	<0.00010	8660659	<0.00010	<0.00010	<0.00010	0.00010	8660659
Dissolved Calcium (Ca)	mg/L	<0.050	8660152	86.8	55.7	<0.050	0.050	8660152
Dissolved Magnesium (Mg)	mg/L	<0.050	8660152	9.92	2.87	<0.050	0.050	8660152
Dissolved Potassium (K)	mg/L	<0.050	8660152	0.978	2.68	<0.050	0.050	8660152
Dissolved Sodium (Na)	mg/L	<0.050	8660152	0.846	1.01	<0.050	0.050	8660152
Dissolved Sulphur (S)	mg/L	<3.0	8660152	21.4	7.3	<3.0	3.0	8660152
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		RG5770	RG5776	RG5777		RG5787		
<b>Sampling Date</b>		2017/06/05 16:15	2017/06/06 11:47	2017/06/06 13:10		2017/06/08 10:33		
<b>COC Number</b>		08439312	08439312	08439312		08439312		
	<b>UNITS</b>	<b>MW15-07D</b>	<b>MW16-12D</b>	<b>MW16-16D</b>	<b>QC Batch</b>	<b>BH95G-131</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	201	862	229	8660292	653	0.50	8660292
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**Elements**

Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	8662956	<0.0000020	0.0000020	8663256
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	0.339	0.361	0.709	8661458	0.539	0.00050	8661458
Total Antimony (Sb)	mg/L	<0.000020	<0.000020	0.000111	8661458	0.00480	0.000020	8661458
Total Arsenic (As)	mg/L	0.000149	0.000082	0.000305	8661458	0.0123	0.000020	8661458
Total Barium (Ba)	mg/L	0.0447	2.49	0.0500	8661458	0.0258	0.000020	8661458
Total Beryllium (Be)	mg/L	0.000010	0.000106	0.000025	8661458	0.000032	0.000010	8661458
Total Bismuth (Bi)	mg/L	0.0000130	<0.0000050	0.0000140	8661458	0.0000610	0.0000050	8661458
Total Boron (B)	mg/L	<0.010	0.012	<0.010	8661458	<0.010	0.010	8661458
Total Cadmium (Cd)	mg/L	0.0000180	0.0000480	0.0000250	8661458	0.000525	0.0000050	8661458
Total Chromium (Cr)	mg/L	0.00106	0.00135	0.00153	8661458	0.00063	0.00010	8661458
Total Cobalt (Co)	mg/L	0.000288	0.000382	0.000627	8661458	0.000215	0.0000050	8661458
Total Copper (Cu)	mg/L	0.00131	0.000764	0.00403	8661458	0.00135	0.000050	8661458
Total Iron (Fe)	mg/L	1.31	5.55	1.89	8661458	3.37	0.0010	8661458
Total Lead (Pb)	mg/L	0.000829	0.000207	0.00138	8661458	0.0474	0.0000050	8661458
Total Lithium (Li)	mg/L	0.0119	0.372	0.00613	8661458	0.0139	0.00050	8661458
Total Manganese (Mn)	mg/L	0.0683	0.307	0.0671	8661458	0.220	0.000050	8661458
Total Molybdenum (Mo)	mg/L	0.000054	<0.000050	0.00111	8661458	0.000114	0.000050	8661458
Total Nickel (Ni)	mg/L	0.000573	0.00137	0.00152	8661458	0.000486	0.000020	8661458
Total Phosphorus (P)	mg/L	0.0249	0.0715	0.0377	8661458	0.0389	0.0020	8661458
Total Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	8661458	0.000065	0.000040	8661458
Total Silicon (Si)	mg/L	7.84	15.0	4.62	8661458	10.0	0.050	8661458
Total Silver (Ag)	mg/L	0.0000800	0.000271	0.0000610	8661458	0.000529	0.0000050	8661458
Total Strontium (Sr)	mg/L	0.309	2.08	0.302	8661458	0.749	0.000050	8661458
Total Thallium (Tl)	mg/L	0.0000020	0.0000080	0.0000080	8661458	0.0000680	0.0000020	8661458
Total Tin (Sn)	mg/L	<0.00020	<0.00020	0.00037	8661458	0.00069	0.00020	8661458
Total Titanium (Ti)	mg/L	0.0109	0.0258	0.0205	8661458	0.0222	0.00050	8661458
Total Uranium (U)	mg/L	0.00117	0.000509	0.00434	8661458	0.0172	0.0000020	8661458
Total Vanadium (V)	mg/L	0.00092	0.00204	0.00161	8661458	0.00088	0.00020	8661458

RDL = Reportable Detection Limit

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		RG5770	RG5776	RG5777		RG5787		
Sampling Date		2017/06/05 16:15	2017/06/06 11:47	2017/06/06 13:10		2017/06/08 10:33		
COC Number		08439312	08439312	08439312		08439312		
	UNITS	MW15-07D	MW16-12D	MW16-16D	QC Batch	BH95G-131	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.00364	0.00422	0.0146	8661458	0.0835	0.00010	8661458
Total Zirconium (Zr)	mg/L	0.00106	0.0418	0.00551	8661458	0.0301	0.00010	8661458
Total Calcium (Ca)	mg/L	58.3	179	78.5	8660262	160	0.050	8660262
Total Magnesium (Mg)	mg/L	13.4	101	7.90	8660262	61.4	0.050	8660262
Total Potassium (K)	mg/L	1.57	12.1	2.83	8660262	3.98	0.050	8660262
Total Sodium (Na)	mg/L	4.21	34.4	2.54	8660262	1.77	0.050	8660262
Total Sulphur (S)	mg/L	10.1	<3.0	12.5	8660262	87.2	3.0	8660262
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		RG5790		RG5793		
Sampling Date		2017/06/08 13:45		2017/06/10 15:29		
COC Number		08439312		08439312		
	UNITS	FIELD BLANK	QC Batch	TRIP BLANK	RDL	QC Batch
<b>Calculated Parameters</b>						
Total Hardness (CaCO3)	mg/L	<0.50	8660292	<0.50	0.50	8660292
<b>Elements</b>						
Total Mercury (Hg)	mg/L	<0.0000020	8663256	<0.0000020	0.0000020	8663256
<b>Total Metals by ICPMS</b>						
Total Aluminum (Al)	mg/L	0.00547	8665557	<0.00050	0.00050	8661458
Total Antimony (Sb)	mg/L	<0.000020	8661458	<0.000020	0.000020	8661458
Total Arsenic (As)	mg/L	<0.000020	8661458	<0.000020	0.000020	8661458
Total Barium (Ba)	mg/L	0.000042	8661458	<0.000020	0.000020	8661458
Total Beryllium (Be)	mg/L	<0.000010	8661458	<0.000010	0.000010	8661458
Total Bismuth (Bi)	mg/L	<0.0000050	8661458	<0.0000050	0.0000050	8661458
Total Boron (B)	mg/L	<0.010	8661458	<0.010	0.010	8661458
Total Cadmium (Cd)	mg/L	<0.0000050	8661458	<0.0000050	0.0000050	8661458
Total Chromium (Cr)	mg/L	<0.00010	8661458	<0.00010	0.00010	8661458
Total Cobalt (Co)	mg/L	0.0000060	8661458	<0.0000050	0.0000050	8661458
Total Copper (Cu)	mg/L	<0.000050	8661458	<0.000050	0.000050	8661458
Total Iron (Fe)	mg/L	0.0047	8665557	<0.0010	0.0010	8661458
Total Lead (Pb)	mg/L	0.0000060	8661458	<0.0000050	0.0000050	8661458
Total Lithium (Li)	mg/L	<0.00050	8661458	<0.00050	0.00050	8661458
Total Manganese (Mn)	mg/L	0.000060	8665557	<0.000050	0.000050	8661458
Total Molybdenum (Mo)	mg/L	<0.000050	8661458	<0.000050	0.000050	8661458
Total Nickel (Ni)	mg/L	<0.000020	8661458	<0.000020	0.000020	8661458
Total Phosphorus (P)	mg/L	0.0030	8661458	<0.0020	0.0020	8661458
Total Selenium (Se)	mg/L	<0.000040	8661458	<0.000040	0.000040	8661458
Total Silicon (Si)	mg/L	<0.050	8661458	<0.050	0.050	8661458
Total Silver (Ag)	mg/L	<0.0000050	8661458	<0.0000050	0.0000050	8661458
Total Strontium (Sr)	mg/L	0.000126	8665557	<0.000050	0.000050	8661458
Total Thallium (Tl)	mg/L	<0.0000020	8661458	<0.0000020	0.0000020	8661458
Total Tin (Sn)	mg/L	<0.00020	8661458	<0.00020	0.00020	8661458
Total Titanium (Ti)	mg/L	<0.00050	8665557	<0.00050	0.00050	8661458
Total Uranium (U)	mg/L	<0.0000020	8661458	<0.0000020	0.0000020	8661458
Total Vanadium (V)	mg/L	<0.00020	8661458	<0.00020	0.00020	8661458
RDL = Reportable Detection Limit						

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		RG5790		RG5793		
Sampling Date		2017/06/08 13:45		2017/06/10 15:29		
COC Number		08439312		08439312		
	UNITS	FIELD BLANK	QC Batch	TRIP BLANK	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.00017	8661458	<0.00010	0.00010	8661458
Total Zirconium (Zr)	mg/L	<0.00010	8661458	<0.00010	0.00010	8661458
Total Calcium (Ca)	mg/L	<0.050	8660262	<0.050	0.050	8660262
Total Magnesium (Mg)	mg/L	<0.050	8660262	<0.050	0.050	8660262
Total Potassium (K)	mg/L	<0.050	8660262	<0.050	0.050	8660262
Total Sodium (Na)	mg/L	<0.050	8660262	<0.050	0.050	8660262
Total Sulphur (S)	mg/L	<3.0	8660262	<3.0	3.0	8660262
RDL = Reportable Detection Limit						

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5766	RG5767		RG5768		
Sampling Date		2017/06/05 12:42	2017/06/05 13:30		2017/06/05 14:40		
COC Number		08439312	08439312		08439312		
	UNITS	MW15-03S	MW15-03D	RDL	MW15-04S	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	208	192	0.50	480	0.50	8660292
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	<0.0000020	0.0000020	8662956
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	13.2	0.204	0.0030	48.8	0.015	8661860
Total Antimony (Sb)	mg/L	0.000302	0.000127	0.000020	0.00015	0.00010	8661860
Total Arsenic (As)	mg/L	0.0145	0.00220	0.000020	0.0319	0.00010	8661860
Total Barium (Ba)	mg/L	0.251	0.0484	0.000050	1.11	0.00025	8661860
Total Beryllium (Be)	mg/L	0.000708	0.000040	0.000010	0.00154	0.000050	8661860
Total Bismuth (Bi)	mg/L	0.000322	<0.000010	0.000010	0.000785	0.000050	8661860
Total Boron (B)	mg/L	<0.010	<0.010	0.010	<0.050	0.050	8661860
Total Cadmium (Cd)	mg/L	0.000713	0.0000110	0.0000050	0.00297	0.000025	8661860
Total Chromium (Cr)	mg/L	0.0456	0.00043	0.00010	0.100	0.00050	8661860
Total Cobalt (Co)	mg/L	0.0210	0.000256	0.000010	0.0904	0.000050	8661860
Total Copper (Cu)	mg/L	0.0878	0.00087	0.00010	0.207	0.00050	8661860
Total Iron (Fe)	mg/L	30.9	1.10	0.0050	74.5	0.025	8661860
Total Lead (Pb)	mg/L	0.0382	0.000383	0.000020	0.152	0.00010	8661860
Total Lithium (Li)	mg/L	0.0144	0.00646	0.00050	0.0322	0.0025	8661860
Total Manganese (Mn)	mg/L	0.941	0.0572	0.00010	4.35	0.00050	8661860
Total Molybdenum (Mo)	mg/L	0.00204	0.00226	0.000050	0.00077	0.00025	8661860
Total Nickel (Ni)	mg/L	0.0558	0.00127	0.00010	0.127	0.00050	8661860
Total Phosphorus (P)	mg/L	1.09	0.0467	0.0050	9.03	0.025	8661860
Total Selenium (Se)	mg/L	0.000452	<0.000040	0.000040	0.00073	0.00020	8661860
Total Silicon (Si)	mg/L	20.8	5.03	0.050	59.2	0.25	8661860
Total Silver (Ag)	mg/L	0.00720	0.000022	0.000010	0.0195	0.000050	8661860
Total Strontium (Sr)	mg/L	0.210	0.245	0.000050	0.550	0.00025	8661860
Total Thallium (Tl)	mg/L	0.000266	0.0000030	0.0000020	0.000774	0.000010	8661860
Total Tin (Sn)	mg/L	0.00095	<0.00020	0.00020	<0.0010	0.0010	8661860
Total Titanium (Ti)	mg/L	0.566	0.0174	0.0020	1.66	0.010	8661860
Total Uranium (U)	mg/L	0.00264	0.00259	0.0000050	0.00309	0.000025	8661860
Total Vanadium (V)	mg/L	0.0402	0.00070	0.00020	0.152	0.0010	8661860
RDL = Reportable Detection Limit							



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5766	RG5767		RG5768		
Sampling Date		2017/06/05 12:42	2017/06/05 13:30		2017/06/05 14:40		
COC Number		08439312	08439312		08439312		
	UNITS	MW15-03S	MW15-03D	RDL	MW15-04S	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.132	0.0034	0.0010	0.325	0.0050	8661860
Total Zirconium (Zr)	mg/L	0.00233	0.00190	0.00010	0.00728	0.00050	8661860
Total Calcium (Ca)	mg/L	62.5	52.3	0.25	140	1.3	8660262
Total Magnesium (Mg)	mg/L	12.7	15.0	0.25	31.4	1.3	8660262
Total Potassium (K)	mg/L	4.17	2.42	0.25	12.5	1.3	8660262
Total Sodium (Na)	mg/L	0.83	1.51	0.25	<1.3	1.3	8660262
Total Sulphur (S)	mg/L	6.4	7.3	3.0	<15	15	8660262
RDL = Reportable Detection Limit							

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		RG5769		RG5771			RG5772		
<b>Sampling Date</b>		2017/06/05 15:10		2017/06/05 16:30			2017/06/05 17:39		
<b>COC Number</b>		08439312		08439312			08439312		
	<b>UNITS</b>	<b>MW15-04D</b>	<b>QC Batch</b>	<b>MW15-07S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-09S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>									
Total Hardness (CaCO3)	mg/L	170	8660292	197	0.50	8660292	441	0.50	8660292

<b>Elements</b>									
Total Mercury (Hg)	mg/L	<0.0000020	8662956	<0.0000020	0.0000020	8662956	<0.0000020	0.0000020	8662956

<b>Total Metals by ICPMS</b>									
Total Aluminum (Al)	mg/L	3.52	8661860	1.09	0.0030	8662055	51.4	0.015	8661860
Total Antimony (Sb)	mg/L	0.000040	8661860	0.000027	0.000020	8662055	0.00137	0.00010	8661860
Total Arsenic (As)	mg/L	0.00825	8661860	0.00380	0.000020	8662055	0.0358	0.00010	8661860
Total Barium (Ba)	mg/L	0.235	8661860	0.0441	0.000050	8662055	1.93	0.00025	8661860
Total Beryllium (Be)	mg/L	0.000282	8661860	0.000055	0.000010	8662055	0.00287	0.000050	8661860
Total Bismuth (Bi)	mg/L	0.000067	8661860	0.000012	0.000010	8662055	0.00260	0.000050	8661860
Total Boron (B)	mg/L	<0.010	8661860	<0.010	0.010	8662055	<0.050	0.050	8661860
Total Cadmium (Cd)	mg/L	0.000736	8661860	0.000101	0.0000050	8662055	0.0143	0.000025	8661860
Total Chromium (Cr)	mg/L	0.0278	8661860	0.00442	0.00010	8662055	0.188	0.00050	8661860
Total Cobalt (Co)	mg/L	0.0127	8661860	0.00187	0.000010	8662055	0.0754	0.000050	8661860
Total Copper (Cu)	mg/L	0.0337	8661860	0.00811	0.00010	8662055	0.487	0.00050	8661860
Total Iron (Fe)	mg/L	6.86	8661860	3.40	0.0050	8662055	179	0.025	8661860
Total Lead (Pb)	mg/L	0.00894	8661860	0.00118	0.000020	8662055	0.315	0.00010	8661860
Total Lithium (Li)	mg/L	0.00325	8661860	0.00864	0.00050	8662055	0.0487	0.0025	8661860
Total Manganese (Mn)	mg/L	0.334	8661860	0.180	0.00010	8662055	2.62	0.00050	8661860
Total Molybdenum (Mo)	mg/L	0.00129	8661860	0.000207	0.000050	8662055	0.00425	0.00025	8661860
Total Nickel (Ni)	mg/L	0.0278	8661860	0.00463	0.00010	8662055	0.162	0.00050	8661860
Total Phosphorus (P)	mg/L	0.311	8661860	0.0653	0.0050	8662055	6.71	0.025	8661860
Total Selenium (Se)	mg/L	0.000255	8661860	0.000067	0.000040	8662055	0.00763	0.00020	8661860
Total Silicon (Si)	mg/L	7.18	8661860	9.21	0.050	8662055	67.0	0.25	8661860
Total Silver (Ag)	mg/L	0.000349	8661860	0.000110	0.000010	8662055	0.0102	0.000050	8661860
Total Strontium (Sr)	mg/L	0.250	8661860	0.273	0.000050	8662055	0.431	0.00025	8661860
Total Thallium (Tl)	mg/L	0.0000670	8661860	0.0000130	0.0000020	8662055	0.000901	0.000010	8661860
Total Tin (Sn)	mg/L	0.00027	8661860	<0.00020 (1)	0.00020	8662055	0.0010	0.0010	8661860
Total Titanium (Ti)	mg/L	0.0310	8661860	0.0172	0.0020	8662055	1.01	0.010	8661860
Total Uranium (U)	mg/L	0.00256	8661860	0.00185	0.0000050	8662055	0.0271	0.000025	8661860

RDL = Reportable Detection Limit  
(1) Matrix Spike for (Tin) exceeds acceptance criteria. 10% of analytes failure in multi-element scan is allowed.

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5769		RG5771			RG5772		
Sampling Date		2017/06/05 15:10		2017/06/05 16:30			2017/06/05 17:39		
COC Number		08439312		08439312			08439312		
	UNITS	MW15-04D	QC Batch	MW15-07S	RDL	QC Batch	MW15-09S	RDL	QC Batch
Total Vanadium (V)	mg/L	0.00617	8661860	0.00363	0.00020	8662055	0.205	0.0010	8661860
Total Zinc (Zn)	mg/L	0.0383	8661860	0.0102	0.0010	8662055	1.00	0.0050	8661860
Total Zirconium (Zr)	mg/L	0.00112	8661860	0.00097	0.00010	8662055	0.00939	0.00050	8661860
Total Calcium (Ca)	mg/L	57.7	8660262	61.1	0.25	8660262	113	1.3	8660262
Total Magnesium (Mg)	mg/L	6.39	8660262	10.7	0.25	8660262	38.3	1.3	8660262
Total Potassium (K)	mg/L	2.84	8660262	1.44	0.25	8660262	11.2	1.3	8660262
Total Sodium (Na)	mg/L	1.38	8660262	3.33	0.25	8660262	2.6	1.3	8660262
Total Sulphur (S)	mg/L	6.2	8660262	11.4	3.0	8660262	<15	15	8660262
RDL = Reportable Detection Limit									

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		RG5773	RG5774		RG5775	RG5778		
<b>Sampling Date</b>		2017/06/06 09:39	2017/06/06 10:04		2017/06/06 10:26	2017/06/06 14:00		
<b>COC Number</b>		08439312	08439312		08439312	08439312		
	<b>UNITS</b>	<b>MW15-10D</b>	<b>DUP-1</b>	<b>RDL</b>	<b>MW16-14D</b>	<b>MW16-17</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	1800	1780	0.50	303	175	0.50	8660292
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**Elements**

Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	<0.0000020	<0.0000020	0.0000020	8662956
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	2.13	1.26	0.015	6.53	1.53	0.0030	8661860
Total Antimony (Sb)	mg/L	<0.00010	<0.00010	0.00010	0.000038	0.000197	0.000020	8661860
Total Arsenic (As)	mg/L	0.00123	0.00098	0.00010	0.00658	0.00136	0.000020	8661860
Total Barium (Ba)	mg/L	0.384	0.387	0.00025	0.0624	0.193	0.000050	8661860
Total Beryllium (Be)	mg/L	0.00110	0.00113	0.000050	0.000501	0.000108	0.000010	8661860
Total Bismuth (Bi)	mg/L	0.000243	0.000122	0.000050	0.000186	0.000016	0.000010	8661860
Total Boron (B)	mg/L	<0.050	<0.050	0.050	<0.010	<0.010	0.010	8661860
Total Cadmium (Cd)	mg/L	0.000770	0.000747	0.000025	0.000209	0.0000390	0.0000050	8661860
Total Chromium (Cr)	mg/L	0.00408	0.00218	0.00050	0.00858	0.00280	0.00010	8661860
Total Cobalt (Co)	mg/L	0.00260	0.00131	0.000050	0.00535	0.00141	0.000010	8661860
Total Copper (Cu)	mg/L	0.00948	0.00448	0.00050	0.00687	0.00299	0.00010	8661860
Total Iron (Fe)	mg/L	29.4	28.1	0.025	9.63	4.02	0.0050	8661860
Total Lead (Pb)	mg/L	0.0157	0.00925	0.00010	0.00470	0.00115	0.000020	8661860
Total Lithium (Li)	mg/L	0.224	0.227	0.0025	0.00587	0.00296	0.00050	8661860
Total Manganese (Mn)	mg/L	4.89	5.01	0.00050	0.564	0.136	0.00010	8661860
Total Molybdenum (Mo)	mg/L	0.00054	0.00032	0.00025	0.000344	0.00247	0.000050	8661860
Total Nickel (Ni)	mg/L	0.00351	0.00192	0.00050	0.0126	0.00362	0.00010	8661860
Total Phosphorus (P)	mg/L	0.186	0.084	0.025	0.213	0.0871	0.0050	8661860
Total Selenium (Se)	mg/L	0.00029	<0.00020	0.00020	0.000073	0.000331	0.000040	8661860
Total Silicon (Si)	mg/L	36.8	34.0	0.25	12.5	5.83	0.050	8661860
Total Silver (Ag)	mg/L	0.000563	0.000380	0.000050	0.000066	0.000231	0.000010	8661860
Total Strontium (Sr)	mg/L	2.53	2.40	0.00025	0.422	0.260	0.000050	8661860
Total Thallium (Tl)	mg/L	0.000018	<0.000010	0.000010	0.0000630	0.0000190	0.0000020	8661860
Total Tin (Sn)	mg/L	<0.0010	<0.0010	0.0010	0.00025	<0.00020	0.00020	8661860
Total Titanium (Ti)	mg/L	0.079	0.044	0.010	0.0683	0.0341	0.0020	8661860
Total Uranium (U)	mg/L	0.000364	0.000294	0.000025	0.00536	0.00369	0.0000050	8661860
Total Vanadium (V)	mg/L	0.0075	0.0049	0.0010	0.0102	0.00344	0.00020	8661860

RDL = Reportable Detection Limit

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5773	RG5774		RG5775	RG5778		
Sampling Date		2017/06/06 09:39	2017/06/06 10:04		2017/06/06 10:26	2017/06/06 14:00		
COC Number		08439312	08439312		08439312	08439312		
	UNITS	MW15-10D	DUP-1	RDL	MW16-14D	MW16-17	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0133	0.0086	0.0050	0.0204	0.0269	0.0010	8661860
Total Zirconium (Zr)	mg/L	0.00187	0.00190	0.00050	0.00303	0.00245	0.00010	8661860
Total Calcium (Ca)	mg/L	594	586	1.3	104	57.3	0.25	8660262
Total Magnesium (Mg)	mg/L	77.2	75.8	1.3	10.2	7.84	0.25	8660262
Total Potassium (K)	mg/L	8.5	8.3	1.3	3.00	1.93	0.25	8660262
Total Sodium (Na)	mg/L	21.2	21.2	1.3	2.71	2.90	0.25	8660262
Total Sulphur (S)	mg/L	<15	<15	15	31.4	10.6	3.0	8660262
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5779	RG5780		RG5781		
Sampling Date		2017/06/06 16:00	2017/06/06 16:27		2017/06/06 16:22		
COC Number		08439312	08439312		08439312		
	UNITS	MW16-15D	DUP-3	RDL	MW16-15S	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	179	189	0.50	234	0.50	8660292
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	0.0000168	0.0000020	8662956
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	2.15	2.43	0.0030	16.2	0.015	8661860
Total Antimony (Sb)	mg/L	0.000505	0.000570	0.000020	0.0106	0.00010	8661860
Total Arsenic (As)	mg/L	0.0214	0.0225	0.000020	0.226	0.00010	8661860
Total Barium (Ba)	mg/L	0.0604	0.0677	0.000050	0.401	0.00025	8661860
Total Beryllium (Be)	mg/L	0.000120	0.000166	0.000010	0.000808	0.000050	8661860
Total Bismuth (Bi)	mg/L	0.000166	0.000202	0.000010	0.00273	0.000050	8661860
Total Boron (B)	mg/L	<0.010	<0.010	0.010	<0.050	0.050	8661860
Total Cadmium (Cd)	mg/L	0.00303	0.00360	0.0000050	0.0107	0.000025	8661860
Total Chromium (Cr)	mg/L	0.00256	0.00293	0.00010	0.0370	0.00050	8661860
Total Cobalt (Co)	mg/L	0.00150	0.00180	0.000010	0.0177	0.000050	8661860
Total Copper (Cu)	mg/L	0.0128	0.0154	0.00010	0.321	0.00050	8661860
Total Iron (Fe)	mg/L	5.56	6.71	0.0050	46.0	0.025	8661860
Total Lead (Pb)	mg/L	0.0175	0.0215	0.000020	1.08	0.00010	8661860
Total Lithium (Li)	mg/L	0.00466	0.00531	0.00050	0.0251	0.0025	8661860
Total Manganese (Mn)	mg/L	0.262	0.307	0.00010	0.949	0.00050	8661860
Total Molybdenum (Mo)	mg/L	0.000661	0.000666	0.000050	0.00252	0.00025	8661860
Total Nickel (Ni)	mg/L	0.00220	0.00260	0.00010	0.0416	0.00050	8661860
Total Phosphorus (P)	mg/L	0.113	0.142	0.0050	1.24	0.025	8661860
Total Selenium (Se)	mg/L	0.000068	0.000072	0.000040	0.00312	0.00020	8661860
Total Silicon (Si)	mg/L	5.86	6.49	0.050	24.2	0.25	8661860
Total Silver (Ag)	mg/L	0.000373	0.000433	0.000010	0.0272	0.000050	8661860
Total Strontium (Sr)	mg/L	0.175	0.184	0.000050	0.129	0.00025	8661860
Total Thallium (Tl)	mg/L	0.0000730	0.0000890	0.0000020	0.000524	0.000010	8661860
Total Tin (Sn)	mg/L	<0.00020	<0.00020	0.00020	0.0014	0.0010	8661860
Total Titanium (Ti)	mg/L	0.115	0.116	0.0020	0.754	0.010	8661860
Total Uranium (U)	mg/L	0.00427	0.00459	0.0000050	0.0172	0.000025	8661860
Total Vanadium (V)	mg/L	0.00397	0.00457	0.00020	0.0429	0.0010	8661860
RDL = Reportable Detection Limit							

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5779	RG5780		RG5781		
Sampling Date		2017/06/06 16:00	2017/06/06 16:27		2017/06/06 16:22		
COC Number		08439312	08439312		08439312		
	UNITS	MW16-15D	DUP-3	RDL	MW16-15S	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.509	0.667	0.0010	1.53	0.0050	8661860
Total Zirconium (Zr)	mg/L	0.00899	0.00955	0.00010	0.00154	0.00050	8661860
Total Calcium (Ca)	mg/L	56.1	59.5	0.25	58.5	1.3	8660262
Total Magnesium (Mg)	mg/L	9.31	9.84	0.25	21.4	1.3	8660262
Total Potassium (K)	mg/L	3.32	3.57	0.25	6.2	1.3	8660262
Total Sodium (Na)	mg/L	1.43	1.48	0.25	<1.3	1.3	8660262
Total Sulphur (S)	mg/L	21.3	21.9	3.0	<15	15	8660262
RDL = Reportable Detection Limit							

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5782	RG5783	RG5784		RG5785		
Sampling Date		2017/06/07 11:40	2017/06/07 12:39	2017/06/07 14:00		2017/06/07 15:05		
COC Number		08439312	08439312	08439312		08439312		
	UNITS	MW15-01	BH95G-02	BH95G-15D	QC Batch	BH95G-25D	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	187	261	240	8660292	605	0.50	8660292
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	0.0000021	<0.0000020	8662956	<0.0000020	0.0000020	8663256
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	4.51	1.86	13.2	8661860	5.63	0.0030	8661860
Total Antimony (Sb)	mg/L	0.000258	0.000135	0.000167	8661860	0.000429	0.000020	8661860
Total Arsenic (As)	mg/L	0.00393	0.00289	0.00947	8661860	0.00525	0.000020	8661860
Total Barium (Ba)	mg/L	0.0654	0.0613	0.444	8661860	0.869	0.000050	8661860
Total Beryllium (Be)	mg/L	0.000205	0.000097	0.00212	8661860	0.000498	0.000010	8661860
Total Bismuth (Bi)	mg/L	0.000061	0.000052	0.000894	8661860	0.000256	0.000010	8661860
Total Boron (B)	mg/L	<0.010	<0.010	0.011	8661860	<0.010	0.010	8661860
Total Cadmium (Cd)	mg/L	0.000323	0.00556	0.00113	8661860	0.000347	0.000050	8661860
Total Chromium (Cr)	mg/L	0.0141	0.00470	0.0132	8661860	0.00553	0.00010	8661860
Total Cobalt (Co)	mg/L	0.00647	0.00420	0.00830	8661860	0.00424	0.000010	8661860
Total Copper (Cu)	mg/L	0.0180	0.0285	0.0772	8661860	0.0146	0.00010	8661860
Total Iron (Fe)	mg/L	14.8	4.97	17.4	8661860	14.5	0.0050	8661860
Total Lead (Pb)	mg/L	0.00707	0.0194	0.0461	8661860	0.0211	0.000020	8661860
Total Lithium (Li)	mg/L	0.00328	0.00291	0.0146	8661860	0.0161	0.00050	8661860
Total Manganese (Mn)	mg/L	0.260	0.121	0.526	8661860	0.666	0.00010	8661860
Total Molybdenum (Mo)	mg/L	0.00213	0.00102	0.00139	8661860	0.000588	0.000050	8661860
Total Nickel (Ni)	mg/L	0.0116	0.0149	0.0230	8661860	0.00687	0.00010	8661860
Total Phosphorus (P)	mg/L	0.404	0.574	0.878	8661860	0.418	0.0050	8661860
Total Selenium (Se)	mg/L	0.000662	0.00370	0.00404	8661860	0.000095	0.000040	8661860
Total Silicon (Si)	mg/L	7.35	5.33	22.1	8661860	12.8	0.050	8661860
Total Silver (Ag)	mg/L	0.00773	0.000492	0.000433	8661860	0.000120	0.000010	8661860
Total Strontium (Sr)	mg/L	0.173	0.212	0.319	8661860	0.549	0.000050	8661860
Total Thallium (Tl)	mg/L	0.0000500	0.0000450	0.000245	8661860	0.0000920	0.0000020	8661860
Total Tin (Sn)	mg/L	0.00041	<0.00020	<0.00020	8661860	0.00026	0.00020	8661860
Total Titanium (Ti)	mg/L	0.252	0.0378	0.0678	8661860	0.104	0.0020	8661860
Total Uranium (U)	mg/L	0.00190	0.00216	0.0126	8661860	0.00865	0.0000050	8661860
Total Vanadium (V)	mg/L	0.0219	0.00825	0.0200	8661860	0.0106	0.00020	8661860
RDL = Reportable Detection Limit								



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5782	RG5783	RG5784		RG5785		
Sampling Date		2017/06/07 11:40	2017/06/07 12:39	2017/06/07 14:00		2017/06/07 15:05		
COC Number		08439312	08439312	08439312		08439312		
	UNITS	MW15-01	BH95G-02	BH95G-15D	QC Batch	BH95G-25D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0771	0.304	0.125	8661860	0.343	0.0010	8661860
Total Zirconium (Zr)	mg/L	0.00358	0.00064	0.00078	8661860	0.00486	0.00010	8661860
Total Calcium (Ca)	mg/L	61.7	60.1	79.2	8660262	145	0.25	8660262
Total Magnesium (Mg)	mg/L	8.12	26.8	10.1	8660262	59.2	0.25	8660262
Total Potassium (K)	mg/L	1.01	0.79	4.55	8660262	5.85	0.25	8660262
Total Sodium (Na)	mg/L	0.91	0.63	1.01	8660262	2.14	0.25	8660262
Total Sulphur (S)	mg/L	16.5	11.5	5.1	8660262	86.5	3.0	8660262
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5786	RG5788	RG5789		RG5791		
Sampling Date		2017/06/07 17:20	2017/06/08 11:15	2017/06/08 13:40		2017/06/08 13:00		
COC Number		08439312	08439312	08439312		08439312		
	UNITS	BH95G-32	BH95G-22	BH95G-31	RDL	BH95G-33D	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	229	251	221	0.50	242	0.50	8660292
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	0.0000207	<0.0000020	0.0000020	0.0000041	0.0000020	8663256
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	8.26	22.1	12.3	0.015	4.45	0.0030	8661860
Total Antimony (Sb)	mg/L	0.00046	0.00163	0.00024	0.00010	0.000079	0.000020	8661860
Total Arsenic (As)	mg/L	0.0230	0.0515	0.0282	0.00010	0.0108	0.000020	8661860
Total Barium (Ba)	mg/L	0.538	0.591	0.635	0.00025	0.198	0.000050	8661860
Total Beryllium (Be)	mg/L	0.000631	0.00105	0.000396	0.000050	0.000262	0.000010	8661860
Total Bismuth (Bi)	mg/L	0.000544	0.00201	0.000649	0.000050	0.000036	0.000010	8661860
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	0.050	<0.010	0.010	8661860
Total Cadmium (Cd)	mg/L	0.000623	0.00946	0.00172	0.000025	0.000122	0.0000050	8661860
Total Chromium (Cr)	mg/L	0.0173	0.0386	0.0325	0.00050	0.00615	0.00010	8661860
Total Cobalt (Co)	mg/L	0.0125	0.0382	0.0392	0.000050	0.0117	0.000010	8661860
Total Copper (Cu)	mg/L	0.138	0.323	0.379	0.00050	0.0194	0.00010	8661860
Total Iron (Fe)	mg/L	38.4	61.6	51.7	0.025	8.67	0.0050	8661860
Total Lead (Pb)	mg/L	0.0849	0.277	0.169	0.00010	0.00589	0.000020	8661860
Total Lithium (Li)	mg/L	0.0054	0.0213	0.0089	0.0025	0.00480	0.00050	8661860
Total Manganese (Mn)	mg/L	1.01	3.51	0.854	0.00050	1.10	0.00010	8661860
Total Molybdenum (Mo)	mg/L	0.00105	0.00078	0.00168	0.00025	0.000546	0.000050	8661860
Total Nickel (Ni)	mg/L	0.0193	0.0708	0.0907	0.00050	0.0439	0.00010	8661860
Total Phosphorus (P)	mg/L	0.471	4.24	1.60	0.025	0.518	0.0050	8661860
Total Selenium (Se)	mg/L	0.00156	0.00083	0.00222	0.00020	0.00410	0.000040	8661860
Total Silicon (Si)	mg/L	15.5	30.1	21.3	0.25	9.34	0.050	8661860
Total Silver (Ag)	mg/L	0.000736	0.00482	0.00346	0.000050	0.000142	0.000010	8661860
Total Strontium (Sr)	mg/L	0.298	0.209	0.258	0.00025	0.278	0.000050	8661860
Total Thallium (Tl)	mg/L	0.000083	0.000534	0.000179	0.000010	0.0000520	0.0000020	8661860
Total Tin (Sn)	mg/L	<0.0010	0.0011	<0.0010	0.0010	<0.00020	0.00020	8661860
Total Titanium (Ti)	mg/L	0.854	0.803	0.811	0.010	0.103	0.0020	8661860
Total Uranium (U)	mg/L	0.00237	0.00627	0.00176	0.000025	0.00515	0.0000050	8661860
Total Vanadium (V)	mg/L	0.0531	0.0711	0.0785	0.0010	0.0126	0.00020	8661860
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RG5786	RG5788	RG5789		RG5791		
Sampling Date		2017/06/07 17:20	2017/06/08 11:15	2017/06/08 13:40		2017/06/08 13:00		
COC Number		08439312	08439312	08439312		08439312		
	UNITS	BH95G-32	BH95G-22	BH95G-31	RDL	BH95G-33D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.120	1.08	0.173	0.0050	0.0609	0.0010	8661860
Total Zirconium (Zr)	mg/L	0.00288	0.00661	0.00400	0.00050	0.00419	0.00010	8661860
Total Calcium (Ca)	mg/L	78.5	67.2	71.8	1.3	79.2	0.25	8660262
Total Magnesium (Mg)	mg/L	8.1	20.1	10.1	1.3	10.7	0.25	8660262
Total Potassium (K)	mg/L	6.0	5.7	5.5	1.3	1.68	0.25	8660262
Total Sodium (Na)	mg/L	<1.3	<1.3	<1.3	1.3	0.81	0.25	8660262
Total Sulphur (S)	mg/L	<15	<15	<15	15	22.3	3.0	8660262
RDL = Reportable Detection Limit								

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		RG5792		
<b>Sampling Date</b>		2017/06/08 14:00		
<b>COC Number</b>		08439312		
	<b>UNITS</b>	<b>DUP-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	220	0.50	8660292
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8663256
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	9.21	0.0030	8662055
Total Antimony (Sb)	mg/L	0.000154	0.000020	8662055
Total Arsenic (As)	mg/L	0.0158	0.000020	8662055
Total Barium (Ba)	mg/L	0.495	0.000050	8662055
Total Beryllium (Be)	mg/L	0.000276	0.000010	8662055
Total Bismuth (Bi)	mg/L	0.000381	0.000010	8662055
Total Boron (B)	mg/L	<0.010	0.010	8662055
Total Cadmium (Cd)	mg/L	0.00111	0.0000050	8662055
Total Chromium (Cr)	mg/L	0.0240	0.00010	8662055
Total Cobalt (Co)	mg/L	0.0238	0.000010	8662055
Total Copper (Cu)	mg/L	0.181	0.00010	8662055
Total Iron (Fe)	mg/L	31.4	0.0050	8662055
Total Lead (Pb)	mg/L	0.0994	0.000020	8662055
Total Lithium (Li)	mg/L	0.00705	0.00050	8662055
Total Manganese (Mn)	mg/L	0.701	0.00010	8662055
Total Molybdenum (Mo)	mg/L	0.00160	0.000050	8662055
Total Nickel (Ni)	mg/L	0.0509	0.00010	8662055
Total Phosphorus (P)	mg/L	1.05	0.0050	8662055
Total Selenium (Se)	mg/L	0.00193	0.000040	8662055
Total Silicon (Si)	mg/L	15.8	0.050	8662055
Total Silver (Ag)	mg/L	0.00203	0.000010	8662055
Total Strontium (Sr)	mg/L	0.261	0.000050	8662055
Total Thallium (Tl)	mg/L	0.000123	0.0000020	8662055
Total Tin (Sn)	mg/L	0.00065	0.00020	8662055
Total Titanium (Ti)	mg/L	0.664	0.0020	8662055
Total Uranium (U)	mg/L	0.00152	0.0000050	8662055
Total Vanadium (V)	mg/L	0.0559	0.00020	8662055
RDL = Reportable Detection Limit				

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		RG5792		
<b>Sampling Date</b>		2017/06/08 14:00		
<b>COC Number</b>		08439312		
	<b>UNITS</b>	<b>DUP-2</b>	<b>RDL</b>	<b>QC Batch</b>
Total Zinc (Zn)	mg/L	0.114	0.0010	8662055
Total Zirconium (Zr)	mg/L	0.00338	0.00010	8662055
Total Calcium (Ca)	mg/L	74.2	0.25	8660262
Total Magnesium (Mg)	mg/L	8.33	0.25	8660262
Total Potassium (K)	mg/L	4.94	0.25	8660262
Total Sodium (Na)	mg/L	1.03	0.25	8660262
Total Sulphur (S)	mg/L	7.8	3.0	8660262
RDL = Reportable Detection Limit				

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5766  
**Sample ID:** MW15-03S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	<b>Name REDACTED</b>
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/13	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661128	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/13	
Fluoride	ISE/ISE	8663806	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662931	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/13	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663215	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5766 Dup  
**Sample ID:** MW15-03S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/13	<b>Name REDACTED</b>
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Fluoride	ISE/ISE	8663806	N/A	2017/06/14	
pH Water	AT/ALK	8662458	N/A	2017/06/13	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5767  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661128	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662931	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5767 Dup  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	Adnan Dzebic

**Maxxam ID:** RG5768  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5768  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	Name REDACTED
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8662931	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAF	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5768 Dup  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	Name REDACTED
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	

**Maxxam ID:** RG5769  
**Sample ID:** MW15-04D  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661128	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663814	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5769  
**Sample ID:** MW15-04D  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	Name REDACTED
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662931	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663221	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5770  
**Sample ID:** MW15-07D  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662931	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Elements by ICPMS Low Level (total)	ICP/CRCM	8661458	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5770  
**Sample ID:** MW15-07D  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	Name REDACTED
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5770 Dup  
**Sample ID:** MW15-07D  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	Name REDACTED
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	

**Maxxam ID:** RG5771  
**Sample ID:** MW15-07S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8662055	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5771  
**Sample ID:** MW15-07S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	Name REDACTED
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5771 Dup  
**Sample ID:** MW15-07S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	Name REDACTED
Elements by ICPMS Digested LL (total)	ICP/CRCM	8662055	2017/06/13	2017/06/14	

**Maxxam ID:** RG5772  
**Sample ID:** MW15-09S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662444	2017/06/13	2017/06/13	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662443	N/A	2017/06/13	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662434	N/A	2017/06/13	
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5772  
**Sample ID:** MW15-09S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	Name REDACTED
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5772 Dup  
**Sample ID:** MW15-09S  
**Matrix:** Water

**Collected:** 2017/06/05  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	Name REDACTED

**Maxxam ID:** RG5773  
**Sample ID:** MW15-10D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663987	N/A	2017/06/14	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5774  
**Sample ID:** DUP-1  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661130	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663814	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663987	N/A	2017/06/14	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663221	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5774 Dup  
**Sample ID:** DUP-1  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661130	N/A	2017/06/12	Name REDACTED

**Maxxam ID:** RG5775  
**Sample ID:** MW16-14D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5775  
**Sample ID:** MW16-14D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	Name REDACTED
Fluoride	ISE/ISE	8663814	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAF	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663221	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5776  
**Sample ID:** MW16-12D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAF	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5776  
**Sample ID:** MW16-12D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	Name REDACTED
Elements by ICPMS Low Level (total)	ICP/CRCM	8661458	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5777  
**Sample ID:** MW16-16D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/13	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/13	
Fluoride	ISE/ISE	8663806	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAF	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Elements by ICPMS Low Level (total)	ICP/CRCM	8661458	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/13	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663215	N/A	2017/06/13	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5777  
**Sample ID:** MW16-16D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	Name REDACTED

**Maxxam ID:** RG5777 Dup  
**Sample ID:** MW16-16D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	Name REDACTED
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	

**Maxxam ID:** RG5778  
**Sample ID:** MW16-17  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/13	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/13	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/13	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663215	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5778 Dup  
**Sample ID:** MW16-17  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ammonia-N (Preserved)	KONE/COL	8661444	N/A	2017/06/13	Name REDACTED

**Maxxam ID:** RG5779  
**Sample ID:** MW16-15D  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAF	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663987	N/A	2017/06/14	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663215	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5780  
**Sample ID:** DUP-3  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5780  
**Sample ID:** DUP-3  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	Name REDACTED
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAF	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663987	N/A	2017/06/14	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5781  
**Sample ID:** MW16-15S  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661128	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAF	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5781  
**Sample ID:** MW16-15S  
**Matrix:** Water

**Collected:** 2017/06/06  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	Name REDACTED
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

**Maxxam ID:** RG5782  
**Sample ID:** MW15-01  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661130	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663814	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660673	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663221	N/A	2017/06/13	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5782  
**Sample ID:** MW15-01  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	Name REDACTED

**Maxxam ID:** RG5782 Dup  
**Sample ID:** MW15-01  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED

**Maxxam ID:** RG5783  
**Sample ID:** BH95G-02  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663814	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660673	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663221	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661599	2017/06/13	2017/06/14	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5784  
**Sample ID:** BH95G-15D  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8662956	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660673	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661615	2017/06/13	2017/06/14	

**Maxxam ID:** RG5785  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5785  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance	CALC	8660149	N/A	2017/06/14	Name REDACTED
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660673	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661615	2017/06/13	2017/06/14	

**Maxxam ID:** RG5786  
**Sample ID:** BH95G-32  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661130	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663814	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660673	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5786  
**Sample ID:** BH95G-32  
**Matrix:** Water

**Collected:** 2017/06/07  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH Water	AT/ALK	8662511	N/A	2017/06/14	Name REDACTED
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663221	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8661615	2017/06/13	2017/06/14	

**Maxxam ID:** RG5787  
**Sample ID:** BH95G-131  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660673	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Elements by ICPMS Low Level (total)	ICP/CRCM	8661458	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8662082	2017/06/13	2017/06/14	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5788  
**Sample ID:** BH95G-22  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662473	2017/06/14	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660673	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8662082	2017/06/13	2017/06/14	

**Maxxam ID:** RG5789  
**Sample ID:** BH95G-31  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661128	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5789  
**Sample ID:** BH95G-31  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance	CALC	8660149	N/A	2017/06/14	Name REDACTED
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660673	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8662082	2017/06/13	2017/06/14	

**Maxxam ID:** RG5790  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662427	2017/06/13	2017/06/13	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661128	N/A	2017/06/12	
Conductance - water	AT/ALK	8662426	N/A	2017/06/13	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8662939	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Elements by ICPMS Low Level (total)	ICP/CRCM	8665557	N/A	2017/06/16	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5790  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH Water	AT/ALK	8662423	N/A	2017/06/13	Name REDACTED
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8662082	2017/06/13	2017/06/14	

**Maxxam ID:** RG5790 Dup  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	Name REDACTED
Elements by ICPMS Low Level (total)	ICP/CRCM	8665557	N/A	2017/06/16	

**Maxxam ID:** RG5791  
**Sample ID:** BH95G-33D  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8660672	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662473	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661129	N/A	2017/06/12	
Conductance - water	AT/ALK	8662472	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8663261	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8661860	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662458	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663070	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663209	2017/06/13	2017/06/13	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5791  
**Sample ID:** BH95G-33D  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	Name REDACTED
Total Suspended Solids-Low Level	BAL/BAL	8662082	2017/06/13	2017/06/14	

**Maxxam ID:** RG5792  
**Sample ID:** DUP-2  
**Matrix:** Water

**Collected:** 2017/06/08  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662500	2017/06/13	2017/06/14	
Chloride by Automated Colourimetry	KONE/COL	8663067	N/A	2017/06/13	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661130	N/A	2017/06/12	
Conductance - water	AT/ALK	8662510	N/A	2017/06/14	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8663261	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8662055	2017/06/13	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663443	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663445	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/06/12	
pH Water	AT/ALK	8662511	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663987	N/A	2017/06/14	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8662082	2017/06/13	2017/06/14	

**Maxxam ID:** RG5793  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/06/10  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8661108	N/A	2017/06/12	Name REDACTED
Alkalinity - Water	AT/ALK	8662427	2017/06/13	2017/06/13	
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RG5793  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/06/10  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (DOC) - field filtered/preserved	TRAA/COL	8661130	N/A	2017/06/12	Name REDACTED
Conductance - water	AT/ALK	8662426	N/A	2017/06/13	
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Hardness Total (calculated as CaCO3)	CALC	8660292	N/A	2017/06/14	
Hardness (calculated as CaCO3)	CALC	8660147	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8663261	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Ion Balance (as Cations/Anions Ratio)	CALC	8660399	N/A	2017/06/14	
Ion Balance	CALC	8660149	N/A	2017/06/14	
Sum of cations, anions	CALC	8660151	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8660152	N/A	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8660262	N/A	2017/06/14	
Elements by ICPMS Low Level (total)	ICP/CRCM	8661458	N/A	2017/06/14	
Ammonia-N (Preserved)	KONE/COL	8661443	N/A	2017/06/13	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8663446	N/A	2017/06/13	
Nitrite (N) (low level)	TRAA/COL	8663447	N/A	2017/06/13	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8660154	N/A	2017/06/14	
pH Water	AT/ALK	8662423	N/A	2017/06/13	
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	
Total Suspended Solids-Low Level	BAL/BAL	8662082	2017/06/13	2017/06/14	

**Maxxam ID:** RG5793 Dup  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/06/10  
**Shipped:**  
**Received:** 2017/06/10

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride by Automated Colourimetry	KONE/COL	8663073	N/A	2017/06/13	Name REDACTED
Fluoride	ISE/ISE	8663812	N/A	2017/06/14	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8663261	N/A	2017/06/14	
Mercury (Total-LowLevel) by CVAf	CV/AF	8663256	2017/06/14	2017/06/14	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8660659	N/A	2017/06/14	
Elements by ICPMS Low Level (total)	ICP/CRCM	8661458	N/A	2017/06/14	
Sulphate by Automated Colourimetry	KONE/COL	8663077	N/A	2017/06/13	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8663212	2017/06/13	2017/06/13	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8663218	N/A	2017/06/13	

Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.7°C
Package 2	6.0°C
Package 3	8.3°C
Package 4	8.0°C
Package 5	7.7°C

Samples collected on June 5th and June 6th were received at analytical lab past recommended hold time for Nitrate, Nitrite, Dissolved Phosphorus and Total Phosphorus. Sample collected on June 7th arrived at analytical lab on date of expiry for Nitrate, Nitrite, Dissolved Phosphorus and Total Phosphorus, samples were analyzed past recommended hold time.

Sample RG5766 [MW15-03S] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5767 [MW15-03D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5768 [MW15-04S] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5769 [MW15-04D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5771 [MW15-07S] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5772 [MW15-09S] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5773 [MW15-10D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5774 [DUP-1] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5775 [MW16-14D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5778 [MW16-17] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5779 [MW16-15D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5780 [DUP-3] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5781 [MW16-15S] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5782 [MW15-01] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Maxxam Job #: B746271  
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ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
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Sampler Initials: CL

Sample RG5783 [BH95G-02] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5784 [BH95G-15D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5785 [BH95G-25D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5786 [BH95G-32] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5788 [BH95G-22] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5789 [BH95G-31] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5790 [FIELD BLANK] : Sample was reanalyzed for Total Metals and Nitrate+Nitrite, re-analysis yields similar results.

Sample RG5791 [BH95G-33D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RG5792 [DUP-2] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER) Comments**

Sample RG5773 [MW15-10D] Elements by ICPMS Low Level (dissolved): RDL raised due to sample matrix interference.

Sample RG5774 [DUP-1] Elements by ICPMS Low Level (dissolved): RDL raised due to sample matrix interference.

**LL TOTAL METALS (DIGESTED) WITH CV HG Comments**

Sample RG5768 [MW15-04S] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample RG5772 [MW15-09S] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample RG5773 [MW15-10D] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample RG5774 [DUP-1] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample RG5781 [MW16-15S] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample RG5786 [BH95G-32] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample RG5788 [BH95G-22] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample RG5789 [BH95G-31] Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample RG5767, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample RG5768, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample RG5769, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample RG5784, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample RG5790, Elements by ICPMS Low Level (total): Test repeated.

**Results relate only to the items tested.**



Maxxam Job #: B746271  
Report Date: 2017/06/17

**QUALITY ASSURANCE REPORT**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8660659	Dissolved Aluminum (Al)	2017/06/14	106	80 - 120	113	80 - 120	<0.00050	mg/L	NC	20
8660659	Dissolved Antimony (Sb)	2017/06/14	103	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8660659	Dissolved Arsenic (As)	2017/06/14	102	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8660659	Dissolved Barium (Ba)	2017/06/14	103	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8660659	Dissolved Beryllium (Be)	2017/06/14	109	80 - 120	110	80 - 120	<0.000010	mg/L	NC	20
8660659	Dissolved Bismuth (Bi)	2017/06/14	103	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8660659	Dissolved Boron (B)	2017/06/14	104	80 - 120	107	80 - 120	<0.010	mg/L	NC	20
8660659	Dissolved Cadmium (Cd)	2017/06/14	101	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8660659	Dissolved Chromium (Cr)	2017/06/14	101	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20
8660659	Dissolved Cobalt (Co)	2017/06/14	99	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8660659	Dissolved Copper (Cu)	2017/06/14	103	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8660659	Dissolved Iron (Fe)	2017/06/14	110	80 - 120	111	80 - 120	<0.0010	mg/L	NC	20
8660659	Dissolved Lead (Pb)	2017/06/14	105	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8660659	Dissolved Lithium (Li)	2017/06/14	104	80 - 120	107	80 - 120	<0.00050	mg/L	NC	20
8660659	Dissolved Manganese (Mn)	2017/06/14	101	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8660659	Dissolved Molybdenum (Mo)	2017/06/14	102	80 - 120	108	80 - 120	<0.000050	mg/L	NC	20
8660659	Dissolved Nickel (Ni)	2017/06/14	101	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8660659	Dissolved Phosphorus (P)	2017/06/14					<0.0020	mg/L	NC	20
8660659	Dissolved Selenium (Se)	2017/06/14	103	80 - 120	105	80 - 120	<0.000040	mg/L	NC	20
8660659	Dissolved Silicon (Si)	2017/06/14					<0.050	mg/L	NC	20
8660659	Dissolved Silver (Ag)	2017/06/14	106	80 - 120	108	80 - 120	<0.0000050	mg/L	NC	20
8660659	Dissolved Strontium (Sr)	2017/06/14	97	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8660659	Dissolved Thallium (Tl)	2017/06/14	101	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8660659	Dissolved Tin (Sn)	2017/06/14	103	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8660659	Dissolved Titanium (Ti)	2017/06/14	95	80 - 120	103	80 - 120	<0.00050	mg/L	NC	20
8660659	Dissolved Uranium (U)	2017/06/14	107	80 - 120	107	80 - 120	<0.0000020	mg/L	NC	20
8660659	Dissolved Vanadium (V)	2017/06/14	102	80 - 120	103	80 - 120	<0.00020	mg/L	NC	20
8660659	Dissolved Zinc (Zn)	2017/06/14	102	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20
8660659	Dissolved Zirconium (Zr)	2017/06/14					<0.00010	mg/L	NC	20
8660672	Acidity (pH 4.5)	2017/06/12					<0.50	mg/L	NC	20
8660672	Acidity (pH 8.3)	2017/06/12			98	80 - 120	<0.50	mg/L	NC	20

Maxxam Job #: B746271  
Report Date: 2017/06/17

**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8660673	Dissolved Aluminum (Al)	2017/06/14	103	80 - 120	112	80 - 120	<0.00050	mg/L		
8660673	Dissolved Antimony (Sb)	2017/06/14	98	80 - 120	101	80 - 120	<0.000020	mg/L		
8660673	Dissolved Arsenic (As)	2017/06/14	100	80 - 120	98	80 - 120	<0.000020	mg/L		
8660673	Dissolved Barium (Ba)	2017/06/14	NC	80 - 120	100	80 - 120	<0.000020	mg/L		
8660673	Dissolved Beryllium (Be)	2017/06/14	106	80 - 120	109	80 - 120	<0.000010	mg/L		
8660673	Dissolved Bismuth (Bi)	2017/06/14	93	80 - 120	100	80 - 120	<0.0000050	mg/L		
8660673	Dissolved Boron (B)	2017/06/14	99	80 - 120	105	80 - 120	<0.010	mg/L		
8660673	Dissolved Cadmium (Cd)	2017/06/14	97	80 - 120	99	80 - 120	<0.0000050	mg/L		
8660673	Dissolved Chromium (Cr)	2017/06/14	95	80 - 120	97	80 - 120	<0.00010	mg/L		
8660673	Dissolved Cobalt (Co)	2017/06/14	93	80 - 120	98	80 - 120	<0.0000050	mg/L		
8660673	Dissolved Copper (Cu)	2017/06/14	93	80 - 120	100	80 - 120	<0.000050	mg/L		
8660673	Dissolved Iron (Fe)	2017/06/14	99	80 - 120	104	80 - 120	<0.0010	mg/L		
8660673	Dissolved Lead (Pb)	2017/06/14	94	80 - 120	101	80 - 120	<0.0000050	mg/L		
8660673	Dissolved Lithium (Li)	2017/06/14	NC	80 - 120	108	80 - 120	<0.00050	mg/L		
8660673	Dissolved Manganese (Mn)	2017/06/14	NC	80 - 120	99	80 - 120	<0.000050	mg/L		
8660673	Dissolved Molybdenum (Mo)	2017/06/14	103	80 - 120	102	80 - 120	<0.000050	mg/L		
8660673	Dissolved Nickel (Ni)	2017/06/14	95	80 - 120	100	80 - 120	<0.000020	mg/L		
8660673	Dissolved Phosphorus (P)	2017/06/14					<0.0020	mg/L		
8660673	Dissolved Selenium (Se)	2017/06/14	105	80 - 120	102	80 - 120	<0.000040	mg/L		
8660673	Dissolved Silicon (Si)	2017/06/14					<0.050	mg/L		
8660673	Dissolved Silver (Ag)	2017/06/14	101	80 - 120	104	80 - 120	<0.0000050	mg/L		
8660673	Dissolved Strontium (Sr)	2017/06/14	NC	80 - 120	91	80 - 120	<0.000050	mg/L		
8660673	Dissolved Thallium (Tl)	2017/06/14	94	80 - 120	100	80 - 120	<0.0000020	mg/L		
8660673	Dissolved Tin (Sn)	2017/06/14	98	80 - 120	102	80 - 120	<0.00020	mg/L		
8660673	Dissolved Titanium (Ti)	2017/06/14	96	80 - 120	98	80 - 120	<0.00050	mg/L		
8660673	Dissolved Uranium (U)	2017/06/14	104	80 - 120	103	80 - 120	<0.0000020	mg/L		
8660673	Dissolved Vanadium (V)	2017/06/14	98	80 - 120	98	80 - 120	<0.00020	mg/L		
8660673	Dissolved Zinc (Zn)	2017/06/14	NC	80 - 120	97	80 - 120	<0.00010	mg/L		
8660673	Dissolved Zirconium (Zr)	2017/06/14					<0.00010	mg/L		
8661108	Acidity (pH 4.5)	2017/06/12					<0.50	mg/L	NC	20
8661108	Acidity (pH 8.3)	2017/06/12			90	80 - 120	<0.50	mg/L	NC	20



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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8661128	Dissolved Organic Carbon (C)	2017/06/12	99	80 - 120	111	80 - 120	<0.50	mg/L	10	20
8661129	Dissolved Organic Carbon (C)	2017/06/12	99	80 - 120	110	80 - 120	<0.50	mg/L	NC	20
8661130	Dissolved Organic Carbon (C)	2017/06/12	104	80 - 120	107	80 - 120	<0.50	mg/L	15	20
8661443	Total Ammonia (N)	2017/06/13	NC	80 - 120	97	80 - 120	<0.0050	mg/L	1.9	20
8661444	Total Ammonia (N)	2017/06/13	108	80 - 120	103	80 - 120	<0.0050	mg/L	4.3	20
8661458	Total Aluminum (Al)	2017/06/14	103	80 - 120	106	80 - 120	<0.00050	mg/L	NC	20
8661458	Total Antimony (Sb)	2017/06/14	102	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8661458	Total Arsenic (As)	2017/06/14	103	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8661458	Total Barium (Ba)	2017/06/14	102	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8661458	Total Beryllium (Be)	2017/06/14	108	80 - 120	106	80 - 120	<0.000010	mg/L	NC	20
8661458	Total Bismuth (Bi)	2017/06/14	102	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8661458	Total Boron (B)	2017/06/14	104	80 - 120	102	80 - 120	<0.010	mg/L	NC	20
8661458	Total Cadmium (Cd)	2017/06/14	103	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8661458	Total Chromium (Cr)	2017/06/14	98	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8661458	Total Cobalt (Co)	2017/06/14	99	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8661458	Total Copper (Cu)	2017/06/14	102	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8661458	Total Iron (Fe)	2017/06/14	104	80 - 120	105	80 - 120	<0.0010	mg/L	NC	20
8661458	Total Lead (Pb)	2017/06/14	103	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8661458	Total Lithium (Li)	2017/06/14	102	80 - 120	100	80 - 120	<0.00050	mg/L	NC	20
8661458	Total Manganese (Mn)	2017/06/14	100	80 - 120	100	80 - 120	<0.000050	mg/L	NC	20
8661458	Total Molybdenum (Mo)	2017/06/14	103	80 - 120	102	80 - 120	<0.000050	mg/L	NC	20
8661458	Total Nickel (Ni)	2017/06/14	102	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8661458	Total Phosphorus (P)	2017/06/14					<0.0020	mg/L	NC	20
8661458	Total Selenium (Se)	2017/06/14	108	80 - 120	104	80 - 120	<0.000040	mg/L	NC	20
8661458	Total Silicon (Si)	2017/06/14					<0.050	mg/L	NC	20
8661458	Total Silver (Ag)	2017/06/14	108	80 - 120	107	80 - 120	<0.0000050	mg/L	NC	20
8661458	Total Strontium (Sr)	2017/06/14	96	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8661458	Total Thallium (Tl)	2017/06/14	101	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8661458	Total Tin (Sn)	2017/06/14	105	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8661458	Total Titanium (Ti)	2017/06/14	91	80 - 120	99	80 - 120	<0.00050	mg/L	NC	20
8661458	Total Uranium (U)	2017/06/14	107	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8661458	Total Vanadium (V)	2017/06/14	100	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8661458	Total Zinc (Zn)	2017/06/14	102	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8661458	Total Zirconium (Zr)	2017/06/14					<0.00010	mg/L	NC	20
8661599	Total Suspended Solids	2017/06/14			101	80 - 120	<1.0	mg/L		
8661615	Total Suspended Solids	2017/06/14			103	80 - 120	<1.0	mg/L		
8661860	Total Aluminum (Al)	2017/06/14	NC	80 - 120	109	80 - 120	<0.0030	mg/L	0.69	20
8661860	Total Antimony (Sb)	2017/06/14	99	80 - 120	97	80 - 120	<0.000020	mg/L	1.6	20
8661860	Total Arsenic (As)	2017/06/14	102	80 - 120	100	80 - 120	<0.000020	mg/L	2.3	20
8661860	Total Barium (Ba)	2017/06/14	NC	80 - 120	98	80 - 120	<0.000050	mg/L	1.6	20
8661860	Total Beryllium (Be)	2017/06/14	102	80 - 120	97	80 - 120	<0.000010	mg/L	2.5	20
8661860	Total Bismuth (Bi)	2017/06/14	98	80 - 120	96	80 - 120	<0.000010	mg/L	NC	20
8661860	Total Boron (B)	2017/06/14	101	80 - 120	96	80 - 120	<0.010	mg/L	NC	20
8661860	Total Cadmium (Cd)	2017/06/14	100	80 - 120	95	80 - 120	<0.0000050	mg/L	8.7	20
8661860	Total Chromium (Cr)	2017/06/14	101	80 - 120	95	80 - 120	<0.00010	mg/L	0.70	20
8661860	Total Cobalt (Co)	2017/06/14	100	80 - 120	99	80 - 120	<0.000010	mg/L	6.4	20
8661860	Total Copper (Cu)	2017/06/14	97	80 - 120	97	80 - 120	<0.00010	mg/L	0.46	20
8661860	Total Iron (Fe)	2017/06/14	NC	80 - 120	102	80 - 120	<0.0050	mg/L	0.68	20
8661860	Total Lead (Pb)	2017/06/14	99	80 - 120	96	80 - 120	<0.000020	mg/L	2.8	20
8661860	Total Lithium (Li)	2017/06/14	98	80 - 120	94	80 - 120	<0.00050	mg/L	2.9	20
8661860	Total Manganese (Mn)	2017/06/14	NC	80 - 120	97	80 - 120	<0.00010	mg/L	5.8	20
8661860	Total Molybdenum (Mo)	2017/06/14	NC	80 - 120	98	80 - 120	<0.000050	mg/L	3.2	20
8661860	Total Nickel (Ni)	2017/06/14	100	80 - 120	99	80 - 120	<0.00010	mg/L	7.1	20
8661860	Total Phosphorus (P)	2017/06/14					<0.0050	mg/L	4.8	20
8661860	Total Selenium (Se)	2017/06/14	102	80 - 120	100	80 - 120	<0.000040	mg/L	NC	20
8661860	Total Silicon (Si)	2017/06/14					<0.050	mg/L	0.78	20
8661860	Total Silver (Ag)	2017/06/14	105	80 - 120	100	80 - 120	<0.000010	mg/L	9.5	20
8661860	Total Strontium (Sr)	2017/06/14	NC	80 - 120	94	80 - 120	<0.000050	mg/L	5.9	20
8661860	Total Thallium (Tl)	2017/06/14	100	80 - 120	94	80 - 120	<0.0000020	mg/L	NC	20
8661860	Total Tin (Sn)	2017/06/14	96	80 - 120	99	80 - 120	<0.00020	mg/L	NC	20
8661860	Total Titanium (Ti)	2017/06/14	NC	80 - 120	101	80 - 120	<0.0020	mg/L	7.9	20
8661860	Total Uranium (U)	2017/06/14	101	80 - 120	97	80 - 120	<0.0000050	mg/L	2.6	20

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8661860	Total Vanadium (V)	2017/06/14	104	80 - 120	96	80 - 120	<0.00020	mg/L	6.7	20
8661860	Total Zinc (Zn)	2017/06/14	100	80 - 120	99	80 - 120	<0.0010	mg/L	11	20
8661860	Total Zirconium (Zr)	2017/06/14					<0.00010	mg/L	0	20
8662055	Total Aluminum (Al)	2017/06/14	NC	80 - 120	110	80 - 120	<0.0030	mg/L	3.0	20
8662055	Total Antimony (Sb)	2017/06/14	96	80 - 120	99	80 - 120	<0.000020	mg/L	3.6	20
8662055	Total Arsenic (As)	2017/06/14	101	80 - 120	98	80 - 120	<0.000020	mg/L	2.7	20
8662055	Total Barium (Ba)	2017/06/14	NC	80 - 120	101	80 - 120	<0.000050	mg/L	2.4	20
8662055	Total Beryllium (Be)	2017/06/14	104	80 - 120	98	80 - 120	<0.000010	mg/L	1.8	20
8662055	Total Bismuth (Bi)	2017/06/14	98	80 - 120	96	80 - 120	<0.000010	mg/L	8.0	20
8662055	Total Boron (B)	2017/06/14	104	80 - 120	96	80 - 120	<0.010	mg/L	NC	20
8662055	Total Cadmium (Cd)	2017/06/14	98	80 - 120	96	80 - 120	<0.0000050	mg/L	3.0	20
8662055	Total Chromium (Cr)	2017/06/14	98	80 - 120	98	80 - 120	<0.00010	mg/L	5.4	20
8662055	Total Cobalt (Co)	2017/06/14	97	80 - 120	101	80 - 120	<0.000010	mg/L	2.7	20
8662055	Total Copper (Cu)	2017/06/14	92	80 - 120	100	80 - 120	<0.00010	mg/L	2.3	20
8662055	Total Iron (Fe)	2017/06/14	NC	80 - 120	106	80 - 120	<0.0050	mg/L	1.1	20
8662055	Total Lead (Pb)	2017/06/14	98	80 - 120	96	80 - 120	<0.000020	mg/L	1.3	20
8662055	Total Lithium (Li)	2017/06/14	88	80 - 120	94	80 - 120	<0.00050	mg/L	1.2	20
8662055	Total Manganese (Mn)	2017/06/14	NC	80 - 120	101	80 - 120	<0.00010	mg/L	2.8	20
8662055	Total Molybdenum (Mo)	2017/06/14	89	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8662055	Total Nickel (Ni)	2017/06/14	99	80 - 120	105	80 - 120	<0.00010	mg/L	1.2	20
8662055	Total Phosphorus (P)	2017/06/14					<0.0050	mg/L	0.50	20
8662055	Total Selenium (Se)	2017/06/14	91	80 - 120	101	80 - 120	<0.000040	mg/L	4.6	20
8662055	Total Silicon (Si)	2017/06/14					<0.050	mg/L	2.9	20
8662055	Total Silver (Ag)	2017/06/14	101	80 - 120	104	80 - 120	<0.000010	mg/L	12	20
8662055	Total Strontium (Sr)	2017/06/14	NC	80 - 120	93	80 - 120	<0.000050	mg/L	0.027	20
8662055	Total Thallium (Tl)	2017/06/14	99	80 - 120	96	80 - 120	<0.0000020	mg/L	0	20
8662055	Total Tin (Sn)	2017/06/14	77 (1)	80 - 120	100	80 - 120	<0.00020	mg/L	NC	20
8662055	Total Titanium (Ti)	2017/06/14	NC	80 - 120	97	80 - 120	<0.0020	mg/L	13	20
8662055	Total Uranium (U)	2017/06/14	102	80 - 120	100	80 - 120	<0.0000050	mg/L	2.4	20
8662055	Total Vanadium (V)	2017/06/14	102	80 - 120	101	80 - 120	<0.00020	mg/L	1.3	20
8662055	Total Zinc (Zn)	2017/06/14	NC	80 - 120	99	80 - 120	<0.0010	mg/L	1.5	20

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8662055	Total Zirconium (Zr)	2017/06/14					<0.00010	mg/L	19	20
8662082	Total Suspended Solids	2017/06/14			103	80 - 120	<1.0	mg/L		
8662423	pH	2017/06/13			102	97 - 103			0	N/A
8662426	Conductivity	2017/06/13			98	80 - 120	<1.0	uS/cm	0	20
8662427	Alkalinity (PP as CaCO3)	2017/06/13					<0.50	mg/L	NC	20
8662427	Alkalinity (Total as CaCO3)	2017/06/13	NC	80 - 120	99	80 - 120	<0.50	mg/L	0.20	20
8662427	Bicarbonate (HCO3)	2017/06/13					<0.50	mg/L	0.20	20
8662427	Carbonate (CO3)	2017/06/13					<0.50	mg/L	NC	20
8662427	Hydroxide (OH)	2017/06/13					<0.50	mg/L	NC	20
8662434	pH	2017/06/13			102	97 - 103			0	N/A
8662443	Conductivity	2017/06/13			100	80 - 120	<1.0	uS/cm	0.37	20
8662444	Alkalinity (PP as CaCO3)	2017/06/13					<0.50	mg/L	NC	20
8662444	Alkalinity (Total as CaCO3)	2017/06/13	102	80 - 120	97	80 - 120	<0.50	mg/L	0.70	20
8662444	Bicarbonate (HCO3)	2017/06/13					<0.50	mg/L	0.70	20
8662444	Carbonate (CO3)	2017/06/13					<0.50	mg/L	NC	20
8662444	Hydroxide (OH)	2017/06/13					<0.50	mg/L	NC	20
8662458	pH	2017/06/13			102	97 - 103			0	N/A
8662472	Conductivity	2017/06/13			100	80 - 120	<1.0	uS/cm		
8662473	Alkalinity (PP as CaCO3)	2017/06/13					<0.50	mg/L	NC	20
8662473	Alkalinity (Total as CaCO3)	2017/06/13	NC	80 - 120	99	80 - 120	<0.50	mg/L	0.68	20
8662473	Bicarbonate (HCO3)	2017/06/13					<0.50	mg/L	0.68	20
8662473	Carbonate (CO3)	2017/06/13					<0.50	mg/L	NC	20
8662473	Hydroxide (OH)	2017/06/13					<0.50	mg/L	NC	20
8662500	Alkalinity (PP as CaCO3)	2017/06/14					<0.50	mg/L	NC	20
8662500	Alkalinity (Total as CaCO3)	2017/06/14	105	80 - 120	98	80 - 120	<0.50	mg/L	6.7	20
8662500	Bicarbonate (HCO3)	2017/06/14					<0.50	mg/L	6.7	20
8662500	Carbonate (CO3)	2017/06/14					<0.50	mg/L	NC	20
8662500	Hydroxide (OH)	2017/06/14					<0.50	mg/L	NC	20
8662510	Conductivity	2017/06/14			101	80 - 120	<1.0	uS/cm		
8662511	pH	2017/06/14			102	97 - 103				
8662931	Dissolved Mercury (Hg)	2017/06/14	95	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20

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			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8662939	Dissolved Mercury (Hg)	2017/06/14	99	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8662956	Total Mercury (Hg)	2017/06/14	109	80 - 120	108	80 - 120	<0.0000020	mg/L	NC	20
8663067	Dissolved Chloride (Cl)	2017/06/13	108	80 - 120	98	80 - 120	<0.50	mg/L	NC	20
8663070	Dissolved Sulphate (SO4)	2017/06/13	102	80 - 120	93	80 - 120	<0.50	mg/L	2.7	20
8663073	Dissolved Chloride (Cl)	2017/06/13	109	80 - 120	97	80 - 120	<0.50	mg/L	NC	20
8663077	Dissolved Sulphate (SO4)	2017/06/13	105	80 - 120	91	80 - 120	<0.50	mg/L	NC	20
8663209	Dissolved Phosphorus (P)	2017/06/13	95	80 - 120	103	80 - 120	<0.0020	mg/L	10	20
8663212	Dissolved Phosphorus (P)	2017/06/13	100	80 - 120	101	80 - 120	<0.0020	mg/L	NC	20
8663215	Total Phosphorus (P)	2017/06/13	101	80 - 120	100	80 - 120	<0.0020	mg/L	3.7	20
8663218	Total Phosphorus (P)	2017/06/13	91	80 - 120	102	80 - 120	<0.0020	mg/L	NC	20
8663221	Total Phosphorus (P)	2017/06/13			109	80 - 120	<0.0020	mg/L		
8663256	Total Mercury (Hg)	2017/06/14	108	80 - 120	106	80 - 120	<0.0000020	mg/L	NC	20
8663261	Dissolved Mercury (Hg)	2017/06/14	107	80 - 120	107	80 - 120	<0.0000020	mg/L	NC	20
8663443	Nitrate plus Nitrite (N)	2017/06/13	97	80 - 120	94	80 - 120	<0.0020	mg/L	NC	25
8663445	Nitrite (N)	2017/06/13	99	80 - 120	100	80 - 120	<0.0020	mg/L	NC	25
8663446	Nitrate plus Nitrite (N)	2017/06/13	107	80 - 120	101	80 - 120	<0.0020	mg/L	3.7	25
8663447	Nitrite (N)	2017/06/13	96	80 - 120	98	80 - 120	<0.0020	mg/L	4.7	25
8663806	Fluoride (F)	2017/06/14	95	80 - 120	100	80 - 120	0.014, RDL=0.010	mg/L	1.8	20
8663812	Fluoride (F)	2017/06/14	98	80 - 120	100	80 - 120	<0.010	mg/L	NC	20
8663814	Fluoride (F)	2017/06/14	102	80 - 120	100	80 - 120	<0.010	mg/L	NC	20
8663987	Dissolved Sulphate (SO4)	2017/06/14	108	80 - 120	98	80 - 120	<0.50	mg/L	3.3	20
8665539	Dissolved Molybdenum (Mo)	2017/06/16	100	80 - 120	102	80 - 120	<0.000050	mg/L	3.4	20
8665557	Total Aluminum (Al)	2017/06/16			105	80 - 120	<0.00050	mg/L	2.1	20
8665557	Total Iron (Fe)	2017/06/16			102	80 - 120	<0.0010	mg/L	1.2	20
8665557	Total Manganese (Mn)	2017/06/16			99	80 - 120	<0.000050	mg/L	18	20
8665557	Total Strontium (Sr)	2017/06/16			94	80 - 120	<0.000050	mg/L	15	20

Maxxam Job #: B746271  
Report Date: 2017/06/17

**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8665557	Total Titanium (Ti)	2017/06/16			94	80 - 120	<0.00050	mg/L	11	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.



Maxxam Job #: B746271  
Report Date: 2017/06/17

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Signature 

Name    
M.Sc., P.Chem., QP, Scientific Services Manager

---

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



-8566

COC #:

1 2

<b>Invoice Information</b> Company Name: <b>BMC MINERALS LTD.</b> Contact Name: _____ Address: <b>530-1130 WEST PENDER ST</b> Vancouver, BC PC: V6E 4A4 Phone: _____ Email: _____		Company Name: <b>ALEXCO ENVIRONMENTAL</b> Contact Name: <b>Name REDACTED</b> Address: <b>UNIT 3 151 INDUSTRIAL RD</b> Whitehorse, YK PC: V1A 2V3 Phone: (867) 668-6463 Email: <b>Email REDACTED</b>		<b>Project Information (where applicable)</b> Quotation #: <b>B50743</b> P.O. #/ A/FER: _____ Project #: <b>BMC-15-01</b> Site Location: <b>Kudz Ze Kayah</b> Site #: _____ Sampled By: <b>Name REDACTED</b>		<b>Turnaround Time (TAT) Required</b> <input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses) PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS Rush TAT (Surcharges will be applied) <input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days Date Required: _____	
---	--	--	--	--	--	--	--

<b>Regulatory Criteria</b> <input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<b>Special Instructions</b> <input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify) USE SCENARIO # 12485		<b>Analysis Requested</b> TOTAL LOW LEVEL METALS INCL. MERCURY DISSOLVED LOW LEVEL METALS INCL. MERCURY LOW LEVEL TYS AMMONIA (D, F, SO4, NO2, NO3) AMMONIA CONDUCTIVITY pH ALKALINITY & ACIDITY DOC TOTAL PHOSPHORUS - LOW LEVEL DISSOLVED PHOSPHORUS - LOW LEVEL # OF CONTAINERS SUBMITTED HOLD - DO NOT ANALYZE										<b>Rush Confirmation #:</b> LABORATORY USE ONLY CUSTOM SEAL Present Intact NA SA COOLING MEDIA PRESENT Y/N COMMENTS	
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SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	TOTAL LOW LEVEL METALS INCL. MERCURY	DISSOLVED LOW LEVEL METALS INCL. MERCURY	LOW LEVEL TYS	AMMONIA (D, F, SO4, NO2, NO3)	AMMONIA	CONDUCTIVITY	pH	ALKALINITY & ACIDITY	DOC	TOTAL PHOSPHORUS - LOW LEVEL	DISSOLVED PHOSPHORUS - LOW LEVEL	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	COMMENTS
1	MW15-03 S	5-Jun-17	1242h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
3	MW15-03 D	5-Jun-17	1330h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
4	MW15-04 S	5-Jun-17	1440h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
5	MW15-04 D	5-Jun-17	1510h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
6	MW15-07 D	5-Jun-17	1615h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
7	MW15-07 S	5-Jun-17	1630h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
8	MW15-09 S	5-Jun-17	1739h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
9	MW15-10 D	6-Jun-17	0939h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
10	DUP-1	6-Jun-17	1004h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
11	MW16-14 D	6-Jun-17	1026h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
12	MW16-12 D	6-Jun-17	1147h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
13	MW16-16 D	6-Jun-17	1310h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
14	MW16-17	6-Jun-17	1400h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
15	MW16-15 D	6-Jun-17	1600h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
16	DUP-3	6-Jun-17	1627h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
17	MW16-15 S	6-Jun-17	1622h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
18	MW15-01	7-Jun-17	1140h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
19	BH95G-02	7-Jun-17	1239h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
20	BH95G-15 D	7-Jun-17	1400h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
21	BH95G-25 D	7-Jun-17	1505h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
22	BH95G-32	7-Jun-17	1720h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
23	BH95G-131	8-Jun-17	1033h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
24	BH95G-22	8-Jun-17	1115h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
25	BH95G-31	8-Jun-17	1340h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
26	Field Blank	8-Jun-17	1345h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
27	BH95G-33 D	8-Jun-17	1300h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
28	DUP-2	8-Jun-17	1400h	Water	X	X	X	X	X	X	X	X	X	X	X	11		
29	Trip Blank	n/a	n/a	Water	X	X	X	X	X	X	X	X	X	X	X	11		

RELINQUISHED BY: (Signature/Print) <b>Name REDACTED</b>	DATE: (YYYY/MM/DD) <b>6/9/2017</b>	TIME: (HH:MM) <b>1650h</b>	RECEIVED BY: (Signature/Print) <b>Name REDACTED</b>	DATE: (YYYY/MM/DD) <b>07/10/10</b>	TIME: (HH:MM) <b>15:29</b>	MAXXAM JOB # <b>B746271</b>
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Your Project #: BMC-15-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08444213, 08444212

**Attention:** Name REDACTED  
 ALEXCO ENVIRONMENTAL GROUP INC.  
 Unit 3 Calcite Business Centre  
 151 Industrial Road  
 WHITEHORSE, YT  
 Canada Y1A 2V3

**Report Date: 2017/09/25**  
 Report #: R2449708  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B780105**  
**Received: 2017/09/15, 15:00**

Sample Matrix: Water  
 # Samples Received: 34

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	34	2017/09/20	2017/09/19	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Low Level	23	2017/09/19	2017/09/19	BBY6SOP-00026	SM 22 2320 B m
Alkalinity - Low Level	11	2017/09/19	2017/09/20	BBY6SOP-00026	SM 22 2320 B m
Chloride - Low Level	34	N/A	2017/09/19	BBY6SOP-00011	SM 22 4500-Cl- E m
Carbon (DOC) - field filtered/preserved (1)	33	N/A	2017/09/20	BBY6SOP-00003	SM 22 5310 C m
Carbon (DOC) - unfiltered/unpreserved (1)	1	2017/09/19	2017/09/20	BBY6SOP-00003	SM 22 5310 C m
Conductance - Low Level	23	2017/09/19	2017/09/19	BBY6SOP-00026	SM 22 2510 B m
Conductance - Low Level	11	2017/09/19	2017/09/20	BBY6SOP-00026	SM 22 2510 B m
Fluoride - Low Level	34	N/A	2017/09/19	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	1	N/A	2017/09/20	BBY WI-00033	Auto Calc
Hardness Total (calculated as CaCO3)	33	N/A	2017/09/21	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	13	N/A	2017/09/19	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	18	N/A	2017/09/20	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	1	N/A	2017/09/21	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	1	N/A	2017/09/22	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	1	N/A	2017/09/25	BBY WI-00033	Auto Calc
Mercury (Dissolved-LowLevel) by CVAF	33	N/A	2017/09/19	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Dissolved-LowLevel) by CVAF	1	N/A	2017/09/20	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAF	34	2017/09/18	2017/09/18	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance (as Cations/Anions Ratio)	31	N/A	2017/09/20	BBY WI-00033	Auto Calc
Ion Balance (as Cations/Anions Ratio)	1	N/A	2017/09/22	BBY WI-00033	Auto Calc
Ion Balance (as Cations/Anions Ratio)	2	N/A	2017/09/25	BBY WI-00033	Auto Calc
Ion Balance	31	N/A	2017/09/20	BBY WI-00033	SM 22 1030E
Ion Balance	1	N/A	2017/09/22	BBY WI-00033	SM 22 1030E
Ion Balance	2	N/A	2017/09/25	BBY WI-00033	SM 22 1030E
Sum of cations, anions	31	N/A	2017/09/20	Calc	
Sum of cations, anions	2	N/A	2017/09/21	Calc	
Sum of cations, anions	1	N/A	2017/09/25	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	13	N/A	2017/09/19	BBY7SOP-00002	EPA 6020B R2 m

Your Project #: BMC-15-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08444213, 08444212

**Attention:** Name REDACTED  
 ALEXCO ENVIRONMENTAL GROUP INC.  
 Unit 3 Calcite Business Centre  
 151 Industrial Road  
 WHITEHORSE, YT  
 Canada Y1A 2V3

**Report Date: 2017/09/25**  
 Report #: R2449708  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B780105**  
**Received: 2017/09/15, 15:00**

Sample Matrix: Water  
 # Samples Received: 34

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	18	N/A	2017/09/20	BBY7SOP-00002	EPA 6020B R2 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2017/09/21	BBY7SOP-00002	EPA 6020B R2 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2017/09/22	BBY7SOP-00002	EPA 6020B R2 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2017/09/25	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Low Level (dissolved)	14	N/A	2017/09/18	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Low Level (dissolved)	9	N/A	2017/09/19	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Low Level (dissolved)	11	N/A	2017/09/20	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Digested LL (total)	17	2017/09/18	2017/09/20	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Digested LL (total)	8	2017/09/19	2017/09/20	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Digested LL (total)	1	2017/09/20	2017/09/20	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Digested LL (total)	3	2017/09/20	2017/09/21	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2017/09/20	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Na, K, Ca, Mg, S by CRC ICPMS (total)	33	N/A	2017/09/21	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Low Level (total)	5	N/A	2017/09/21	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Ammonia-N Low Level (Preserved)	34	N/A	2017/09/20	BBY6SOP-00009	EPA 350.1 m
Nitrate+Nitrite (N) (low level)	18	N/A	2017/09/17	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrate+Nitrite (N) (low level)	16	N/A	2017/09/19	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	18	N/A	2017/09/17	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	16	N/A	2017/09/19	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N) Low Level Calc	34	N/A	2017/09/20	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	5	N/A	2017/09/18	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	1	N/A	2017/09/19	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	27	N/A	2017/09/21	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	23	2017/09/19	2017/09/19	BBY6SOP-00026	SM 22 4500-H+ B m
pH Water (2)	11	2017/09/19	2017/09/20	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate - Low Level	32	N/A	2017/09/19	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate - Low Level	2	N/A	2017/09/20	BBY6SOP-00017	SM 22 4500-SO42- E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	32	2017/09/19	2017/09/19	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	2	2017/09/22	2017/09/22	BBY6SOP-00013	SM 22 4500-P E m

Your Project #: BMC-15-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08444213, 08444212

**Attention:** Name REDACTED  
 ALEXCO ENVIRONMENTAL GROUP INC.  
 Unit 3 Calcite Business Centre  
 151 Industrial Road  
 WHITEHORSE, YT  
 Canada Y1A 2V3

**Report Date: 2017/09/25**  
 Report #: R2449708  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B780105**  
**Received: 2017/09/15, 15:00**

Sample Matrix: Water  
 # Samples Received: 34

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Phosphorus - Low Level Unpreserved	7	2017/09/16	2017/09/19	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - Low Level Unpreserved	25	2017/09/19	2017/09/19	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - Low Level Unpreserved	2	2017/09/22	2017/09/22	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	13	2017/09/18	2017/09/18	BBY6SOP-00034	SM 22 2540 D
Total Suspended Solids-Low Level	11	2017/09/18	2017/09/19	BBY6SOP-00034	SM 22 2540 D
Total Suspended Solids-Low Level	10	2017/09/19	2017/09/19	BBY6SOP-00034	SM 22 2540 D

**Remarks:**

Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) DOC present in the sample should be considered as non-purgeable DOC.

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Your Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08444213, 08444212

**Attention:** Name REDACTED  
ALEXCO ENVIRONMENTAL GROUP INC.  
Unit 3 Calcite Business Centre  
151 Industrial Road  
WHITEHORSE, YT  
Canada Y1A 2V3

**Report Date: 2017/09/25**  
Report #: R2449708  
Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B780105**  
**Received: 2017/09/15, 15:00**

### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Name REDACTED Project Manager  
Email: Email REDACTED  
Phone REDACTED

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2886			RZ2887			RZ2888		
Sampling Date		2017/09/13 09:11			2017/09/13 08:45			2017/09/13 10:55		
COC Number		08444213			08444213			08444213		
	UNITS	MW15-03S	RDL	QC Batch	MW15-03D	RDL	QC Batch	MW15-04S	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	2.2	N/A	8760834	4.4	N/A	8760834	2.6	N/A	8760834
Cation Sum	meq/L	2.0	N/A	8760834	4.2	N/A	8760834	3.0	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.93	0.010	8760662	0.95	0.010	8760662	1.2	0.010	8760662
Ion Balance (% Difference)	%	3.8	N/A	8760663	2.7	N/A	8760663	7.4	N/A	8760663
Nitrate (N)	mg/L	0.118	0.0020	8760534	<0.0020	0.0020	8760534	0.212	0.0020	8760534
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.130	0.010	8763317	0.160	0.010	8763317	0.086	0.010	8763317
Dissolved Organic Carbon (C)	mg/L	0.99	0.50	8764523	<0.50	0.50	8764524	0.52	0.50	8763887
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765486	<1.0	1.0	8765493	<1.0	1.0	8765486
Alkalinity (Total as CaCO3)	mg/L	93.6	0.50	8763796	194	0.50	8763812	118	0.50	8763812
Acidity (pH 8.3)	mg/L	<1.0	1.0	8765486	<1.0	1.0	8765493	<1.0	1.0	8765486
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763796	2.18	0.50	8763812	<0.50	0.50	8763812
Bicarbonate (HCO3)	mg/L	114	0.50	8763796	232	0.50	8763812	144	0.50	8763812
Carbonate (CO3)	mg/L	<0.50	0.50	8763796	2.62	0.50	8763812	<0.50	0.50	8763812
Hydroxide (OH)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763812	<0.50	0.50	8763812
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	13.4	0.50	8764641	23.7	0.50	8764663	8.47	0.50	8764663
Dissolved Chloride (Cl)	mg/L	1.4	0.50	8764633	<0.50	0.50	8764643	0.62	0.50	8764643
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	2.04 (1)	0.020	8764033	0.0061	0.0020	8764033	0.759 (1)	0.020	8764033
Total Ammonia (N)	mg/L	0.029	0.0050	8765492	0.040	0.0050	8765492	0.011	0.0050	8765496
Nitrate plus Nitrite (N)	mg/L	0.118	0.0020	8765402	<0.0020	0.0020	8765406	0.221	0.0020	8765406
Nitrite (N)	mg/L	<0.0020	0.0020	8765404	<0.0020	0.0020	8765408	0.0092	0.0020	8765408
Total Phosphorus (P)	mg/L	1.93 (1)	0.020	8764026	0.0057	0.0020	8764034	0.860 (1)	0.020	8764034
<b>Physical Properties</b>										
Conductivity	uS/cm	199	1.0	8763795	388	1.0	8763811	231	1.0	8763811
pH	pH	8.10		8763791	8.33		8763798	8.11		8763798
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2886			RZ2887			RZ2888		
<b>Sampling Date</b>		2017/09/13 09:11			2017/09/13 08:45			2017/09/13 10:55		
<b>COC Number</b>		08444213			08444213			08444213		
	<b>UNITS</b>	<b>MW15-03S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-04S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	3860 (1)	25	8761694	12.2	1.0	8761694	697 (1)	6.7	8761694

RDL = Reportable Detection Limit

(1) RDL raised due to high concentration of solids in the sample.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2889			RZ2890			RZ2901		
<b>Sampling Date</b>		2017/09/13 10:20			2017/09/13 15:29			2017/09/13 15:50		
<b>COC Number</b>		08444213			08444213			08444213		
	<b>UNITS</b>	<b>MW15-04D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-07D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-07S</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Anion Sum	meq/L	3.2	N/A	8760834	4.3	N/A	8760834	4.3	N/A	8760834
Cation Sum	meq/L	3.0	N/A	8760834	4.3	N/A	8760834	4.0	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.93	0.010	8760662	0.99	0.010	8760662	0.94	0.010	8760662
Ion Balance (% Difference)	%	3.8	N/A	8760663	0.38	N/A	8760663	2.9	N/A	8760663
Nitrate (N)	mg/L	0.0072	0.0020	8760534	<0.0020	0.0020	8760534	<0.0020	0.0020	8760534

**Misc. Inorganics**

Fluoride (F)	mg/L	0.220	0.010	8763317	0.350	0.010	8763317	0.310	0.010	8763317
Dissolved Organic Carbon (C)	mg/L	1.44	0.50	8764524	<0.50	0.50	8764525	0.64	0.50	8764524
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765493	<1.0	1.0	8765493	<1.0	1.0	8765486
Alkalinity (Total as CaCO3)	mg/L	139	0.50	8763812	182	0.50	8763812	177	0.50	8763796
Acidity (pH 8.3)	mg/L	<1.0	1.0	8765493	<1.0	1.0	8765493	<1.0	1.0	8765486
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763812	<0.50	0.50	8763812	<0.50	0.50	8763796
Bicarbonate (HCO3)	mg/L	170	0.50	8763812	222	0.50	8763812	216	0.50	8763796
Carbonate (CO3)	mg/L	<0.50	0.50	8763812	<0.50	0.50	8763812	<0.50	0.50	8763796
Hydroxide (OH)	mg/L	<0.50	0.50	8763812	<0.50	0.50	8763812	<0.50	0.50	8763796

**Anions**

Dissolved Sulphate (SO4)	mg/L	19.5	0.50	8764663	30.7	0.50	8764663	33.7	0.50	8764641
Dissolved Chloride (Cl)	mg/L	0.65	0.50	8764643	0.63	0.50	8764643	<0.50	0.50	8764633

**Nutrients**

Dissolved Phosphorus (P)	mg/L	0.513 (1)	0.020	8764033	0.720 (1)	0.020	8764033	0.0112	0.0020	8764033
Total Ammonia (N)	mg/L	0.020	0.0050	8765496	0.050	0.0050	8765496	0.020	0.0050	8765492
Nitrate plus Nitrite (N)	mg/L	0.0122	0.0020	8765406	0.0055	0.0020	8765406	0.0020	0.0020	8765402
Nitrite (N)	mg/L	0.0050	0.0020	8765408	0.0057	0.0020	8765408	0.0035	0.0020	8765404
Total Phosphorus (P)	mg/L	0.482	0.0020	8764034	0.681 (1)	0.020	8764034	0.0097	0.0020	8764034

**Physical Properties**

Conductivity	uS/cm	289	1.0	8763811	383	1.0	8763811	377	1.0	8763795
pH	pH	8.17		8763798	8.04		8763798	8.21		8763791

RDL = Reportable Detection Limit

N/A = Not Applicable

(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2889			RZ2890			RZ2901		
<b>Sampling Date</b>		2017/09/13 10:20			2017/09/13 15:29			2017/09/13 15:50		
<b>COC Number</b>		08444213			08444213			08444213		
	<b>UNITS</b>	<b>MW15-04D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-07D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-07S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	712 (1)	20	8761694	910 (1)	10	8761694	7.9	1.0	8762433

RDL = Reportable Detection Limit

(1) RDL raised due to high concentration of solids in the sample.



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2907			RZ2908			RZ2909		
Sampling Date		2017/09/14 08:50			2017/09/13 18:00			2017/09/14 09:00		
COC Number		08444213			08444213			08444213		
	UNITS	MW15-09S	RDL	QC Batch	MW15-10D	RDL	QC Batch	DUP-1	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	4.8	N/A	8760834	36	N/A	8760834	4.7	N/A	8760834
Cation Sum	meq/L	4.5	N/A	8760834	40	N/A	8760834	4.6	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.95	0.010	8760662	1.1	0.010	8760662	0.96	0.010	8760662
Ion Balance (% Difference)	%	2.6	N/A	8760663	5.8	N/A	8760663	2.0	N/A	8760663
Nitrate (N)	mg/L	0.138	0.0020	8760534	0.0020	0.0020	8760534	0.129	0.0020	8760534
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.230	0.010	8763318	1.30	0.010	8763318	0.230	0.010	8763318
Dissolved Organic Carbon (C)	mg/L	0.50	0.50	8764523	<0.50	0.50	8764525	0.74	0.50	8764525
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765442	<1.0	1.0	8765442	<1.0	1.0	8765446
Alkalinity (Total as CaCO3)	mg/L	217	0.50	8763788	1770	0.50	8763788	216	0.50	8763788
Acidity (pH 8.3)	mg/L	<1.0	1.0	8765442	423	1.0	8765442	<1.0	1.0	8765446
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763788
Bicarbonate (HCO3)	mg/L	265	0.50	8763788	2150	0.50	8763788	263	0.50	8763788
Carbonate (CO3)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763788
Hydroxide (OH)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763788
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	19.7	0.50	8764632	4.06	0.50	8764632	19.0	0.50	8764632
Dissolved Chloride (Cl)	mg/L	0.55	0.50	8764630	1.6	0.50	8764630	0.53	0.50	8764630
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0224	0.0020	8764030	0.0183	0.0020	8764030	0.0516	0.0020	8764030
Total Ammonia (N)	mg/L	0.016	0.0050	8765492	0.29	0.0050	8765492	0.011	0.0050	8765496
Nitrate plus Nitrite (N)	mg/L	0.142	0.0020	8761357	0.0020	0.0020	8761357	0.129	0.0020	8761357
Nitrite (N)	mg/L	0.0041	0.0020	8761358	<0.0020	0.0020	8761358	<0.0020	0.0020	8761358
Total Phosphorus (P)	mg/L	0.365	0.0020	8764026	0.0751	0.0020	8764026	0.240	0.0020	8764026
<b>Physical Properties</b>										
Conductivity	uS/cm	414	1.0	8763785	2890	1.0	8763785	420	1.0	8763785
pH	pH	8.16		8763782	6.96		8763782	8.14		8763782
RDL = Reportable Detection Limit N/A = Not Applicable										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2907			RZ2908			RZ2909		
<b>Sampling Date</b>		2017/09/14 08:50			2017/09/13 18:00			2017/09/14 09:00		
<b>COC Number</b>		08444213			08444213			08444213		
	<b>UNITS</b>	<b>MW15-09S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP-1</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	584 (1)	14	8762433	116	1.0	8762433	278 (1)	5.0	8762433
RDL = Reportable Detection Limit (1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2910			RZ2911			RZ2912		
Sampling Date		2017/09/15 07:30			2017/09/13 13:35			2017/09/13 14:25		
COC Number		08444213			08444213			08444213		
	UNITS	MW16-14D	RDL	QC Batch	MW16-12D	RDL	QC Batch	MW16-16D	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	5.2	N/A	8760834	20	N/A	8760834	4.8	N/A	8760834
Cation Sum	meq/L	5.0	N/A	8760834	20	N/A	8760834	4.6	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.97	0.010	8760662	1.0	0.010	8760662	0.97	0.010	8760662
Ion Balance (% Difference)	%	1.4	N/A	8760663	1.1	N/A	8760663	1.7	N/A	8760663
Nitrate (N)	mg/L	0.0079	0.0020	8760534	<0.0020	0.0020	8760534	<0.0020	0.0020	8760534
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.240	0.010	8763318	1.10	0.010	8763318	0.180	0.010	8763318
Dissolved Organic Carbon (C)	mg/L	0.85	0.50	8764525	<0.50	0.50	8764524	0.66	0.50	8764524
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765446	<1.0	1.0	8765446	<1.0	1.0	8765446
Alkalinity (Total as CaCO3)	mg/L	163	0.50	8763788	972	0.50	8763796	199	0.50	8763788
Acidity (pH 8.3)	mg/L	1.2	1.0	8765446	124	1.0	8765446	2.4	1.0	8765446
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763796	<0.50	0.50	8763788
Bicarbonate (HCO3)	mg/L	199	0.50	8763788	1190	0.50	8763796	243	0.50	8763788
Carbonate (CO3)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763796	<0.50	0.50	8763788
Hydroxide (OH)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763796	<0.50	0.50	8763788
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	89.9	0.50	8764632	<0.50	0.50	8764632	37.4	0.50	8764632
Dissolved Chloride (Cl)	mg/L	0.53	0.50	8764630	1.0	0.50	8764630	0.55	0.50	8764630
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0029	0.0020	8764030	0.0076	0.0020	8764030	0.0844	0.0020	8764030
Total Ammonia (N)	mg/L	0.040	0.0050	8765496	0.27	0.0050	8765498	0.0090	0.0050	8765496
Nitrate plus Nitrite (N)	mg/L	0.0079	0.0020	8761357	<0.0020	0.0020	8761357	<0.0020	0.0020	8761357
Nitrite (N)	mg/L	<0.0020	0.0020	8761358	<0.0020	0.0020	8761358	<0.0020	0.0020	8761358
Total Phosphorus (P)	mg/L	0.0235	0.0020	8764026	0.0132	0.0020	8764026	0.595 (1)	0.020	8764026
<b>Physical Properties</b>										
Conductivity	uS/cm	464	1.0	8763785	1550	1.0	8763795	432	1.0	8763785
pH	pH	8.14		8763782	7.19		8763791	7.96		8763782
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2910			RZ2911			RZ2912		
<b>Sampling Date</b>		2017/09/15 07:30			2017/09/13 13:35			2017/09/13 14:25		
<b>COC Number</b>		08444213			08444213			08444213		
	<b>UNITS</b>	<b>MW16-14D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW16-12D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW16-16D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	30.7 (1)	1.1	8762433	5.1	1.0	8762433	551 (2)	10	8762433

RDL = Reportable Detection Limit  
(1) RDL raised due to limited initial sample amount.  
(2) RDL raised due to high concentration of solids in the sample.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2913			RZ2914			RZ2915		
Sampling Date		2017/09/14 15:09			2017/09/12 11:27			2017/09/14 15:35		
COC Number		08444213			08444213			08444213		
	UNITS	MW16-17	RDL	QC Batch	MW16-15D	RDL	QC Batch	DUP-3	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	2.9	N/A	8760834	4.1	N/A	8760834	3.0	N/A	8760834
Cation Sum	meq/L	2.7	N/A	8760834	3.9	N/A	8760834	2.8	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.92	0.010	8760662	0.96	0.010	8760662	0.95	0.010	8760662
Ion Balance (% Difference)	%	4.4	N/A	8760663	1.9	N/A	8760663	2.7	N/A	8760663
Nitrate (N)	mg/L	0.0237	0.0020	8760534	<0.0020	0.0020	8760534	0.0303	0.0020	8760534
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.470	0.010	8763318	0.094	0.010	8763318	0.480	0.010	8763318
Dissolved Organic Carbon (C)	mg/L	1.70	0.50	8764523	0.84	0.50	8764523	1.67	0.50	8764524
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765446	<1.0	1.0	8765446	<1.0	1.0	8765446
Alkalinity (Total as CaCO3)	mg/L	111	0.50	8763788	131	0.50	8763788	115	0.50	8763796
Acidity (pH 8.3)	mg/L	<1.0	1.0	8765446	<1.0	1.0	8765446	<1.0	1.0	8765446
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763796
Bicarbonate (HCO3)	mg/L	136	0.50	8763788	160	0.50	8763788	140	0.50	8763796
Carbonate (CO3)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763796
Hydroxide (OH)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763796
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	30.1	0.50	8764632	68.3	0.50	8764632	29.6	0.50	8764632
Dissolved Chloride (Cl)	mg/L	0.65	0.50	8764630	0.55	0.50	8764630	0.84	0.50	8764630
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.130	0.0020	8764030	0.103	0.0020	8764030	0.0778	0.0020	8764030
Total Ammonia (N)	mg/L	0.051	0.0050	8765498	0.023	0.0050	8765496	0.049	0.0050	8765492
Nitrate plus Nitrite (N)	mg/L	0.0237	0.0020	8761357	<0.0020	0.0020	8761357	0.0303	0.0020	8761357
Nitrite (N)	mg/L	<0.0020	0.0020	8761358	<0.0020	0.0020	8761358	<0.0020	0.0020	8761358
Total Phosphorus (P)	mg/L	0.464	0.0020	8764026	0.693 (1)	0.020	8764026	0.522 (1)	0.020	8764026
<b>Physical Properties</b>										
Conductivity	uS/cm	266	1.0	8763785	375	1.0	8763785	275	1.0	8763795
pH	pH	8.12		8763782	8.07		8763782	8.20		8763791
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2913			RZ2914			RZ2915		
Sampling Date		2017/09/14 15:09			2017/09/12 11:27			2017/09/14 15:35		
COC Number		08444213			08444213			08444213		
	UNITS	MW16-17	RDL	QC Batch	MW16-15D	RDL	QC Batch	DUP-3	RDL	QC Batch
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	435 (1)	5.0	8762433	1130 (1)	10	8762433	404 (1)	5.0	8762433
RDL = Reportable Detection Limit										
(1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2916			RZ2917			RZ2918		
Sampling Date		2017/09/12 13:05			2017/09/12 09:00			2017/09/11 16:55		
COC Number		08444213			08444213			08444213		
	UNITS	MW16-15S	RDL	QC Batch	MW15-01	RDL	QC Batch	BH95G-2	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	3.0	N/A	8766325	4.4	N/A	8760834	6.7	N/A	8760834
Cation Sum	meq/L	2.4	N/A	8766325	4.3	N/A	8760834	6.3	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.83	0.010	8765960	0.97	0.010	8760662	0.94	0.010	8760662
Ion Balance (% Difference)	%	9.6	N/A	8765961	1.8	N/A	8760663	3.2	N/A	8760663
Nitrate (N)	mg/L	0.902	0.0020	8760534	0.428	0.0020	8760534	0.367	0.0020	8760534
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.059	0.010	8763318	0.100	0.010	8763318	0.060	0.010	8763318
Dissolved Organic Carbon (C)	mg/L	2.21	0.50	8764525	1.57	0.50	8764524	1.96	0.50	8764524
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765446	<1.0	1.0	8765446	<1.0	1.0	8765486
Alkalinity (Total as CaCO3)	mg/L	103	0.50	8763796	144	0.50	8763788	279	0.50	8763812
Acidity (pH 8.3)	mg/L	2.1	1.0	8765446	<1.0	1.0	8765446	<1.0	1.0	8765486
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763788	2.68	0.50	8763812
Bicarbonate (HCO3)	mg/L	126	0.50	8763796	176	0.50	8763788	334	0.50	8763812
Carbonate (CO3)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763788	3.22	0.50	8763812
Hydroxide (OH)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763788	<0.50	0.50	8763812
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	38.2	0.50	8764641	72.3	0.50	8764632	50.6	0.50	8765537
Dissolved Chloride (Cl)	mg/L	1.2	0.50	8764633	<0.50	0.50	8764630	0.67	0.50	8764643
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	1.52 (1)	0.020	8764033	0.0167	0.0020	8764030	0.997 (1)	0.020	8764033
Total Ammonia (N)	mg/L	0.010	0.0050	8765492	<0.0050	0.0050	8765498	0.0050	0.0050	8765496
Nitrate plus Nitrite (N)	mg/L	0.902	0.0020	8761357	0.428	0.0020	8761357	0.367	0.0020	8765406
Nitrite (N)	mg/L	<0.0020	0.0020	8761358	<0.0020	0.0020	8761358	<0.0020	0.0020	8765408
Total Phosphorus (P)	mg/L	1.76 (1)	0.020	8764026	0.120	0.0020	8764026	1.07 (1)	0.020	8764034
<b>Physical Properties</b>										
Conductivity	uS/cm	279	1.0	8763795	406	1.0	8763785	561	1.0	8763811
pH	pH	7.75		8763791	7.81		8763782	8.31		8763798
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2916			RZ2917			RZ2918		
<b>Sampling Date</b>		2017/09/12 13:05			2017/09/12 09:00			2017/09/11 16:55		
<b>COC Number</b>		08444213			08444213			08444213		
	<b>UNITS</b>	<b>MW16-15S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-01</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	2570 (1)	20	8763138	83.1	1.0	8763138	310 (1)	10	8761694

RDL = Reportable Detection Limit  
(1) RDL raised due to high concentration of solids in the sample.



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2919			RZ2920			RZ2921		
Sampling Date		2017/09/14 14:35			2017/09/12 15:11			2017/09/14 15:55		
COC Number		08444213			08444213			08444213		
	UNITS	BH95G-15D	RDL	QC Batch	BH95G-25D	RDL	QC Batch	BH95G-32	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	3.9	N/A	8760834	12	N/A	8766325	4.3	N/A	8760834
Cation Sum	meq/L	3.6	N/A	8760834	12	N/A	8766325	4.1	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.93	0.010	8760662	1.0	0.010	8765960	0.95	0.010	8760662
Ion Balance (% Difference)	%	3.4	N/A	8760663	0.43	N/A	8765961	2.8	N/A	8760663
Nitrate (N)	mg/L	0.601	0.0020	8760534	<0.0020	0.0020	8760534	0.0720	0.0020	8760534
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.140	0.010	8763318	0.092	0.010	8763318	0.039	0.010	8763318
Dissolved Organic Carbon (C)	mg/L	0.76	0.50	8764524	2.12	0.50	8764524	1.28	0.50	8764523
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765446	<1.0	1.0	8765486	<1.0	1.0	8765446
Alkalinity (Total as CaCO3)	mg/L	175	0.50	8763788	354	0.50	8763812	178	0.50	8763788
Acidity (pH 8.3)	mg/L	1.9	1.0	8765446	9.1	1.0	8765486	1.6	1.0	8765446
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763812	<0.50	0.50	8763788
Bicarbonate (HCO3)	mg/L	214	0.50	8763788	432	0.50	8763812	217	0.50	8763788
Carbonate (CO3)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763812	<0.50	0.50	8763788
Hydroxide (OH)	mg/L	<0.50	0.50	8763788	<0.50	0.50	8763812	<0.50	0.50	8763788
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	16.0	0.50	8764632	232 (1)	5.0	8764663	34.9	0.50	8764632
Dissolved Chloride (Cl)	mg/L	0.57	0.50	8764630	0.61	0.50	8764643	0.56	0.50	8764630
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.104	0.0020	8764030	0.294	0.0020	8764033	0.0976	0.0020	8764030
Total Ammonia (N)	mg/L	0.010	0.0050	8765498	0.055	0.0050	8765498	0.023	0.0050	8765496
Nitrate plus Nitrite (N)	mg/L	0.601	0.0020	8761357	<0.0020	0.0020	8765406	0.0720	0.0020	8761357
Nitrite (N)	mg/L	<0.0020	0.0020	8761358	0.0047	0.0020	8765408	<0.0020	0.0020	8761358
Total Phosphorus (P)	mg/L	0.683 (1)	0.020	8764026	0.312	0.0020	8764034	0.628 (1)	0.020	8764026
<b>Physical Properties</b>										
Conductivity	uS/cm	346	1.0	8763785	1010	1.0	8763811	390	1.0	8763785
pH	pH	7.97		8763782	7.97		8763798	8.04		8763782
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2919			RZ2920			RZ2921		
<b>Sampling Date</b>		2017/09/14 14:35			2017/09/12 15:11			2017/09/14 15:55		
<b>COC Number</b>		08444213			08444213			08444213		
	<b>UNITS</b>	<b>BH95G-15D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-32</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	1160 (1)	20	8763138	692 (1)	20	8761694	633 (1)	10	8763138

RDL = Reportable Detection Limit  
(1) RDL raised due to high concentration of solids in the sample.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2922			RZ2923			RZ2924		
Sampling Date		2017/09/14 19:30			2017/09/12 16:45			2017/09/12 16:15		
COC Number		08444213			08444213			08444213		
	UNITS	BH95G-131	RDL	QC Batch	BH95G-22	RDL	QC Batch	BH95G-31	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	13	N/A	8760834	3.7	N/A	8760834	3.0	N/A	8760834
Cation Sum	meq/L	13	N/A	8760834	3.5	N/A	8760834	2.9	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.99	0.010	8760662	0.93	0.010	8760662	0.97	0.010	8760662
Ion Balance (% Difference)	%	0.42	N/A	8760663	3.5	N/A	8760663	1.7	N/A	8760663
Nitrate (N)	mg/L	0.156	0.0020	8760534	0.315	0.0020	8760534	0.230	0.0020	8760534
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.097	0.010	8763963	0.055	0.010	8763963	0.097	0.010	8763963
Dissolved Organic Carbon (C)	mg/L	8.35	0.50	8764523	1.91	0.50	8764525	0.67	0.50	8764524
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765446	<1.0	1.0	8765493	<1.0	1.0	8765493
Alkalinity (Total as CaCO3)	mg/L	413	0.50	8763796	139	0.50	8763812	131	0.50	8763812
Acidity (pH 8.3)	mg/L	12.0	1.0	8765446	1.9	1.0	8765493	<1.0	1.0	8765493
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763812	<0.50	0.50	8763812
Bicarbonate (HCO3)	mg/L	503	0.50	8763796	169	0.50	8763812	160	0.50	8763812
Carbonate (CO3)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763812	<0.50	0.50	8763812
Hydroxide (OH)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763812	<0.50	0.50	8763812
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	230 (1)	5.0	8764641	44.6	0.50	8765537	14.8	0.50	8764663
Dissolved Chloride (Cl)	mg/L	1.9	0.50	8764633	0.73	0.50	8764643	0.55	0.50	8764643
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0595	0.0020	8768202	0.603 (1)	0.020	8764033	0.372	0.0020	8764033
Total Ammonia (N)	mg/L	0.032	0.0050	8765496	0.013	0.0050	8765492	<0.0050	0.0050	8765492
Nitrate plus Nitrite (N)	mg/L	0.156	0.0020	8761357	0.322	0.0020	8765406	0.236	0.0020	8765406
Nitrite (N)	mg/L	<0.0020	0.0020	8761358	0.0076	0.0020	8765408	0.0058	0.0020	8765408
Total Phosphorus (P)	mg/L	0.785 (1)	0.020	8768204	1.03 (1)	0.020	8764034	0.330	0.0020	8764034
<b>Physical Properties</b>										
Conductivity	uS/cm	1070	1.0	8763795	339	1.0	8763811	273	1.0	8763811
pH	pH	8.20		8763791	7.97		8763798	8.23		8763798
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2922			RZ2923			RZ2924		
<b>Sampling Date</b>		2017/09/14 19:30			2017/09/12 16:45			2017/09/12 16:15		
<b>COC Number</b>		08444213			08444213			08444213		
	<b>UNITS</b>	<b>BH95G-131</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-22</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-31</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	634 (1)	20	8763138	848 (1)	20	8761694	300 (1)	10	8761694
RDL = Reportable Detection Limit (1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2925		RZ2926			RZ2927		
Sampling Date		2017/09/14 22:00		2017/09/14 13:15			2017/09/14 09:00		
COC Number		08444213		08444213			08444213		
	UNITS	FIELD BLANK	QC Batch	BH95G-33D	RDL	QC Batch	DUP-2	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	0.00060	8760834	5.2	N/A	8760834	3.9	N/A	8760834
Cation Sum	meq/L	0.0054	8760834	5.2	N/A	8760834	3.6	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD	ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	NC	8760662	1.0	0.010	8760662	0.92	0.010	8760662
Ion Balance (% Difference)	%	80	8760663	0.031	N/A	8760663	3.9	N/A	8760663
Nitrate (N)	mg/L	<0.0020	8760534	0.230	0.0020	8760534	0.596	0.0020	8760534
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.012	8763963	0.052	0.010	8763963	0.130	0.010	8763963
Dissolved Organic Carbon (C)	mg/L	<0.50	8764524	<0.50	0.50	8764524	0.72	0.50	8764524
Acidity (pH 4.5)	mg/L	<1.0	8765446	<1.0	1.0	8765446	<1.0	1.0	8765446
Alkalinity (Total as CaCO3)	mg/L	<0.50	8763788	186	0.50	8763788	174	0.50	8763796
Acidity (pH 8.3)	mg/L	<1.0	8765446	2.0	1.0	8765446	2.2	1.0	8765446
Alkalinity (PP as CaCO3)	mg/L	<0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763796
Bicarbonate (HCO3)	mg/L	<0.50	8763788	227	0.50	8763788	213	0.50	8763796
Carbonate (CO3)	mg/L	<0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763796
Hydroxide (OH)	mg/L	<0.50	8763788	<0.50	0.50	8763788	<0.50	0.50	8763796
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	<0.50	8764632	68.4	0.50	8764632	15.5	0.50	8764632
Dissolved Chloride (Cl)	mg/L	<0.50	8764630	0.53	0.50	8764630	0.75	0.50	8764630
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	<0.0020	8764030	0.0053	0.0020	8764030	0.0988	0.0020	8764030
Total Ammonia (N)	mg/L	<0.0050	8765498	<0.0050	0.0050	8765496	0.014	0.0050	8765498
Nitrate plus Nitrite (N)	mg/L	<0.0020	8761357	0.230	0.0020	8761357	0.596	0.0020	8761357
Nitrite (N)	mg/L	<0.0020	8761358	<0.0020	0.0020	8761358	<0.0020	0.0020	8761358
Total Phosphorus (P)	mg/L	<0.0020	8764026	0.118	0.0020	8764026	0.874 (1)	0.020	8764026
<b>Physical Properties</b>									
Conductivity	uS/cm	1.1	8763785	464	1.0	8763785	347	1.0	8763795
pH	pH	5.28	8763782	8.10		8763782	8.03		8763791
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.									

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2925		RZ2926			RZ2927		
<b>Sampling Date</b>		2017/09/14 22:00		2017/09/14 13:15			2017/09/14 09:00		
<b>COC Number</b>		08444213		08444213			08444213		
	<b>UNITS</b>	<b>FIELD BLANK</b>	<b>QC Batch</b>	<b>BH95G-33D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	<1.0	8763138	115	1.0	8763138	1980 (1)	20	8763138
RDL = Reportable Detection Limit									
(1) RDL raised due to high concentration of solids in the sample.									

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2928		RZ2929			RZ2930		
Sampling Date		2017/09/15 15:00		2017/09/12 09:23			2017/09/12 09:55		
COC Number		08444213		08444212			08444212		
	UNITS	TRIP BLANK	QC Batch	MW15-02	RDL	QC Batch	BH95G-21	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	0.013	8760834	4.9	N/A	8760834	4.5	N/A	8760834
Cation Sum	meq/L	0.0048	8760834	4.5	N/A	8760834	4.5	N/A	8760834
Filter and HNO3 Preservation	N/A		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.38 (1)	8760662	0.90	0.010	8760662	1.0	0.010	8760662
Ion Balance (% Difference)	%	45 (1)	8760663	5.1	N/A	8760663	0.21	N/A	8760663
Nitrate (N)	mg/L	<0.0020	8760534	0.227	0.0020	8760534	<0.0020	0.0020	8760534
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.012	8763963	0.090	0.010	8763963	0.093	0.010	8763963
Dissolved Organic Carbon (C)	mg/L	<0.50	8764524	0.80	0.50	8764523	2.57	0.50	8764523
Acidity (pH 4.5)	mg/L	<1.0	8765446	<1.0	1.0	8765493	<1.0	1.0	8765493
Alkalinity (Total as CaCO3)	mg/L	0.61	8763788	185	0.50	8763812	174	0.50	8763812
Acidity (pH 8.3)	mg/L	<1.0	8765446	<1.0	1.0	8765493	<1.0	1.0	8765493
Alkalinity (PP as CaCO3)	mg/L	<0.50	8763788	<0.50	0.50	8763812	<0.50	0.50	8763812
Bicarbonate (HCO3)	mg/L	0.74	8763788	226	0.50	8763812	213	0.50	8763812
Carbonate (CO3)	mg/L	<0.50	8763788	<0.50	0.50	8763812	<0.50	0.50	8763812
Hydroxide (OH)	mg/L	<0.50	8763788	<0.50	0.50	8763812	<0.50	0.50	8763812
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	<0.50	8764641	58.3	0.50	8764663	47.6	0.50	8764663
Dissolved Chloride (Cl)	mg/L	<0.50	8764633	<0.50	0.50	8764643	0.68	0.50	8764643
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	<0.0020	8764033	0.0038	0.0020	8764033	0.700 (2)	0.020	8764033
Total Ammonia (N)	mg/L	<0.0050	8765496	<0.0050	0.0050	8765496	0.022	0.0050	8765498
Nitrate plus Nitrite (N)	mg/L	<0.0020	8761359	0.227	0.0020	8765406	0.0042	0.0020	8765406
Nitrite (N)	mg/L	<0.0020	8761360	<0.0020	0.0020	8765408	0.0072	0.0020	8765408
Total Phosphorus (P)	mg/L	0.0028	8764026	0.0025	0.0020	8764034	0.682 (2)	0.020	8764034
<b>Physical Properties</b>									
Conductivity	uS/cm	<1.0	8763785	446	1.0	8763811	407	1.0	8763811
pH	pH	5.32	8763782	8.23		8763798	8.24		8763798
RDL = Reportable Detection Limit N/A = Not Applicable (1) Ion balance out of optimal range due to high measurement uncertainty at this level (Ion Sum < 0.4 meq/L for both cations and anions). (2) Detection limits raised due to dilution to bring analyte within the calibrated range.									

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2928		RZ2929			RZ2930		
<b>Sampling Date</b>		2017/09/15 15:00		2017/09/12 09:23			2017/09/12 09:55		
<b>COC Number</b>		08444213		08444212			08444212		
	<b>UNITS</b>	<b>TRIP BLANK</b>	<b>QC Batch</b>	<b>MW15-02</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-21</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	<1.0	8763138	1.2	1.0	8761694	704 (1)	20	8761694
RDL = Reportable Detection Limit (1) RDL raised due to high concentration of solids in the sample.									



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2931			RZ2932			RZ2933		
Sampling Date		2017/09/12 14:18			2017/09/12 15:37			2017/09/13 13:10		
COC Number		08444212			08444212			08444212		
	UNITS	MW15-11S	RDL	QC Batch	BH95G-25S	RDL	QC Batch	MW16-12S	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	7.0	N/A	8760834	11	N/A	8760834	17	N/A	8769877
Cation Sum	meq/L	6.7	N/A	8760834	11	N/A	8760834	17	N/A	8769877
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.97	0.010	8760662	0.98	0.010	8760662	1.0	0.010	8769874
Ion Balance (% Difference)	%	1.5	N/A	8760663	1.2	N/A	8760663	0.30	N/A	8769876
Nitrate (N)	mg/L	0.0437	0.0020	8760534	<0.0020	0.0020	8760534	<0.0020	0.0020	8760534
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.140	0.010	8763963	0.130	0.010	8763963	1.10	0.010	8763963
Dissolved Organic Carbon (C)	mg/L	2.59	0.50	8764523	2.14	0.50	8764523	0.96	0.50	8764524
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765486	<1.0	1.0	8765486	<1.0	1.0	8765493
Alkalinity (Total as CaCO3)	mg/L	251	0.50	8763796	340	0.50	8763796	832	0.50	8763812
Acidity (pH 8.3)	mg/L	3.3	1.0	8765486	9.5	1.0	8765486	87.0	1.0	8765493
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763796	<0.50	0.50	8763812
Bicarbonate (HCO3)	mg/L	307	0.50	8763796	415	0.50	8763796	1010	0.50	8763812
Carbonate (CO3)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763796	<0.50	0.50	8763812
Hydroxide (OH)	mg/L	<0.50	0.50	8763796	<0.50	0.50	8763796	<0.50	0.50	8763812
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	90.9	0.50	8764641	194	0.50	8764641	<0.50	0.50	8764663
Dissolved Chloride (Cl)	mg/L	0.92	0.50	8764633	0.65	0.50	8764633	1.2	0.50	8764643
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0050	0.0020	8764033	0.475	0.0020	8764033	1.66 (1)	0.020	8764033
Total Ammonia (N)	mg/L	0.048	0.0050	8765496	0.26	0.0050	8765496	0.38	0.0050	8765496
Nitrate plus Nitrite (N)	mg/L	0.0437	0.0020	8765406	<0.0020	0.0020	8765406	0.0040	0.0020	8765406
Nitrite (N)	mg/L	<0.0020	0.0020	8765408	0.0037	0.0020	8765408	0.0038	0.0020	8765408
Total Phosphorus (P)	mg/L	0.0046	0.0020	8764034	0.554 (1)	0.020	8764026	1.62 (1)	0.020	8764034
<b>Physical Properties</b>										
Conductivity	uS/cm	607	1.0	8763795	914	1.0	8763795	1360	1.0	8763811
pH	pH	8.23		8763791	8.10		8763791	7.17		8763798
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		RZ2931			RZ2932			RZ2933		
Sampling Date		2017/09/12 14:18			2017/09/12 15:37			2017/09/13 13:10		
COC Number		08444212			08444212			08444212		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW16-12S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	8.8	1.0	8761694	1080 (1)	20	8761694	11800 (1)	100	8763138
RDL = Reportable Detection Limit										
(1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2934		
<b>Sampling Date</b>		2017/09/13 17:00		
<b>COC Number</b>		08444212		
	<b>UNITS</b>	<b>MW15-10S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Anion Sum	meq/L	6.5	N/A	8760834
Cation Sum	meq/L	6.1	N/A	8760834
Filter and HNO3 Preservation	N/A	FIELD		ONSITE
Ion Balance	N/A	0.94	0.010	8760662
Ion Balance (% Difference)	%	3.3	N/A	8760663
Nitrate (N)	mg/L	0.0977	0.0020	8760534
<b>Misc. Inorganics</b>				
Fluoride (F)	mg/L	0.170	0.010	8763963
Dissolved Organic Carbon (C)	mg/L	0.88	0.50	8764523
Acidity (pH 4.5)	mg/L	<1.0	1.0	8765486
Alkalinity (Total as CaCO3)	mg/L	294	0.50	8763796
Acidity (pH 8.3)	mg/L	185	1.0	8765486
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8763796
Bicarbonate (HCO3)	mg/L	359	0.50	8763796
Carbonate (CO3)	mg/L	<0.50	0.50	8763796
Hydroxide (OH)	mg/L	<0.50	0.50	8763796
<b>Anions</b>				
Dissolved Sulphate (SO4)	mg/L	28.4	0.50	8764663
Dissolved Chloride (Cl)	mg/L	0.58	0.50	8764643
<b>Nutrients</b>				
Dissolved Phosphorus (P)	mg/L	0.974 (1)	0.020	8768202
Total Ammonia (N)	mg/L	0.28	0.0050	8765496
Nitrate plus Nitrite (N)	mg/L	0.108	0.0020	8765406
Nitrite (N)	mg/L	0.0101	0.0020	8765408
Total Phosphorus (P)	mg/L	3.89 (1)	0.020	8768204
<b>Physical Properties</b>				
Conductivity	uS/cm	585	1.0	8763795
pH	pH	6.34		8763791
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.				

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		RZ2934		
<b>Sampling Date</b>		2017/09/13 17:00		
<b>COC Number</b>		08444212		
	<b>UNITS</b>	<b>MW15-10S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>				
Total Suspended Solids	mg/L	10500 (1)	100	8763138
RDL = Reportable Detection Limit (1) RDL raised due to high concentration of solids in the sample.				

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2886	RZ2887		RZ2888		
Sampling Date		2017/09/13 09:11	2017/09/13 08:45		2017/09/13 10:55		
COC Number		08444213	08444213		08444213		
	UNITS	MW15-03S	MW15-03D	QC Batch	MW15-04S	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	95.5	200	8760454	127	0.50	8760454
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	8763178	<0.0000020	0.0000020	8764400
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.0104	0.00382	8761824	2.24	0.00050	8761824
Dissolved Antimony (Sb)	mg/L	0.000080	0.000049	8761824	<0.000020	0.000020	8761824
Dissolved Arsenic (As)	mg/L	0.000218	0.00327	8761824	0.00260	0.000020	8761824
Dissolved Barium (Ba)	mg/L	0.0382	0.0457	8761824	0.187	0.000020	8761824
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	8761824	0.000115	0.000010	8761824
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	8761824	0.0000130	0.0000050	8761824
Dissolved Boron (B)	mg/L	<0.010	<0.010	8761824	<0.010	0.010	8761824
Dissolved Cadmium (Cd)	mg/L	0.0000090	<0.0000050	8761824	0.000214	0.0000050	8761824
Dissolved Chromium (Cr)	mg/L	0.00049	<0.00010	8761824	0.00325	0.00010	8761824
Dissolved Cobalt (Co)	mg/L	0.0000190	0.0000720	8761824	0.00489	0.0000050	8761824
Dissolved Copper (Cu)	mg/L	0.000585	0.000067	8761824	0.0142	0.000050	8761824
Dissolved Iron (Fe)	mg/L	0.0194	0.543	8761824	2.59	0.0010	8761824
Dissolved Lead (Pb)	mg/L	0.000260	0.0000190	8761824	0.00736	0.0000050	8761824
Dissolved Lithium (Li)	mg/L	0.00195	0.00651	8761824	0.00207	0.00050	8761824
Dissolved Manganese (Mn)	mg/L	0.00104	0.0508	8761824	0.285	0.000050	8761824
Dissolved Molybdenum (Mo)	mg/L	0.00266	0.00274	8761824	0.000489	0.000050	8761824
Dissolved Nickel (Ni)	mg/L	0.000480	0.000251	8761824	0.00559	0.000020	8761824
Dissolved Phosphorus (P)	mg/L	0.0063	0.0039	8761824	0.979	0.0020	8761824
Dissolved Selenium (Se)	mg/L	0.000173	<0.000040	8761824	0.000701	0.000040	8761824
Dissolved Silicon (Si)	mg/L	4.93	4.76	8761824	4.93	0.050	8761824
Dissolved Silver (Ag)	mg/L	0.0000070	<0.0000050	8761824	0.000350	0.0000050	8761824
Dissolved Strontium (Sr)	mg/L	0.107	0.260	8761824	0.182	0.000050	8761824
Dissolved Thallium (Tl)	mg/L	0.0000040	<0.0000020	8761824	0.0000090	0.0000020	8761824
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	8761824	<0.00020	0.00020	8761824
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	8761824	0.0304	0.00050	8761824
Dissolved Uranium (U)	mg/L	0.000548	0.00290	8761824	0.000820	0.0000020	8761824
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	8761824	0.00792	0.00020	8761824
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2886	RZ2887		RZ2888		
Sampling Date		2017/09/13 09:11	2017/09/13 08:45		2017/09/13 10:55		
COC Number		08444213	08444213		08444213		
	UNITS	MW15-03S	MW15-03D	QC Batch	MW15-04S	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00126	0.00093	8761824	0.0183	0.00010	8761824
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00047	8761824	0.00023	0.00010	8761824
Dissolved Calcium (Ca)	mg/L	31.0	54.1	8760456	43.6	0.050	8760456
Dissolved Magnesium (Mg)	mg/L	4.37	15.9	8760456	4.46	0.050	8760456
Dissolved Potassium (K)	mg/L	1.41	2.47	8760456	1.51	0.050	8760456
Dissolved Sodium (Na)	mg/L	2.10 (1)	1.41	8760456	0.925	0.050	8760456
Dissolved Sulphur (S)	mg/L	4.1	7.5	8760456	<3.0	3.0	8760456
RDL = Reportable Detection Limit							
(1) Dissolved greater than total. Reanalysis yields similar results.							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2889		RZ2890	RZ2901	RZ2907		
Sampling Date		2017/09/13 10:20		2017/09/13 15:29	2017/09/13 15:50	2017/09/14 08:50		
COC Number		08444213		08444213	08444213	08444213		
	UNITS	MW15-04D	QC Batch	MW15-07D	MW15-07S	MW15-09S	RDL	QC Batch

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	129	8760454	203	191	220	0.50	8760454
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	8763073	<0.0000020	<0.0000020	<0.0000020	0.0000020	8763073
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.0199	8761824	0.00282	0.00129	0.00089	0.00050	8761824
Dissolved Antimony (Sb)	mg/L	0.000067	8761824	0.000071	<0.000020	0.000113	0.000020	8761824
Dissolved Arsenic (As)	mg/L	0.00135	8761824	0.000191	0.00153	0.000126	0.000020	8761824
Dissolved Barium (Ba)	mg/L	0.0525	8761824	0.0366	0.0310	0.192	0.000020	8761824
Dissolved Beryllium (Be)	mg/L	<0.000010	8761824	<0.000010	<0.000010	<0.000010	0.000010	8761824
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8761824	<0.0000050	<0.0000050	<0.0000050	0.0000050	8761824
Dissolved Boron (B)	mg/L	<0.010	8761824	<0.010	<0.010	<0.010	0.010	8761824
Dissolved Cadmium (Cd)	mg/L	0.0000220	8761824	<0.0000050	<0.0000050	0.0000460	0.0000050	8761824
Dissolved Chromium (Cr)	mg/L	<0.00010	8761824	<0.00010	<0.00010	<0.00010	0.00010	8761824
Dissolved Cobalt (Co)	mg/L	0.000307	8761824	0.0000280	0.0000540	0.000160	0.0000050	8761824
Dissolved Copper (Cu)	mg/L	0.000483	8761824	<0.000050	<0.000050	<0.000050	0.000050	8761824
Dissolved Iron (Fe)	mg/L	0.0862	8761824	0.0901	0.0818	0.0114	0.0010	8761824
Dissolved Lead (Pb)	mg/L	0.000271	8761824	0.0000140	<0.0000050	0.0000050	0.0000050	8761824
Dissolved Lithium (Li)	mg/L	0.00114	8761824	0.0121	0.00720	0.00330	0.00050	8761824
Dissolved Manganese (Mn)	mg/L	0.116	8761824	0.0508	0.144	0.0667	0.000050	8761824
Dissolved Molybdenum (Mo)	mg/L	0.00296 (1)	8770210	0.000161	0.000229	0.00412	0.000050	8761824
Dissolved Nickel (Ni)	mg/L	0.00122	8761824	0.000119	0.000133	0.000579	0.000020	8761824
Dissolved Phosphorus (P)	mg/L	0.0075	8761824	<0.0020	0.0025	0.0036	0.0020	8761824
Dissolved Selenium (Se)	mg/L	0.000404	8761824	<0.000040	<0.000040	0.00156	0.000040	8761824
Dissolved Silicon (Si)	mg/L	2.81	8761824	7.67	6.71	4.32	0.050	8761824
Dissolved Silver (Ag)	mg/L	0.0000060	8761824	<0.0000050	<0.0000050	<0.0000050	0.0000050	8761824
Dissolved Strontium (Sr)	mg/L	0.298	8761824	0.317	0.275	0.279	0.000050	8761824
Dissolved Thallium (Tl)	mg/L	<0.0000020	8761824	<0.0000020	<0.0000020	<0.0000020	0.0000020	8761824
Dissolved Tin (Sn)	mg/L	<0.00020	8761824	<0.00020	<0.00020	<0.00020	0.00020	8761824
Dissolved Titanium (Ti)	mg/L	0.00128	8761824	<0.00050	<0.00050	<0.00050	0.00050	8761824
Dissolved Uranium (U)	mg/L	0.00115	8761824	0.00134	0.00172	0.00394	0.0000020	8761824

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2889		RZ2890	RZ2901	RZ2907		
Sampling Date		2017/09/13 10:20		2017/09/13 15:29	2017/09/13 15:50	2017/09/14 08:50		
COC Number		08444213		08444213	08444213	08444213		
	UNITS	MW15-04D	QC Batch	MW15-07D	MW15-07S	MW15-09S	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	8761824	<0.00020	<0.00020	<0.00020	0.00020	8761824
Dissolved Zinc (Zn)	mg/L	0.00278	8761824	0.00104	0.00151	0.00086	0.00010	8761824
Dissolved Zirconium (Zr)	mg/L	<0.00010	8761824	<0.00010	<0.00010	<0.00010	0.00010	8761824
Dissolved Calcium (Ca)	mg/L	44.2	8760456	59.7	59.9	69.6	0.050	8760456
Dissolved Magnesium (Mg)	mg/L	4.63	8760456	13.0	10.1	11.2	0.050	8760456
Dissolved Potassium (K)	mg/L	2.33	8760456	1.53	1.37	1.82	0.050	8760456
Dissolved Sodium (Na)	mg/L	7.41	8760456	3.97	3.40	2.15	0.050	8760456
Dissolved Sulphur (S)	mg/L	6.1	8760456	10.6	11.7	5.9	3.0	8760456
RDL = Reportable Detection Limit								



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		RZ2908		RZ2909		RZ2910		
<b>Sampling Date</b>		2017/09/13 18:00		2017/09/14 09:00		2017/09/15 07:30		
<b>COC Number</b>		08444213		08444213		08444213		
	<b>UNITS</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>DUP-1</b>	<b>QC Batch</b>	<b>MW16-14D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	1870	0.50	221	8760454	241	0.50	8760454
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.000020	0.000020	<0.000020	8763073	<0.000020	0.000020	8763073
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.289	0.0050	0.00130	8761824	0.00259	0.00050	8761824
Dissolved Antimony (Sb)	mg/L	<0.00020	0.00020	0.000118	8761824	0.000033	0.000020	8761824
Dissolved Arsenic (As)	mg/L	0.00041	0.00020	0.000136	8761824	0.00354	0.000020	8761824
Dissolved Barium (Ba)	mg/L	0.392	0.00020	0.193	8761824	0.0201	0.000020	8761824
Dissolved Beryllium (Be)	mg/L	0.00113	0.00010	<0.000010	8761824	<0.000010	0.000010	8761824
Dissolved Bismuth (Bi)	mg/L	<0.000050	0.000050	<0.0000050	8761824	<0.0000050	0.0000050	8761824
Dissolved Boron (B)	mg/L	<0.10	0.10	<0.010	8761824	<0.010	0.010	8761824
Dissolved Cadmium (Cd)	mg/L	<0.000050	0.000050	0.0000490	8761824	0.0000990 (1)	0.0000050	8761766
Dissolved Chromium (Cr)	mg/L	<0.0010	0.0010	<0.00010	8761824	0.00021	0.00010	8761824
Dissolved Cobalt (Co)	mg/L	0.000117	0.000050	0.000159	8761824	0.000101	0.0000050	8761824
Dissolved Copper (Cu)	mg/L	<0.00050	0.00050	<0.000050	8761824	0.000327	0.000050	8761824
Dissolved Iron (Fe)	mg/L	26.5	0.010	0.0095	8761824	0.223	0.0010	8761824
Dissolved Lead (Pb)	mg/L	0.000317	0.000050	0.0000050	8761824	0.0000140	0.0000050	8761824
Dissolved Lithium (Li)	mg/L	0.237	0.0050	0.00329	8761824	0.00269	0.00050	8761824
Dissolved Manganese (Mn)	mg/L	4.99	0.00050	0.0625	8761824	0.291	0.000050	8761824
Dissolved Molybdenum (Mo)	mg/L	<0.00050	0.00050	0.00421	8761824	0.000282	0.000050	8761824
Dissolved Nickel (Ni)	mg/L	0.00072	0.00020	0.000568	8761824	0.000281	0.000020	8761824
Dissolved Phosphorus (P)	mg/L	<0.020	0.020	<0.0020	8761824	0.0030	0.0020	8761824
Dissolved Selenium (Se)	mg/L	<0.00040	0.00040	0.00162	8761824	<0.000040	0.000040	8761824
Dissolved Silicon (Si)	mg/L	39.2	0.50	4.13	8761824	4.54	0.050	8761824
Dissolved Silver (Ag)	mg/L	<0.000050	0.000050	<0.0000050	8761824	<0.0000050	0.0000050	8761824
Dissolved Strontium (Sr)	mg/L	2.58	0.00050	0.281	8761824	0.324	0.000050	8761824
Dissolved Thallium (Tl)	mg/L	<0.000020	0.000020	<0.0000020	8761824	<0.0000020	0.0000020	8761824
Dissolved Tin (Sn)	mg/L	<0.0020	0.0020	<0.00020	8761824	<0.00020	0.00020	8761824
Dissolved Titanium (Ti)	mg/L	<0.0050	0.0050	<0.00050	8761824	<0.00050	0.00050	8761824
Dissolved Uranium (U)	mg/L	0.000246	0.000020	0.00401	8761824	0.00389	0.0000020	8761824

RDL = Reportable Detection Limit  
(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2908		RZ2909		RZ2910		
Sampling Date		2017/09/13 18:00		2017/09/14 09:00		2017/09/15 07:30		
COC Number		08444213		08444213		08444213		
	UNITS	MW15-10D	RDL	DUP-1	QC Batch	MW16-14D	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.0020	0.0020	<0.00020	8761824	<0.00020	0.00020	8761824
Dissolved Zinc (Zn)	mg/L	0.0057	0.0010	0.00082	8761824	0.00481	0.00010	8761824
Dissolved Zirconium (Zr)	mg/L	0.0016	0.0010	<0.00010	8761824	<0.00010	0.00010	8761824
Dissolved Calcium (Ca)	mg/L	618	0.50	69.8	8760456	86.1	0.050	8760456
Dissolved Magnesium (Mg)	mg/L	80.5	0.50	11.4	8760456	6.36	0.050	8760456
Dissolved Potassium (K)	mg/L	8.83	0.50	1.82	8760456	2.38	0.050	8760456
Dissolved Sodium (Na)	mg/L	23.0	0.50	2.12	8760456	2.51	0.050	8760456
Dissolved Sulphur (S)	mg/L	<30	30	6.1	8760456	28.5	3.0	8760456
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2911			RZ2912		RZ2913		
Sampling Date		2017/09/13 13:35			2017/09/13 14:25		2017/09/14 15:09		
COC Number		08444213			08444213		08444213		
	UNITS	MW16-12D	RDL	QC Batch	MW16-16D	QC Batch	MW16-17	RDL	QC Batch

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	901	0.50	8760454	223	8760454	123	0.50	8760454
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.000020	0.000020	8763178	<0.000020	8763178	<0.000020	0.000020	8763073
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.0107	0.0025	8761824	0.00264	8761824	0.00802	0.00050	8761824
Dissolved Antimony (Sb)	mg/L	<0.00010	0.00010	8761824	0.000046	8761824	0.000205	0.000020	8761824
Dissolved Arsenic (As)	mg/L	<0.00010	0.00010	8761824	0.000415	8761824	0.000277	0.000020	8761824
Dissolved Barium (Ba)	mg/L	2.93	0.00010	8761824	0.0377	8761824	0.0463	0.000020	8761824
Dissolved Beryllium (Be)	mg/L	0.000093	0.000050	8761824	<0.000010	8761824	<0.000010	0.000010	8761824
Dissolved Bismuth (Bi)	mg/L	<0.000025	0.000025	8761824	<0.0000050	8761824	<0.0000050	0.0000050	8761824
Dissolved Boron (B)	mg/L	<0.050	0.050	8761824	<0.010	8761824	<0.010	0.010	8761824
Dissolved Cadmium (Cd)	mg/L	0.000042	0.000025	8761824	<0.0000050	8761824	0.0000050	0.0000050	8761824
Dissolved Chromium (Cr)	mg/L	<0.00050	0.00050	8761824	<0.00010	8761824	0.00113	0.00010	8761824
Dissolved Cobalt (Co)	mg/L	<0.000025	0.000025	8761824	0.0000530	8761824	0.0000850	0.0000050	8761824
Dissolved Copper (Cu)	mg/L	<0.00025	0.00025	8761824	<0.000050	8761824	0.000965	0.000050	8761824
Dissolved Iron (Fe)	mg/L	4.10	0.0050	8761824	0.0023	8761824	0.0158	0.0010	8761824
Dissolved Lead (Pb)	mg/L	0.000053	0.000025	8761824	0.0000100	8761824	0.0000110	0.0000050	8761824
Dissolved Lithium (Li)	mg/L	0.427	0.0025	8761824	0.00486	8761824	0.00266	0.00050	8761824
Dissolved Manganese (Mn)	mg/L	0.251	0.00025	8761824	0.0470	8761824	0.0131	0.000050	8761824
Dissolved Molybdenum (Mo)	mg/L	<0.00025	0.00025	8761824	0.00132	8761824	0.00178	0.000050	8761824
Dissolved Nickel (Ni)	mg/L	0.00016	0.00010	8761824	0.000410	8761824	0.000729	0.000020	8761824
Dissolved Phosphorus (P)	mg/L	<0.010	0.010	8761824	0.0023	8761824	0.0038	0.0020	8761824
Dissolved Selenium (Se)	mg/L	<0.00020	0.00020	8761824	<0.000040	8761824	0.000132	0.000040	8761824
Dissolved Silicon (Si)	mg/L	15.8	0.25	8761824	3.86	8761824	3.40	0.050	8761824
Dissolved Silver (Ag)	mg/L	0.000063	0.000025	8761824	<0.0000050	8761824	<0.0000050	0.0000050	8761824
Dissolved Strontium (Sr)	mg/L	2.10	0.00025	8761824	0.293	8761824	0.197	0.000050	8761824
Dissolved Thallium (Tl)	mg/L	<0.000010	0.000010	8761824	<0.0000020	8761824	0.0000040	0.0000020	8761824
Dissolved Tin (Sn)	mg/L	<0.0010	0.0010	8761824	<0.00020	8761824	<0.00020	0.00020	8761824
Dissolved Titanium (Ti)	mg/L	<0.0025	0.0025	8761824	<0.00050	8761824	<0.00050	0.00050	8761824
Dissolved Uranium (U)	mg/L	0.000292	0.000010	8761824	0.00545	8761824	0.00281	0.0000020	8761824
Dissolved Vanadium (V)	mg/L	<0.0010	0.0010	8761824	<0.00020	8761824	<0.00020	0.00020	8761824

RDL = Reportable Detection Limit

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2911			RZ2912		RZ2913		
Sampling Date		2017/09/13 13:35			2017/09/13 14:25		2017/09/14 15:09		
COC Number		08444213			08444213		08444213		
	UNITS	MW16-12D	RDL	QC Batch	MW16-16D	QC Batch	MW16-17	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00408 (1)	0.00050	8770210	0.00068	8761824	0.00020	0.00010	8761824
Dissolved Zirconium (Zr)	mg/L	0.0348	0.00050	8761824	0.00016	8761824	<0.00010	0.00010	8761824
Dissolved Calcium (Ca)	mg/L	202	0.25	8760456	76.8	8760456	37.3	0.050	8760456
Dissolved Magnesium (Mg)	mg/L	96.0	0.25	8760456	7.69	8760456	7.16	0.050	8760456
Dissolved Potassium (K)	mg/L	11.5	0.25	8760456	2.62	8760456	2.05	0.050	8760456
Dissolved Sodium (Na)	mg/L	32.3	0.25	8760456	2.10	8760456	3.42	0.050	8760456
Dissolved Sulphur (S)	mg/L	<15	15	8760456	12.5	8760456	10.2	3.0	8760456

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2914	RZ2915		RZ2916		
Sampling Date		2017/09/12 11:27	2017/09/14 15:35		2017/09/12 13:05		
COC Number		08444213	08444213		08444213		
	UNITS	MW16-15D	DUP-3	QC Batch	MW16-15S	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	188	130	8760454	117	0.50	8765959
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	8763073	0.0000052	0.0000020	8763178
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00519	0.0126	8761824	0.0117	0.00050	8761824
Dissolved Antimony (Sb)	mg/L	0.000064	0.000270	8761824	0.000085	0.000020	8761824
Dissolved Arsenic (As)	mg/L	0.0180	0.000322	8761824	0.000175	0.000020	8761824
Dissolved Barium (Ba)	mg/L	0.0325	0.0472	8761824	0.0705	0.000020	8761824
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	8761824	<0.000010	0.000010	8761824
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	8761824	<0.0000050	0.0000050	8761824
Dissolved Boron (B)	mg/L	<0.010	<0.010	8761824	<0.010	0.010	8761824
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.0000050	8761824	0.00212	0.0000050	8761824
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00105	8761824	0.00016	0.00010	8761824
Dissolved Cobalt (Co)	mg/L	0.0000800	0.0000920	8761824	0.0000330	0.0000050	8761824
Dissolved Copper (Cu)	mg/L	<0.000050	0.00109	8761824	0.00343	0.000050	8761824
Dissolved Iron (Fe)	mg/L	0.465	0.0155	8761824	0.0290	0.0010	8761824
Dissolved Lead (Pb)	mg/L	0.0000210	0.0000190	8761824	0.000550	0.0000050	8761824
Dissolved Lithium (Li)	mg/L	0.00288	0.00265	8761824	0.00218	0.00050	8761824
Dissolved Manganese (Mn)	mg/L	0.117	0.0158	8761824	0.00213	0.000050	8761824
Dissolved Molybdenum (Mo)	mg/L	0.000622	0.00172	8761824	0.000284	0.000050	8761824
Dissolved Nickel (Ni)	mg/L	0.000208	0.000707	8761824	0.00198	0.000020	8761824
Dissolved Phosphorus (P)	mg/L	0.0030	0.0050	8761824	0.0050	0.0020	8761824
Dissolved Selenium (Se)	mg/L	<0.000040	0.000127	8761824	0.00282	0.000040	8761824
Dissolved Silicon (Si)	mg/L	2.98	3.52	8761824	3.49	0.050	8761824
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	8761824	0.0000250	0.0000050	8761824
Dissolved Strontium (Sr)	mg/L	0.197	0.198	8761824	0.110	0.000050	8761824
Dissolved Thallium (Tl)	mg/L	0.0000020	0.0000040	8761824	0.0000050	0.0000020	8761824
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	8761824	<0.00020	0.00020	8761824
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	8761824	0.00055	0.00050	8761824
Dissolved Uranium (U)	mg/L	0.00346	0.00294	8761824	0.00173	0.0000020	8761824
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	8761824	<0.00020	0.00020	8761824
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2914	RZ2915		RZ2916		
Sampling Date		2017/09/12 11:27	2017/09/14 15:35		2017/09/12 13:05		
COC Number		08444213	08444213		08444213		
	UNITS	MW16-15D	DUP-3	QC Batch	MW16-15S	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00057	0.00218	8761824	0.131	0.00010	8761824
Dissolved Zirconium (Zr)	mg/L	0.00012	<0.00010	8761824	<0.00010	0.00010	8761824
Dissolved Calcium (Ca)	mg/L	60.8	40.1	8760456	37.8	0.050	8765963
Dissolved Magnesium (Mg)	mg/L	8.76	7.34	8760456	5.45	0.050	8765963
Dissolved Potassium (K)	mg/L	2.71	2.03	8760456	2.24	0.050	8765963
Dissolved Sodium (Na)	mg/L	1.69	3.42	8760456	1.03	0.050	8765963
Dissolved Sulphur (S)	mg/L	22.3	10.1	8760456	12.8	3.0	8765963
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2917	RZ2918	RZ2919		RZ2920		
Sampling Date		2017/09/12 09:00	2017/09/11 16:55	2017/09/14 14:35		2017/09/12 15:11		
COC Number		08444213	08444213	08444213		08444213		
	UNITS	MW15-01	BH95G-2	BH95G-15D	QC Batch	BH95G-25D	RDL	QC Batch

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	211	312	178	8760454	588	0.50	8765959
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	8763178	<0.0000020	0.0000020	8763178
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00227	0.00261	0.00108	8761824	0.00096	0.00050	8761829
Dissolved Antimony (Sb)	mg/L	0.000039	<0.000020	0.000043	8761824	0.000053	0.000020	8761829
Dissolved Arsenic (As)	mg/L	0.000074	0.000065	0.000064	8761824	0.00102	0.000020	8761829
Dissolved Barium (Ba)	mg/L	0.0260	0.0261	0.0838	8761824	0.0201	0.000020	8761829
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	8761824	<0.000010	0.000010	8761829
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	8761824	<0.0000050	0.0000050	8761829
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	8761824	<0.010	0.010	8761829
Dissolved Cadmium (Cd)	mg/L	0.0000110	0.00161	0.0000320	8761824	0.0000090	0.0000050	8761829
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00010	8761824	<0.00010	0.00010	8761829
Dissolved Cobalt (Co)	mg/L	0.0000720	0.0000150	<0.0000050	8761824	0.000188	0.0000050	8761829
Dissolved Copper (Cu)	mg/L	0.000325	0.000413	0.000137	8761824	<0.000050	0.000050	8761829
Dissolved Iron (Fe)	mg/L	0.0050	0.0211	<0.0010	8761824	1.83	0.0010	8761829
Dissolved Lead (Pb)	mg/L	0.0000090	0.0000390	0.0000140	8761824	0.0000290	0.0000050	8761829
Dissolved Lithium (Li)	mg/L	0.00190	0.00155	0.00266	8761824	0.0115	0.00050	8761829
Dissolved Manganese (Mn)	mg/L	0.00337	0.000847	0.000453	8761824	0.395	0.000050	8761829
Dissolved Molybdenum (Mo)	mg/L	0.000667	0.00207	0.00300	8761824	0.000215	0.000050	8761829
Dissolved Nickel (Ni)	mg/L	0.000610	0.000436	0.000261	8761824	0.000252	0.000020	8761829
Dissolved Phosphorus (P)	mg/L	0.0022	0.0072	0.0130	8761824	0.0028	0.0020	8761829
Dissolved Selenium (Se)	mg/L	0.000504	0.00616	0.00327	8761824	<0.000040	0.000040	8761829
Dissolved Silicon (Si)	mg/L	1.84	2.43	2.70	8761824	4.79	0.050	8761829
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	8761824	0.0000100	0.0000050	8761829
Dissolved Strontium (Sr)	mg/L	0.194	0.259	0.195	8761824	0.546	0.000050	8761829
Dissolved Thallium (Tl)	mg/L	<0.0000020	<0.0000020	0.0000020	8761824	<0.0000020	0.0000020	8761829
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	8761824	<0.00020	0.00020	8761829
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	8761824	<0.00050	0.00050	8761829
Dissolved Uranium (U)	mg/L	0.00254	0.00319	0.00324	8761824	0.00761	0.0000020	8761829
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	8761824	<0.00020	0.00020	8761829

RDL = Reportable Detection Limit

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2917	RZ2918	RZ2919		RZ2920		
Sampling Date		2017/09/12 09:00	2017/09/11 16:55	2017/09/14 14:35		2017/09/12 15:11		
COC Number		08444213	08444213	08444213		08444213		
	UNITS	MW15-01	BH95G-2	BH95G-15D	QC Batch	BH95G-25D	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00057	0.0224	0.00132	8761824	0.00646	0.00010	8761829
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	<0.00010	8761824	0.00417 (1)	0.00010	8767166
Dissolved Calcium (Ca)	mg/L	70.4	71.8	63.0	8760456	143	0.050	8765963
Dissolved Magnesium (Mg)	mg/L	8.52	32.2	5.13	8760456	56.5	0.050	8765963
Dissolved Potassium (K)	mg/L	0.546	0.431	1.66	8760456	4.42	0.050	8765963
Dissolved Sodium (Na)	mg/L	1.01	0.730	0.827	8760456	2.26	0.050	8765963
Dissolved Sulphur (S)	mg/L	23.9	16.4	4.9	8760456	82.3	3.0	8765963
RDL = Reportable Detection Limit								
(1) Dissolved greater than total. Reanalysis yields similar results.								



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		RZ2921	RZ2922		RZ2923	RZ2924		
<b>Sampling Date</b>		2017/09/14 15:55	2017/09/14 19:30		2017/09/12 16:45	2017/09/12 16:15		
<b>COC Number</b>		08444213	08444213		08444213	08444213		
	<b>UNITS</b>	<b>BH95G-32</b>	<b>BH95G-131</b>	<b>QC Batch</b>	<b>BH95G-22</b>	<b>BH95G-31</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	196	609	8760454	171	138	0.50	8760454
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	8763178	<0.0000020	<0.0000020	0.0000020	8763266
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00314	0.00813	8761829	0.00483	0.00485	0.00050	8761829
Dissolved Antimony (Sb)	mg/L	0.000108	0.00120	8761829	0.000139	0.000022	0.000020	8761829
Dissolved Arsenic (As)	mg/L	0.000239	0.000530	8761829	0.000105	0.000048	0.000020	8761829
Dissolved Barium (Ba)	mg/L	0.178	0.0808	8761829	0.112	0.114	0.000020	8761829
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	8761829	<0.000010	<0.000010	0.000010	8761829
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	8761829	<0.0000050	<0.0000050	0.0000050	8761829
Dissolved Boron (B)	mg/L	<0.010	<0.010	8761829	<0.010	<0.010	0.010	8761829
Dissolved Cadmium (Cd)	mg/L	0.0000550	0.000289	8761829	0.0000910	0.0000150	0.0000050	8761829
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00022	8761829	<0.00010	<0.00010	0.00010	8761829
Dissolved Cobalt (Co)	mg/L	0.000347	0.000348	8761829	0.0000130	0.0000180	0.0000050	8761829
Dissolved Copper (Cu)	mg/L	0.000079	0.00298	8761829	0.00112	0.000334	0.000050	8761829
Dissolved Iron (Fe)	mg/L	0.0038	0.0121	8761829	0.0270	0.0034	0.0010	8761829
Dissolved Lead (Pb)	mg/L	0.0000260	0.0000710	8761829	0.0000760	0.0000270	0.0000050	8761829
Dissolved Lithium (Li)	mg/L	0.00116	0.0122	8761829	0.00171	0.00102	0.00050	8761829
Dissolved Manganese (Mn)	mg/L	0.0824	0.216	8761829	0.000677	0.000666	0.000050	8761829
Dissolved Molybdenum (Mo)	mg/L	0.000748	0.000806	8761829	0.000182	0.00158	0.000050	8761829
Dissolved Nickel (Ni)	mg/L	0.00129	0.00159	8761829	0.000221	0.000337	0.000020	8761829
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0247	8761829	<0.0020	<0.0020	0.0020	8761829
Dissolved Selenium (Se)	mg/L	0.000449	0.000138	8761829	0.000501	0.00104	0.000040	8761829
Dissolved Silicon (Si)	mg/L	2.21	8.10	8761829	3.01	2.70	0.050	8761829
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000100	8761829	<0.0000050	<0.0000050	0.0000050	8761829
Dissolved Strontium (Sr)	mg/L	0.286	0.721	8761829	0.162	0.170	0.000050	8761829
Dissolved Thallium (Tl)	mg/L	0.0000060	0.0000070	8761829	<0.0000020	<0.0000020	0.0000020	8761829
Dissolved Tin (Sn)	mg/L	<0.00020	0.00035	8761829	<0.00020	<0.00020	0.00020	8761829
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00091	8761829	<0.00050	<0.00050	0.00050	8761829
Dissolved Uranium (U)	mg/L	0.00113	0.0156	8761829	0.00158	0.000788	0.0000020	8761829
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	8761829	<0.00020	<0.00020	0.00020	8761829

RDL = Reportable Detection Limit

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2921	RZ2922		RZ2923	RZ2924		
Sampling Date		2017/09/14 15:55	2017/09/14 19:30		2017/09/12 16:45	2017/09/12 16:15		
COC Number		08444213	08444213		08444213	08444213		
	UNITS	BH95G-32	BH95G-131	QC Batch	BH95G-22	BH95G-31	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00077	0.0198	8761829	0.00792	0.00112	0.00010	8761829
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00277	8761829	<0.00010	<0.00010	0.00010	8761829
Dissolved Calcium (Ca)	mg/L	71.5	155	8760456	54.4	50.7	0.050	8760456
Dissolved Magnesium (Mg)	mg/L	4.29	54.3	8760456	8.46	2.73	0.050	8760456
Dissolved Potassium (K)	mg/L	4.63	4.92	8760456	1.36	2.81	0.050	8760456
Dissolved Sodium (Na)	mg/L	0.737	15.6 (1)	8760456	1.05	1.02	0.050	8760456
Dissolved Sulphur (S)	mg/L	11.9	75.8	8760456	14.2	5.2	3.0	8760456
RDL = Reportable Detection Limit								
(1) Dissolved greater than total. Reanalysis yields similar results.								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		RZ2925		RZ2926		RZ2927		
<b>Sampling Date</b>		2017/09/14 22:00		2017/09/14 13:15		2017/09/14 09:00		
<b>COC Number</b>		08444213		08444213		08444213		
	<b>UNITS</b>	<b>FIELD BLANK</b>	<b>QC Batch</b>	<b>BH95G-33D</b>	<b>QC Batch</b>	<b>DUP-2</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	<0.50	8760454	256	8760454	176	0.50	8760454
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	8763266	<0.0000020	8763073	<0.0000020	0.0000020	8763073
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00088	8761829	0.00225	8761829	0.00113	0.00050	8761829
Dissolved Antimony (Sb)	mg/L	0.000056	8761829	0.000167 (1)	8761829	0.000100	0.000020	8761829
Dissolved Arsenic (As)	mg/L	<0.000020	8761829	0.000191	8761829	0.000039	0.000020	8761829
Dissolved Barium (Ba)	mg/L	0.000030	8761829	0.0850	8761829	0.0822	0.000020	8761829
Dissolved Beryllium (Be)	mg/L	<0.000010	8761829	<0.000010	8761829	<0.000010	0.000010	8761829
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8761829	<0.0000050	8761829	<0.0000050	0.0000050	8761829
Dissolved Boron (B)	mg/L	<0.010	8761829	<0.010	8761829	<0.010	0.010	8761829
Dissolved Cadmium (Cd)	mg/L	<0.0000050	8761829	0.0000050	8761829	0.0000270	0.0000050	8761829
Dissolved Chromium (Cr)	mg/L	<0.00010	8761829	0.00119	8761829	0.00011	0.00010	8761829
Dissolved Cobalt (Co)	mg/L	<0.0000050	8761829	0.0000290	8761829	<0.0000050	0.0000050	8761829
Dissolved Copper (Cu)	mg/L	<0.000050	8761829	0.000287	8761829	0.000192	0.000050	8761829
Dissolved Iron (Fe)	mg/L	<0.0010	8761829	0.0070	8761829	<0.0010	0.0010	8761829
Dissolved Lead (Pb)	mg/L	0.0000070	8761829	0.0000100	8761829	0.0000130	0.0000050	8761829
Dissolved Lithium (Li)	mg/L	<0.00050	8761829	0.00110	8761829	0.00236	0.00050	8761829
Dissolved Manganese (Mn)	mg/L	<0.000050	8761829	0.00577	8761829	0.000312	0.000050	8761829
Dissolved Molybdenum (Mo)	mg/L	<0.000050	8761829	0.00132	8761829	0.00296 (1)	0.000050	8770210
Dissolved Nickel (Ni)	mg/L	<0.000020	8761829	0.00187	8761829	0.000237	0.000020	8761829
Dissolved Phosphorus (P)	mg/L	<0.0020	8761829	0.0058	8761829	0.0109	0.0020	8761829
Dissolved Selenium (Se)	mg/L	<0.000040	8761829	0.00630	8761829	0.00311	0.000040	8761829
Dissolved Silicon (Si)	mg/L	<0.050	8761829	2.81	8761829	2.60	0.050	8761829
Dissolved Silver (Ag)	mg/L	<0.0000050	8761829	<0.0000050	8761829	<0.0000050	0.0000050	8761829
Dissolved Strontium (Sr)	mg/L	<0.000050	8761829	0.251	8761829	0.187	0.000050	8761829
Dissolved Thallium (Tl)	mg/L	<0.0000020	8761829	<0.0000020	8761829	0.0000020	0.0000020	8761829
Dissolved Tin (Sn)	mg/L	<0.00020	8761829	<0.00020	8761829	<0.00020	0.00020	8761829
Dissolved Titanium (Ti)	mg/L	<0.00050	8761829	<0.00050	8761829	<0.00050	0.00050	8761829
Dissolved Uranium (U)	mg/L	<0.0000020	8761829	0.00485	8761829	0.00306	0.0000020	8761829

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2925		RZ2926		RZ2927		
Sampling Date		2017/09/14 22:00		2017/09/14 13:15		2017/09/14 09:00		
COC Number		08444213		08444213		08444213		
	UNITS	FIELD BLANK	QC Batch	BH95G-33D	QC Batch	DUP-2	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	8761829	<0.00020	8761829	<0.00020	0.00020	8761829
Dissolved Zinc (Zn)	mg/L	0.00016	8761829	0.00276	8761829	0.00125	0.00010	8761829
Dissolved Zirconium (Zr)	mg/L	<0.00010	8761829	<0.00010	8761829	<0.00010	0.00010	8761829
Dissolved Calcium (Ca)	mg/L	<0.050	8760456	85.4	8760456	61.9	0.050	8760456
Dissolved Magnesium (Mg)	mg/L	<0.050	8760456	10.3	8760456	5.09	0.050	8760456
Dissolved Potassium (K)	mg/L	<0.050	8760456	0.988	8760456	1.57	0.050	8760456
Dissolved Sodium (Na)	mg/L	<0.050	8760456	0.898	8760456	0.842	0.050	8760456
Dissolved Sulphur (S)	mg/L	<3.0	8760456	23.7	8760456	4.6	3.0	8760456
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2928	RZ2929		RZ2930		
Sampling Date		2017/09/15 15:00	2017/09/12 09:23		2017/09/12 09:55		
COC Number		08444213	08444212		08444212		
	UNITS	TRIP BLANK	MW15-02	QC Batch	BH95G-21	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	<0.50	218	8760454	219	0.50	8760454
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	8763266	<0.000020	0.000020	8763073
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	<0.00050	0.00106	8761829	0.00325	0.00050	8761829
Dissolved Antimony (Sb)	mg/L	<0.000020	0.000022	8761829	0.000038	0.000020	8761829
Dissolved Arsenic (As)	mg/L	<0.000020	0.000832	8761829	0.00137	0.000020	8761829
Dissolved Barium (Ba)	mg/L	<0.000020	0.0930	8761829	0.0453	0.000020	8761829
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	8761829	<0.000010	0.000010	8761829
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	8761829	<0.0000050	0.0000050	8761829
Dissolved Boron (B)	mg/L	<0.010	<0.010	8761829	<0.010	0.010	8761829
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.0000140	8761829	<0.0000050	0.0000050	8761829
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	8761829	<0.00010	0.00010	8761829
Dissolved Cobalt (Co)	mg/L	<0.0000050	0.0000400	8761829	0.0000210	0.0000050	8761829
Dissolved Copper (Cu)	mg/L	<0.000050	0.000196	8761829	0.000100	0.000050	8761829
Dissolved Iron (Fe)	mg/L	<0.0010	<0.0010	8761829	0.365	0.0010	8761829
Dissolved Lead (Pb)	mg/L	<0.0000050	0.0000200	8761829	0.0000490	0.0000050	8761829
Dissolved Lithium (Li)	mg/L	<0.00050	0.00182	8761829	0.00575	0.00050	8761829
Dissolved Manganese (Mn)	mg/L	<0.000050	0.00131	8761829	0.0621	0.000050	8761829
Dissolved Molybdenum (Mo)	mg/L	<0.000050	0.000747	8761829	0.000298	0.000050	8770210
Dissolved Nickel (Ni)	mg/L	<0.000020	0.000187	8761829	0.000075	0.000020	8761829
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0030	8761829	0.0028	0.0020	8761829
Dissolved Selenium (Se)	mg/L	<0.000040	0.00174	8761829	<0.000040	0.000040	8761829
Dissolved Silicon (Si)	mg/L	<0.050	2.10	8761829	3.45	0.050	8761829
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	8761829	<0.0000050	0.0000050	8761829
Dissolved Strontium (Sr)	mg/L	<0.000050	0.297	8761829	0.231	0.000050	8761829
Dissolved Thallium (Tl)	mg/L	<0.0000020	<0.0000020	8761829	<0.0000020	0.0000020	8761829
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	8761829	<0.00020	0.00020	8761829
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	8761829	<0.00050	0.00050	8761829
Dissolved Uranium (U)	mg/L	<0.0000020	0.00339	8761829	0.00481	0.0000020	8761829
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	8761829	<0.00020	0.00020	8761829
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2928	RZ2929		RZ2930		
Sampling Date		2017/09/15 15:00	2017/09/12 09:23		2017/09/12 09:55		
COC Number		08444213	08444212		08444212		
	UNITS	TRIP BLANK	MW15-02	QC Batch	BH95G-21	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	<0.00010	0.00128	8761829	0.00078	0.00010	8761829
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	8761829	<0.00010	0.00010	8761829
Dissolved Calcium (Ca)	mg/L	<0.050	68.3	8760456	65.3	0.050	8760456
Dissolved Magnesium (Mg)	mg/L	<0.050	11.6	8760456	13.6	0.050	8760456
Dissolved Potassium (K)	mg/L	<0.050	2.42	8760456	1.46	0.050	8760456
Dissolved Sodium (Na)	mg/L	<0.050	0.774	8760456	1.13	0.050	8760456
Dissolved Sulphur (S)	mg/L	<3.0	19.3	8760456	17.2	3.0	8760456
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		RZ2931		RZ2932			RZ2933		
<b>Sampling Date</b>		2017/09/12 14:18		2017/09/12 15:37			2017/09/13 13:10		
<b>COC Number</b>		08444212		08444212			08444212		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>QC Batch</b>	<b>BH95G-25S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW16-12S</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	321	8760454	505	0.50	8760454	723	0.50	8769868
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	8763073	<0.0000020	0.0000020	8763266	<0.0000020	0.0000020	8763266
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00768	8761829	0.00380	0.00050	8761829	0.0078	0.0025	8761829
Dissolved Antimony (Sb)	mg/L	0.000076	8761829	0.000037	0.000020	8761829	0.00061	0.00010	8761829
Dissolved Arsenic (As)	mg/L	0.000853	8761829	0.00715	0.000020	8761829	0.0257	0.00010	8761829
Dissolved Barium (Ba)	mg/L	0.0381	8761829	0.0577	0.000020	8761829	3.15	0.00010	8761829
Dissolved Beryllium (Be)	mg/L	<0.000010	8761829	<0.000010	0.000010	8761829	<0.000050	0.000050	8761829
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8761829	<0.0000050	0.0000050	8761829	<0.000025	0.000025	8761829
Dissolved Boron (B)	mg/L	<0.010	8761829	<0.010	0.010	8761829	<0.050	0.050	8761829
Dissolved Cadmium (Cd)	mg/L	0.0000220	8761829	<0.0000050	0.0000050	8761829	0.000034	0.000025	8761829
Dissolved Chromium (Cr)	mg/L	<0.00010	8761829	<0.00010	0.00010	8761829	<0.00050	0.00050	8761829
Dissolved Cobalt (Co)	mg/L	0.000147	8761829	0.000192	0.0000050	8761829	0.0255	0.000025	8761829
Dissolved Copper (Cu)	mg/L	<0.000050	8761829	<0.000050	0.000050	8761829	<0.00025	0.00025	8761829
Dissolved Iron (Fe)	mg/L	1.32	8761829	6.46	0.0010	8761829	17.2	0.0050	8761829
Dissolved Lead (Pb)	mg/L	0.0000500	8761829	0.0000280	0.0000050	8761829	<0.000025	0.000025	8761829
Dissolved Lithium (Li)	mg/L	0.00928	8761829	0.0110	0.00050	8761829	0.444	0.0025	8761829
Dissolved Manganese (Mn)	mg/L	0.261	8761829	0.422	0.000050	8761829	0.601	0.00025	8761829
Dissolved Molybdenum (Mo)	mg/L	0.000321	8761829	0.00155	0.000050	8761829	0.00588	0.00025	8761829
Dissolved Nickel (Ni)	mg/L	0.000893	8761829	0.000389	0.000020	8761829	0.105	0.00010	8761829
Dissolved Phosphorus (P)	mg/L	0.0037	8761829	0.0065	0.0020	8761829	0.035	0.010	8761829
Dissolved Selenium (Se)	mg/L	0.000059	8761829	<0.000040	0.000040	8761829	<0.00020	0.00020	8761829
Dissolved Silicon (Si)	mg/L	3.96	8761829	5.53	0.050	8761829	16.6	0.25	8761829
Dissolved Silver (Ag)	mg/L	0.0000050	8761829	<0.0000050	0.0000050	8761829	0.000043	0.000025	8761829
Dissolved Strontium (Sr)	mg/L	0.537	8761829	0.499	0.000050	8761829	2.50	0.00025	8761829
Dissolved Thallium (Tl)	mg/L	<0.0000020	8761829	<0.0000020	0.0000020	8761829	0.000013	0.000010	8761829
Dissolved Tin (Sn)	mg/L	<0.00020	8761829	<0.00020	0.00020	8761829	<0.0010	0.0010	8761829
Dissolved Titanium (Ti)	mg/L	<0.00050	8761829	<0.00050	0.00050	8761829	0.0028	0.0025	8761829
Dissolved Uranium (U)	mg/L	0.00925	8761829	0.00372	0.0000020	8761829	0.00104	0.000010	8761829
Dissolved Vanadium (V)	mg/L	<0.00020	8761829	<0.00020	0.00020	8761829	<0.0010	0.0010	8761829

RDL = Reportable Detection Limit

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		RZ2931		RZ2932			RZ2933		
Sampling Date		2017/09/12 14:18		2017/09/12 15:37			2017/09/13 13:10		
COC Number		08444212		08444212			08444212		
	UNITS	MW15-11S	QC Batch	BH95G-25S	RDL	QC Batch	MW16-12S	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00203	8761829	0.00380	0.00010	8761829	0.0155	0.00050	8761829
Dissolved Zirconium (Zr)	mg/L	0.00146	8761829	0.00010	0.00010	8761829	0.0171	0.00050	8761829
Dissolved Calcium (Ca)	mg/L	86.8	8760456	135	0.050	8760456	141	0.25	8769975
Dissolved Magnesium (Mg)	mg/L	25.4	8760456	40.5	0.050	8760456	90.4	0.25	8769975
Dissolved Potassium (K)	mg/L	4.06	8760456	5.82	0.050	8760456	9.17	0.25	8769975
Dissolved Sodium (Na)	mg/L	3.57	8760456	2.43	0.050	8760456	32.2	0.25	8769975
Dissolved Sulphur (S)	mg/L	30.0	8760456	64.9	3.0	8760456	<15	15	8769975
RDL = Reportable Detection Limit									



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		RZ2934		
<b>Sampling Date</b>		2017/09/13 17:00		
<b>COC Number</b>		08444212		
	<b>UNITS</b>	<b>MW15-10S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	291	0.50	8760454
<b>Elements</b>				
Dissolved Mercury (Hg)	mg/L	<0.0000020	0.0000020	8763266
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	mg/L	0.0162	0.00050	8761829
Dissolved Antimony (Sb)	mg/L	0.000058	0.000020	8761829
Dissolved Arsenic (As)	mg/L	0.00206	0.000020	8761829
Dissolved Barium (Ba)	mg/L	0.126	0.000020	8761829
Dissolved Beryllium (Be)	mg/L	0.000018	0.000010	8761829
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000050	8761829
Dissolved Boron (B)	mg/L	<0.010	0.010	8761829
Dissolved Cadmium (Cd)	mg/L	0.00128	0.0000050	8761829
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00010	8761829
Dissolved Cobalt (Co)	mg/L	0.00308	0.0000050	8761829
Dissolved Copper (Cu)	mg/L	0.000381	0.000050	8761829
Dissolved Iron (Fe)	mg/L	2.15	0.0010	8761829
Dissolved Lead (Pb)	mg/L	0.000287	0.0000050	8761829
Dissolved Lithium (Li)	mg/L	0.00348	0.00050	8761829
Dissolved Manganese (Mn)	mg/L	0.455	0.000050	8761829
Dissolved Molybdenum (Mo)	mg/L	0.000186	0.000050	8761829
Dissolved Nickel (Ni)	mg/L	0.00520	0.000020	8761829
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0020	8761829
Dissolved Selenium (Se)	mg/L	0.00210	0.000040	8761829
Dissolved Silicon (Si)	mg/L	3.85	0.050	8761829
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000050	8761829
Dissolved Strontium (Sr)	mg/L	0.440	0.000050	8761829
Dissolved Thallium (Tl)	mg/L	0.0000050	0.0000020	8761829
Dissolved Tin (Sn)	mg/L	<0.00020	0.00020	8761829
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00050	8761829
Dissolved Uranium (U)	mg/L	0.000619	0.0000020	8761829
Dissolved Vanadium (V)	mg/L	<0.00020	0.00020	8761829
RDL = Reportable Detection Limit				

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		RZ2934		
<b>Sampling Date</b>		2017/09/13 17:00		
<b>COC Number</b>		08444212		
	<b>UNITS</b>	<b>MW15-10S</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Zinc (Zn)	mg/L	0.0160	0.00010	8761829
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00010	8761829
Dissolved Calcium (Ca)	mg/L	102	0.050	8760456
Dissolved Magnesium (Mg)	mg/L	8.89	0.050	8760456
Dissolved Potassium (K)	mg/L	2.18	0.050	8760456
Dissolved Sodium (Na)	mg/L	2.15	0.050	8760456
Dissolved Sulphur (S)	mg/L	8.1	3.0	8760456
RDL = Reportable Detection Limit				

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		RZ2887	RZ2901		RZ2911		
Sampling Date		2017/09/13 08:45	2017/09/13 15:50		2017/09/13 13:35		
COC Number		08444213	08444213		08444213		
	UNITS	MW15-03D	MW15-07S	RDL	MW16-12D	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	202	182	0.50	812	0.50	8760453
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	<0.0000020	0.0000020	8762132
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	0.0722	0.157	0.00050	0.0105	0.0025	8762292
Total Antimony (Sb)	mg/L	0.000074	<0.000020	0.000020	<0.00010	0.00010	8762292
Total Arsenic (As)	mg/L	0.00344	0.00191	0.000020	<0.00010	0.00010	8762292
Total Barium (Ba)	mg/L	0.0480	0.0330	0.000020	2.98	0.00010	8762292
Total Beryllium (Be)	mg/L	0.000014	0.000011	0.000010	0.000112	0.000050	8762292
Total Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	0.0000050	<0.000025	0.000025	8762292
Total Boron (B)	mg/L	<0.010	<0.010	0.010	<0.050	0.050	8762292
Total Cadmium (Cd)	mg/L	0.0000100	0.0000070	0.0000050	0.000043	0.000025	8762292
Total Chromium (Cr)	mg/L	0.00022	0.00060	0.00010	<0.00050	0.00050	8762292
Total Cobalt (Co)	mg/L	0.000124	0.000304	0.0000050	<0.000025	0.000025	8762292
Total Copper (Cu)	mg/L	0.000469	0.00121	0.000050	<0.00025	0.00025	8762292
Total Iron (Fe)	mg/L	0.744	0.630	0.0010	3.42	0.0050	8762292
Total Lead (Pb)	mg/L	0.000359	0.000190	0.0000050	0.000040	0.000025	8762292
Total Lithium (Li)	mg/L	0.00673	0.00740	0.00050	0.474	0.0025	8762292
Total Manganese (Mn)	mg/L	0.0551	0.148	0.000050	0.247	0.00025	8762292
Total Molybdenum (Mo)	mg/L	0.00270	0.000235	0.000050	<0.00025	0.00025	8762292
Total Nickel (Ni)	mg/L	0.000463	0.000720	0.000020	<0.00010	0.00010	8762292
Total Phosphorus (P)	mg/L	0.0127	0.0102	0.0020	<0.010	0.010	8762292
Total Selenium (Se)	mg/L	<0.000040	<0.000040	0.000040	<0.00020	0.00020	8762292
Total Silicon (Si)	mg/L	4.81	6.54	0.050	18.6	0.25	8762292
Total Silver (Ag)	mg/L	0.0000130	0.0000260	0.0000050	0.000067	0.000025	8762292
Total Strontium (Sr)	mg/L	0.258	0.270	0.000050	2.13	0.00025	8762292
Total Thallium (Tl)	mg/L	0.0000020	0.0000020	0.0000020	<0.000010	0.000010	8762292
Total Tin (Sn)	mg/L	<0.00020	<0.00020	0.00020	<0.0010	0.0010	8762292
Total Titanium (Ti)	mg/L	0.00296	0.00465	0.00050	<0.0025	0.0025	8762292
Total Uranium (U)	mg/L	0.00278	0.00172	0.0000020	0.000298	0.000010	8762292
Total Vanadium (V)	mg/L	0.00021	0.00045	0.00020	<0.0010	0.0010	8762292
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		RZ2887	RZ2901		RZ2911		
Sampling Date		2017/09/13 08:45	2017/09/13 15:50		2017/09/13 13:35		
COC Number		08444213	08444213		08444213		
	UNITS	MW15-03D	MW15-07S	RDL	MW16-12D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.00171	0.00146	0.00010	0.00325	0.00050	8762292
Total Zirconium (Zr)	mg/L	0.00100	0.00046 (1)	0.00010	0.0342	0.00050	8762292
Total Calcium (Ca)	mg/L	53.1	56.4	0.050	167	0.25	8760458
Total Magnesium (Mg)	mg/L	16.8	10.1	0.050	96.0	0.25	8760458
Total Potassium (K)	mg/L	2.48	1.37	0.050	11.5	0.25	8760458
Total Sodium (Na)	mg/L	1.50	3.33	0.050	32.5	0.25	8760458
Total Sulphur (S)	mg/L	8.4	12.1	3.0	<15	15	8760458
RDL = Reportable Detection Limit							
(1) Matrix Spike for (Zirconium) outside acceptance criteria (10% of analytes failure allowed).							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		RZ2925	RZ2928		
Sampling Date		2017/09/14 22:00	2017/09/15 15:00		
COC Number		08444213	08444213		
	<b>UNITS</b>	<b>FIELD BLANK</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>					
Total Hardness (CaCO3)	mg/L	<0.50	<0.50	0.50	8760453
<b>Elements</b>					
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	8762158
<b>Total Metals by ICPMS</b>					
Total Aluminum (Al)	mg/L	<0.00050	<0.00050	0.00050	8762292
Total Antimony (Sb)	mg/L	<0.000020	<0.000020	0.000020	8762292
Total Arsenic (As)	mg/L	<0.000020	<0.000020	0.000020	8762292
Total Barium (Ba)	mg/L	<0.000020	<0.000020	0.000020	8762292
Total Beryllium (Be)	mg/L	<0.000010	<0.000010	0.000010	8762292
Total Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	0.0000050	8762292
Total Boron (B)	mg/L	<0.010	<0.010	0.010	8762292
Total Cadmium (Cd)	mg/L	<0.0000050	<0.0000050	0.0000050	8762292
Total Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00010	8762292
Total Cobalt (Co)	mg/L	<0.0000050	<0.0000050	0.0000050	8762292
Total Copper (Cu)	mg/L	<0.000050	<0.000050	0.000050	8762292
Total Iron (Fe)	mg/L	<0.0010	<0.0010	0.0010	8762292
Total Lead (Pb)	mg/L	<0.0000050	<0.0000050	0.0000050	8762292
Total Lithium (Li)	mg/L	<0.00050	<0.00050	0.00050	8762292
Total Manganese (Mn)	mg/L	<0.000050	<0.000050	0.000050	8762292
Total Molybdenum (Mo)	mg/L	<0.000050	<0.000050	0.000050	8762292
Total Nickel (Ni)	mg/L	<0.000020	<0.000020	0.000020	8762292
Total Phosphorus (P)	mg/L	<0.0020	<0.0020	0.0020	8762292
Total Selenium (Se)	mg/L	<0.000040	<0.000040	0.000040	8762292
Total Silicon (Si)	mg/L	<0.050	<0.050	0.050	8762292
Total Silver (Ag)	mg/L	<0.0000050	<0.0000050	0.0000050	8762292
Total Strontium (Sr)	mg/L	<0.000050	<0.000050	0.000050	8762292
Total Thallium (Tl)	mg/L	<0.0000020	<0.0000020	0.0000020	8762292
Total Tin (Sn)	mg/L	<0.00020	<0.00020	0.00020	8762292
Total Titanium (Ti)	mg/L	<0.00050	<0.00050	0.00050	8762292
Total Uranium (U)	mg/L	<0.0000020	<0.0000020	0.0000020	8762292
Total Vanadium (V)	mg/L	<0.00020	<0.00020	0.00020	8762292
RDL = Reportable Detection Limit					

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		RZ2925	RZ2928		
Sampling Date		2017/09/14 22:00	2017/09/15 15:00		
COC Number		08444213	08444213		
	UNITS	FIELD BLANK	TRIP BLANK	RDL	QC Batch
Total Zinc (Zn)	mg/L	<0.00010	<0.00010	0.00010	8762292
Total Zirconium (Zr)	mg/L	<0.00010	<0.00010	0.00010	8762292
Total Calcium (Ca)	mg/L	<0.050	<0.050	0.050	8760458
Total Magnesium (Mg)	mg/L	<0.050	<0.050	0.050	8760458
Total Potassium (K)	mg/L	<0.050	<0.050	0.050	8760458
Total Sodium (Na)	mg/L	<0.050	<0.050	0.050	8760458
Total Sulphur (S)	mg/L	<3.0	<3.0	3.0	8760458
RDL = Reportable Detection Limit					

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2886		RZ2888	RZ2889	RZ2890		
Sampling Date		2017/09/13 09:11		2017/09/13 10:55	2017/09/13 10:20	2017/09/13 15:29		
COC Number		08444213		08444213	08444213	08444213		
	UNITS	MW15-03S	RDL	MW15-04S	MW15-04D	MW15-07D	RDL	QC Batch

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	323	0.50	159	456	297	0.50	8760453
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**Elements**

Total Mercury (Hg)	mg/L	0.0000021	0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8762132
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	18.9	0.015	11.7	28.6	12.1	0.0030	8762213
Total Antimony (Sb)	mg/L	0.00017	0.00010	0.000121	0.000078	0.000054	0.000020	8762213
Total Arsenic (As)	mg/L	0.0212	0.00010	0.0100	0.0298	0.00549	0.000020	8762213
Total Barium (Ba)	mg/L	0.714	0.00025	0.294	0.541	0.545	0.000050	8762213
Total Beryllium (Be)	mg/L	0.00170	0.000050	0.000301	0.00490	0.000306	0.000010	8762213
Total Bismuth (Bi)	mg/L	0.000298	0.000050	0.000124	0.00157	0.000366	0.000010	8762213
Total Boron (B)	mg/L	<0.050	0.050	<0.010	0.022	<0.010	0.010	8762213
Total Cadmium (Cd)	mg/L	0.00362	0.000025	0.000532	0.00207	0.000417	0.0000050	8762213
Total Chromium (Cr)	mg/L	0.0777	0.00050	0.0255	0.0664	0.0369	0.00010	8762213
Total Cobalt (Co)	mg/L	0.0836	0.000050	0.0167	0.0313	0.0127	0.000010	8762213
Total Copper (Cu)	mg/L	0.332	0.00050	0.0570	0.111	0.0532	0.00010	8762213
Total Iron (Fe)	mg/L	58.7	0.025	22.6	31.1	39.0	0.0050	8762213
Total Lead (Pb)	mg/L	0.161	0.00010	0.0196	0.0741	0.0284	0.000020	8762213
Total Lithium (Li)	mg/L	0.0199	0.0025	0.00797	0.0173	0.0192	0.00050	8762213
Total Manganese (Mn)	mg/L	4.96	0.00050	0.771	1.21	0.871	0.00010	8762213
Total Molybdenum (Mo)	mg/L	0.00250	0.00025	0.00113	0.00234	0.000550	0.000050	8762213
Total Nickel (Ni)	mg/L	0.162	0.00050	0.0264	0.0743	0.0254	0.00010	8762213
Total Phosphorus (P)	mg/L	9.71	0.025	1.56	1.65	0.974	0.0050	8762213
Total Selenium (Se)	mg/L	0.00022	0.00020	0.000751	0.00108	0.00122	0.000040	8762213
Total Silicon (Si)	mg/L	22.4	0.25	17.7	46.5	20.4	0.050	8762213
Total Silver (Ag)	mg/L	0.0106	0.000050	0.00874	0.00168	0.00127	0.000010	8762213
Total Strontium (Sr)	mg/L	0.372	0.00025	0.194	1.01	0.393	0.000050	8762213
Total Thallium (Tl)	mg/L	0.000233	0.000010	0.000153	0.000585	0.0000830	0.0000020	8762213
Total Tin (Sn)	mg/L	<0.0010	0.0010	0.00030	0.00057	0.00079	0.00020	8762213
Total Titanium (Ti)	mg/L	0.274	0.010	0.412	0.0324	0.206	0.0020	8762213
Total Uranium (U)	mg/L	0.00386	0.000025	0.00115	0.0174	0.00455	0.0000050	8762213
Total Vanadium (V)	mg/L	0.0721	0.0010	0.0438	0.0291	0.0340	0.00020	8762213

RDL = Reportable Detection Limit

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2886		RZ2888	RZ2889	RZ2890		
Sampling Date		2017/09/13 09:11		2017/09/13 10:55	2017/09/13 10:20	2017/09/13 15:29		
COC Number		08444213		08444213	08444213	08444213		
	UNITS	MW15-03S	RDL	MW15-04S	MW15-04D	MW15-07D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.325	0.0050	0.0753	0.148	0.103	0.0010	8762213
Total Zirconium (Zr)	mg/L	0.00221	0.00050	0.00228	0.00069	0.0141	0.00010	8762213
Total Calcium (Ca)	mg/L	102	1.3	47.8	153	86.3	0.25	8760458
Total Magnesium (Mg)	mg/L	16.5	1.3	9.66	17.9	19.8	0.25	8760458
Total Potassium (K)	mg/L	3.4	1.3	3.31	6.80	3.67	0.25	8760458
Total Sodium (Na)	mg/L	1.4	1.3	0.92	15.3	3.93	0.25	8760458
Total Sulphur (S)	mg/L	<15	15	<3.0	7.0	12.6	3.0	8760458
RDL = Reportable Detection Limit								



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2907			RZ2908		
Sampling Date		2017/09/14 08:50			2017/09/13 18:00		
COC Number		08444213			08444213		
	UNITS	MW15-09S	RDL	QC Batch	MW15-10D	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	255	0.50	8760453	1990	0.50	8760453
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8762132	<0.0000020	0.0000020	8762132
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	7.30	0.0030	8762213	0.900	0.015	8764745
Total Antimony (Sb)	mg/L	0.000346	0.000020	8762213	<0.00010	0.00010	8764745
Total Arsenic (As)	mg/L	0.00761	0.000020	8762213	0.00088	0.00010	8764745
Total Barium (Ba)	mg/L	0.362	0.000050	8762213	0.411	0.00025	8764745
Total Beryllium (Be)	mg/L	0.000694	0.000010	8762213	0.00116	0.000050	8764745
Total Bismuth (Bi)	mg/L	0.000325	0.000010	8762213	0.000156	0.000050	8764745
Total Boron (B)	mg/L	<0.010	0.010	8762213	<0.050	0.050	8764745
Total Cadmium (Cd)	mg/L	0.000996	0.0000050	8762213	0.00106	0.000025	8764745
Total Chromium (Cr)	mg/L	0.0233	0.00010	8762213	0.00196	0.00050	8764745
Total Cobalt (Co)	mg/L	0.00676	0.000010	8762213	0.00115	0.000050	8764745
Total Copper (Cu)	mg/L	0.0462	0.00010	8762213	0.00541	0.00050	8764745
Total Iron (Fe)	mg/L	22.8	0.0050	8762213	28.9	0.025	8764745
Total Lead (Pb)	mg/L	0.0260	0.000020	8762213	0.0140	0.00010	8764745
Total Lithium (Li)	mg/L	0.00849	0.00050	8762213	0.228	0.0025	8764745
Total Manganese (Mn)	mg/L	0.263	0.00010	8762213	5.22	0.00050	8764745
Total Molybdenum (Mo)	mg/L	0.00468	0.000050	8762213	0.00041	0.00025	8764745
Total Nickel (Ni)	mg/L	0.0331	0.00010	8762213	0.00190	0.00050	8764745
Total Phosphorus (P)	mg/L	0.629	0.0050	8762213	0.116	0.025	8764745
Total Selenium (Se)	mg/L	0.00273	0.000040	8762213	<0.00020	0.00020	8764745
Total Silicon (Si)	mg/L	15.5	0.050	8762213	38.1	0.25	8764745
Total Silver (Ag)	mg/L	0.00204	0.000010	8762213	0.000560	0.000050	8764745
Total Strontium (Sr)	mg/L	0.302	0.000050	8762213	2.51	0.00025	8764745
Total Thallium (Tl)	mg/L	0.000122	0.0000020	8762213	<0.000010	0.000010	8764745
Total Tin (Sn)	mg/L	0.00046	0.00020	8762213	<0.0010	0.0010	8764745
Total Titanium (Ti)	mg/L	0.132	0.0020	8762213	0.030	0.010	8764745
Total Uranium (U)	mg/L	0.00691	0.0000050	8762213	0.000316	0.000025	8764745
Total Vanadium (V)	mg/L	0.0252	0.00020	8762213	0.0040	0.0010	8764745
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2907			RZ2908		
Sampling Date		2017/09/14 08:50			2017/09/13 18:00		
COC Number		08444213			08444213		
	UNITS	MW15-09S	RDL	QC Batch	MW15-10D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0865	0.0010	8762213	0.0081	0.0050	8764745
Total Zirconium (Zr)	mg/L	0.00088	0.00010	8762213	0.00179	0.00050	8764745
Total Calcium (Ca)	mg/L	78.0	0.25	8760458	658	1.3	8760458
Total Magnesium (Mg)	mg/L	14.7	0.25	8760458	84.5	1.3	8760458
Total Potassium (K)	mg/L	3.12	0.25	8760458	9.4	1.3	8760458
Total Sodium (Na)	mg/L	2.21	0.25	8760458	24.1	1.3	8760458
Total Sulphur (S)	mg/L	6.3	3.0	8760458	<15	15	8760458
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2909		RZ2910		RZ2912		
Sampling Date		2017/09/14 09:00		2017/09/15 07:30		2017/09/13 14:25		
COC Number		08444213		08444213		08444213		
	UNITS	DUP-1	QC Batch	MW16-14D	QC Batch	MW16-16D	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	253	8760453	251	8760453	325	0.50	8760453
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	8762132	<0.0000020	8762132	<0.0000020	0.0000020	8762132
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	5.95	8762213	0.443	8764745	7.18	0.0030	8762213
Total Antimony (Sb)	mg/L	0.000293	8762213	0.000031	8764745	0.000583	0.000020	8762213
Total Arsenic (As)	mg/L	0.00595	8762213	0.00505	8764745	0.00330	0.000020	8762213
Total Barium (Ba)	mg/L	0.324	8762213	0.0225	8764745	0.143	0.000050	8762213
Total Beryllium (Be)	mg/L	0.000561	8762213	0.000028	8764745	0.000241	0.000010	8762213
Total Bismuth (Bi)	mg/L	0.000255	8762213	0.000013	8764745	0.000130	0.000010	8762213
Total Boron (B)	mg/L	<0.010	8762213	<0.010	8764745	<0.010	0.010	8762213
Total Cadmium (Cd)	mg/L	0.000719	8762213	0.0000370	8764745	0.000406	0.0000050	8762213
Total Chromium (Cr)	mg/L	0.0161	8762213	0.00070	8764745	0.0233	0.00010	8762213
Total Cobalt (Co)	mg/L	0.00473	8762213	0.000396	8764745	0.0107	0.000010	8762213
Total Copper (Cu)	mg/L	0.0304	8762213	0.00056	8764745	0.0516	0.00010	8762213
Total Iron (Fe)	mg/L	17.3	8762213	1.03	8764745	22.3	0.0050	8762213
Total Lead (Pb)	mg/L	0.0167	8762213	0.000477	8764745	0.0218	0.000020	8762213
Total Lithium (Li)	mg/L	0.00768	8762213	0.00269	8764745	0.0107	0.00050	8762213
Total Manganese (Mn)	mg/L	0.203	8762213	0.319	8764745	0.378	0.00010	8762213
Total Molybdenum (Mo)	mg/L	0.00449	8762213	0.000283	8764745	0.00171	0.000050	8762213
Total Nickel (Ni)	mg/L	0.00991	8762213	0.00101	8764745	0.0248	0.00010	8762213
Total Phosphorus (P)	mg/L	0.404	8762213	0.0364	8764745	0.570	0.0050	8762213
Total Selenium (Se)	mg/L	0.00251	8762213	0.000051	8764745	0.000390	0.000040	8762213
Total Silicon (Si)	mg/L	12.6	8762213	5.37	8764745	12.3	0.050	8762213
Total Silver (Ag)	mg/L	0.00539	8762213	<0.000010	8764745	0.000310	0.000010	8762213
Total Strontium (Sr)	mg/L	0.295	8762213	0.315	8764745	0.454	0.000050	8762213
Total Thallium (Tl)	mg/L	0.0000990	8762213	0.0000068	8764745	0.0000960	0.0000020	8762213
Total Tin (Sn)	mg/L	0.00032	8762213	0.00030	8764745	0.00155	0.00020	8762213
Total Titanium (Ti)	mg/L	0.110	8762213	0.0143	8764745	0.137	0.0020	8762213
Total Uranium (U)	mg/L	0.00605	8762213	0.00391	8764745	0.0103	0.0000050	8762213
Total Vanadium (V)	mg/L	0.0178	8762213	0.00072	8764745	0.0187	0.00020	8762213
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2909		RZ2910		RZ2912		
Sampling Date		2017/09/14 09:00		2017/09/15 07:30		2017/09/13 14:25		
COC Number		08444213		08444213		08444213		
	UNITS	DUP-1	QC Batch	MW16-14D	QC Batch	MW16-16D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0556	8762213	0.0063	8764745	0.288	0.0010	8762213
Total Zirconium (Zr)	mg/L	0.00084	8762213	0.00021	8764745	0.0108	0.00010	8762213
Total Calcium (Ca)	mg/L	78.3	8760458	89.4	8760458	109	0.25	8760458
Total Magnesium (Mg)	mg/L	13.9	8760458	6.79	8760458	12.8	0.25	8760458
Total Potassium (K)	mg/L	2.78	8760458	2.32	8760458	3.56	0.25	8760458
Total Sodium (Na)	mg/L	2.19	8760458	2.42	8760458	2.20	0.25	8760458
Total Sulphur (S)	mg/L	6.3	8760458	31.4	8760458	15.6	3.0	8760458
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2913	RZ2914	RZ2915		RZ2916		
Sampling Date		2017/09/14 15:09	2017/09/12 11:27	2017/09/14 15:35		2017/09/12 13:05		
COC Number		08444213	08444213	08444213		08444213		
	<b>UNITS</b>	<b>MW16-17</b>	<b>MW16-15D</b>	<b>DUP-3</b>	<b>RDL</b>	<b>MW16-15S</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	240	239	269	0.50	355	0.50	8760453
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**Elements**

Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	0.0000020	0.0000181	0.0000020	8762132
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	5.23	8.70	5.22	0.0030	21.4	0.015	8762213
Total Antimony (Sb)	mg/L	0.000311	0.00233	0.000404	0.000020	0.0109	0.00010	8762213
Total Arsenic (As)	mg/L	0.00110	0.0563	0.00119	0.000020	0.255	0.00010	8762213
Total Barium (Ba)	mg/L	0.573	0.191	0.570	0.000050	0.574	0.00025	8762213
Total Beryllium (Be)	mg/L	0.000271	0.000610	0.000283	0.000010	0.00126	0.000050	8762213
Total Bismuth (Bi)	mg/L	0.000073	0.000757	0.000046	0.000010	0.00310	0.000050	8762213
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	0.010	<0.050	0.050	8762213
Total Cadmium (Cd)	mg/L	0.000307	0.0222	0.000323	0.0000050	0.0182	0.000025	8762213
Total Chromium (Cr)	mg/L	0.0101	0.0130	0.0106	0.00010	0.0626	0.00050	8762213
Total Cobalt (Co)	mg/L	0.00563	0.00795	0.00586	0.000010	0.0276	0.000050	8762213
Total Copper (Cu)	mg/L	0.0159	0.0643	0.0224	0.00010	0.402	0.00050	8762213
Total Iron (Fe)	mg/L	17.6	31.7	19.0	0.0050	56.8	0.025	8762213
Total Lead (Pb)	mg/L	0.00776	0.120	0.00612	0.000020	1.78	0.00010	8762213
Total Lithium (Li)	mg/L	0.00610	0.0117	0.00617	0.00050	0.0337	0.0025	8762213
Total Manganese (Mn)	mg/L	0.475	1.02	0.516	0.00010	1.77	0.00050	8762213
Total Molybdenum (Mo)	mg/L	0.00187	0.00166	0.00168	0.000050	0.00278	0.00025	8762213
Total Nickel (Ni)	mg/L	0.0121	0.0109	0.0124	0.00010	0.0621	0.00050	8762213
Total Phosphorus (P)	mg/L	0.631	0.734	0.620	0.0050	2.48	0.025	8762213
Total Selenium (Se)	mg/L	0.000369	0.000484	0.000355	0.000040	0.00412	0.00020	8762213
Total Silicon (Si)	mg/L	9.51	14.7	9.88	0.050	31.7	0.25	8762213
Total Silver (Ag)	mg/L	0.00190	0.00209	0.00270	0.000010	0.0234	0.000050	8762213
Total Strontium (Sr)	mg/L	0.267	0.217	0.276	0.000050	0.168	0.00025	8762213
Total Thallium (Tl)	mg/L	0.0000770	0.000357	0.0000820	0.0000020	0.000684	0.000010	8762213
Total Tin (Sn)	mg/L	0.00063	0.00059	0.00110	0.00020	0.0020	0.0010	8762213
Total Titanium (Ti)	mg/L	0.103	0.240	0.109	0.0020	0.910	0.010	8762213
Total Uranium (U)	mg/L	0.00613	0.0104	0.00647	0.0000050	0.0302	0.000025	8762213
Total Vanadium (V)	mg/L	0.00973	0.0148	0.0103	0.00020	0.0612	0.0010	8762213

RDL = Reportable Detection Limit

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2913	RZ2914	RZ2915		RZ2916		
Sampling Date		2017/09/14 15:09	2017/09/12 11:27	2017/09/14 15:35		2017/09/12 13:05		
COC Number		08444213	08444213	08444213		08444213		
	UNITS	MW16-17	MW16-15D	DUP-3	RDL	MW16-15S	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0959	3.25	0.109	0.0010	2.39	0.0050	8762213
Total Zirconium (Zr)	mg/L	0.0106	0.0181	0.0121	0.00010	0.00233	0.00050	8762213
Total Calcium (Ca)	mg/L	77.6	72.4	88.0	0.25	86.9	1.3	8760458
Total Magnesium (Mg)	mg/L	11.2	14.2	12.0	0.25	33.6	1.3	8760458
Total Potassium (K)	mg/L	3.21	5.97	3.33	0.25	7.5	1.3	8760458
Total Sodium (Na)	mg/L	3.01	1.64	3.03	0.25	<1.3	1.3	8760458
Total Sulphur (S)	mg/L	11.7	22.3	12.5	3.0	<15	15	8760458
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2917	RZ2918	RZ2919	RZ2920		
Sampling Date		2017/09/12 09:00	2017/09/11 16:55	2017/09/14 14:35	2017/09/12 15:11		
COC Number		08444213	08444213	08444213	08444213		
	UNITS	MW15-01	BH95G-2	BH95G-15D	BH95G-25D	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	210	315	235	586	0.50	8760453
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8762132
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	0.983	2.93	11.1	5.53	0.0030	8762213
Total Antimony (Sb)	mg/L	0.000154	0.000250	0.000532	0.000350	0.000020	8762213
Total Arsenic (As)	mg/L	0.00230	0.00719	0.00517	0.00470	0.000020	8762213
Total Barium (Ba)	mg/L	0.0663	0.0757	0.289	0.550	0.000050	8762213
Total Beryllium (Be)	mg/L	0.000045	0.000132	0.00105	0.000500	0.000010	8762213
Total Bismuth (Bi)	mg/L	0.000020	0.000082	0.00130	0.000261	0.000010	8762213
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	8762213
Total Cadmium (Cd)	mg/L	0.0000960	0.00595	0.000694	0.000301	0.0000050	8762213
Total Chromium (Cr)	mg/L	0.00331	0.00690	0.0163	0.00470	0.00010	8762213
Total Cobalt (Co)	mg/L	0.00257	0.00668	0.00492	0.00323	0.000010	8762213
Total Copper (Cu)	mg/L	0.00703	0.0598	0.185	0.0102	0.00010	8762213
Total Iron (Fe)	mg/L	5.87	9.25	15.2	14.3	0.0050	8762213
Total Lead (Pb)	mg/L	0.00209	0.0206	0.120	0.0172	0.000020	8762213
Total Lithium (Li)	mg/L	0.00222	0.00385	0.0121	0.0153	0.00050	8762213
Total Manganese (Mn)	mg/L	0.0738	0.133	0.275	0.607	0.00010	8762213
Total Molybdenum (Mo)	mg/L	0.00106	0.00373	0.00270	0.000416	0.000050	8762213
Total Nickel (Ni)	mg/L	0.00705	0.0354	0.0324	0.00524	0.00010	8762213
Total Phosphorus (P)	mg/L	0.132	0.965	0.641	0.506	0.0050	8762213
Total Selenium (Se)	mg/L	0.000744	0.00643	0.00427	0.000078	0.000040	8762213
Total Silicon (Si)	mg/L	3.08	6.07	21.1	13.7	0.050	8762213
Total Silver (Ag)	mg/L	0.00217	0.000450	0.000857	0.000189	0.000010	8762213
Total Strontium (Sr)	mg/L	0.199	0.258	0.246	0.553	0.000050	8762213
Total Thallium (Tl)	mg/L	0.0000210	0.0000710	0.000127	0.0000910	0.0000020	8762213
Total Tin (Sn)	mg/L	0.00023	<0.00020	0.00048	0.00024	0.00020	8762213
Total Titanium (Ti)	mg/L	0.0509	0.0579	0.155	0.0784	0.0020	8762213
Total Uranium (U)	mg/L	0.00275	0.00375	0.00825	0.0104	0.0000050	8762213
Total Vanadium (V)	mg/L	0.00489	0.0171	0.0182	0.00915	0.00020	8762213
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2917	RZ2918	RZ2919	RZ2920		
Sampling Date		2017/09/12 09:00	2017/09/11 16:55	2017/09/14 14:35	2017/09/12 15:11		
COC Number		08444213	08444213	08444213	08444213		
	UNITS	MW15-01	BH95G-2	BH95G-15D	BH95G-25D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0315	0.565	0.144	0.305	0.0010	8762213
Total Zirconium (Zr)	mg/L	0.00242	0.00280	0.00087	0.00323	0.00010	8762213
Total Calcium (Ca)	mg/L	69.7	72.5	73.8	146	0.25	8760458
Total Magnesium (Mg)	mg/L	8.81	32.6	12.2	54.1	0.25	8760458
Total Potassium (K)	mg/L	0.80	1.10	4.00	5.65	0.25	8760458
Total Sodium (Na)	mg/L	1.11	0.89	1.00	2.21	0.25	8760458
Total Sulphur (S)	mg/L	24.9	16.1	5.7	79.2	3.0	8760458
RDL = Reportable Detection Limit							



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2921	RZ2922			RZ2923		
Sampling Date		2017/09/14 15:55	2017/09/14 19:30			2017/09/12 16:45		
COC Number		08444213	08444213			08444213		
	UNITS	BH95G-32	BH95G-131	RDL	QC Batch	BH95G-22	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	229	622	0.50	8760453	218	0.50	8760453
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	8762158	0.0000036	0.0000020	8762158
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	9.77	2.37	0.0030	8763047	13.7	0.015	8762213
Total Antimony (Sb)	mg/L	0.00031	0.00272	0.00010	8763047	0.00081	0.00010	8762213
Total Arsenic (As)	mg/L	0.00481	0.00710	0.000020	8763047	0.0409	0.00010	8762213
Total Barium (Ba)	mg/L	0.522	0.101	0.000050	8763047	0.536	0.00025	8762213
Total Beryllium (Be)	mg/L	0.000591	0.000079	0.000010	8763047	0.000856	0.000050	8762213
Total Bismuth (Bi)	mg/L	0.000242	0.000105	0.000010	8763047	0.00203	0.000050	8762213
Total Boron (B)	mg/L	<0.010	<0.010	0.010	8763047	<0.050	0.050	8762213
Total Cadmium (Cd)	mg/L	0.000698	0.000628	0.0000050	8763047	0.00925	0.000025	8762213
Total Chromium (Cr)	mg/L	0.0204	0.00670	0.00010	8763047	0.0267	0.00050	8762213
Total Cobalt (Co)	mg/L	0.00866	0.00263	0.000010	8763047	0.0425	0.000050	8762213
Total Copper (Cu)	mg/L	0.0428	0.0165	0.00010	8763047	0.346	0.00050	8762213
Total Iron (Fe)	mg/L	20.5	6.34	0.0050	8763047	115	0.025	8762213
Total Lead (Pb)	mg/L	0.0273	0.0234	0.000020	8763047	0.268	0.00010	8762213
Total Lithium (Li)	mg/L	0.00621	0.0138	0.00050	8763047	0.0129	0.0025	8762213
Total Manganese (Mn)	mg/L	0.640	0.378	0.00010	8763047	3.20	0.00050	8762213
Total Molybdenum (Mo)	mg/L	0.00106	0.000678	0.000050	8763047	0.00110	0.00025	8762213
Total Nickel (Ni)	mg/L	0.0169	0.00717	0.00010	8763047	0.0747	0.00050	8762213
Total Phosphorus (P)	mg/L	0.473	0.627	0.0050	8763047	1.38	0.025	8762213
Total Selenium (Se)	mg/L	0.00162	0.000218	0.000040	8763047	0.00205	0.00020	8762213
Total Silicon (Si)	mg/L	15.8	10.5	0.050	8763047	27.8	0.25	8762213
Total Silver (Ag)	mg/L	0.000554	0.000182	0.000010	8763047	0.00308	0.000050	8762213
Total Strontium (Sr)	mg/L	0.333	0.749	0.000050	8763047	0.199	0.00025	8762213
Total Thallium (Tl)	mg/L	0.000112	0.0000490	0.0000020	8763047	0.000308	0.000010	8762213
Total Tin (Sn)	mg/L	0.00047	0.00489	0.00020	8763047	<0.0010	0.0010	8762213
Total Titanium (Ti)	mg/L	1.08	0.107	0.0020	8763047	0.316	0.010	8762213
Total Uranium (U)	mg/L	0.00239	0.0167	0.0000050	8763047	0.00528	0.000025	8762213
Total Vanadium (V)	mg/L	0.0595	0.00700	0.00020	8763047	0.0420	0.0010	8762213
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2921	RZ2922			RZ2923		
Sampling Date		2017/09/14 15:55	2017/09/14 19:30			2017/09/12 16:45		
COC Number		08444213	08444213			08444213		
	UNITS	BH95G-32	BH95G-131	RDL	QC Batch	BH95G-22	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0915	0.0934	0.0010	8763047	1.28	0.0050	8762213
Total Zirconium (Zr)	mg/L	0.00266	0.00364	0.00010	8763047	0.00327	0.00050	8762213
Total Calcium (Ca)	mg/L	76.7	156	0.25	8760458	61.3	1.3	8760458
Total Magnesium (Mg)	mg/L	9.16	56.7	0.25	8760458	15.7	1.3	8760458
Total Potassium (K)	mg/L	6.86	5.15	0.25	8760458	4.5	1.3	8760458
Total Sodium (Na)	mg/L	1.09	9.72	0.25	8760458	<1.3	1.3	8760458
Total Sulphur (S)	mg/L	12.3	82.5	3.0	8760458	<15	15	8760458
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2924			RZ2926	RZ2927		
Sampling Date		2017/09/12 16:15			2017/09/14 13:15	2017/09/14 09:00		
COC Number		08444213			08444213	08444213		
	UNITS	BH95G-31	RDL	QC Batch	BH95G-33D	DUP-2	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	160	0.50	8760453	254	251	0.50	8760453
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8762158	<0.0000020	<0.0000020	0.0000020	8762158
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	4.16	0.0030	8762213	1.65	17.0	0.0030	8763047
Total Antimony (Sb)	mg/L	0.000094	0.000020	8762213	<0.00010	0.00047	0.00010	8763047
Total Arsenic (As)	mg/L	0.0108	0.000020	8762213	0.00632	0.0121	0.000020	8763047
Total Barium (Ba)	mg/L	0.264	0.000050	8762213	0.117	0.418	0.000050	8763047
Total Beryllium (Be)	mg/L	0.000116	0.000010	8762213	0.000085	0.00181	0.000010	8763047
Total Bismuth (Bi)	mg/L	0.000151	0.000010	8762213	0.000025	0.00228	0.000010	8763047
Total Boron (B)	mg/L	<0.010	0.010	8762213	<0.010	0.011	0.010	8763047
Total Cadmium (Cd)	mg/L	0.000539	0.0000050	8762213	0.0000470	0.00140	0.0000050	8763047
Total Chromium (Cr)	mg/L	0.0126	0.00010	8762213	0.00204	0.0218	0.00010	8763047
Total Cobalt (Co)	mg/L	0.0151	0.000010	8762213	0.00340	0.00971	0.000010	8763047
Total Copper (Cu)	mg/L	0.0787	0.00010	8762213	0.00744	0.222	0.00010	8763047
Total Iron (Fe)	mg/L	14.2	0.0050	8762213	4.65	25.6	0.0050	8763047
Total Lead (Pb)	mg/L	0.0463	0.000020	8762213	0.00187	0.226	0.000020	8763047
Total Lithium (Li)	mg/L	0.00401	0.00050	8762213	0.00225	0.0167	0.00050	8763047
Total Manganese (Mn)	mg/L	0.372	0.00010	8762213	0.405	0.678	0.00010	8763047
Total Molybdenum (Mo)	mg/L	0.00170	0.000050	8762213	0.00193	0.00241	0.000050	8763047
Total Nickel (Ni)	mg/L	0.0286	0.00010	8762213	0.0159	0.0454	0.00010	8763047
Total Phosphorus (P)	mg/L	0.522	0.0050	8762213	0.107	1.06	0.0050	8763047
Total Selenium (Se)	mg/L	0.00114	0.000040	8762213	0.00614	0.00541	0.000040	8763047
Total Silicon (Si)	mg/L	8.57	0.050	8762213	5.37	30.5	0.050	8763047
Total Silver (Ag)	mg/L	0.000654	0.000010	8762213	0.000068	0.00120	0.000010	8763047
Total Strontium (Sr)	mg/L	0.202	0.000050	8762213	0.258	0.294	0.000050	8763047
Total Thallium (Tl)	mg/L	0.0000600	0.0000020	8762213	0.0000160	0.000236	0.0000020	8763047
Total Tin (Sn)	mg/L	0.00042	0.00020	8762213	<0.00020	0.00039	0.00020	8763047
Total Titanium (Ti)	mg/L	0.273	0.0020	8762213	0.0402	0.137	0.0020	8763047
Total Uranium (U)	mg/L	0.00110	0.0000050	8762213	0.00547	0.0119	0.0000050	8763047
Total Vanadium (V)	mg/L	0.0250	0.00020	8762213	0.00519	0.0277	0.00020	8763047
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2924			RZ2926	RZ2927		
Sampling Date		2017/09/12 16:15			2017/09/14 13:15	2017/09/14 09:00		
COC Number		08444213			08444213	08444213		
	UNITS	BH95G-31	RDL	QC Batch	BH95G-33D	DUP-2	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0572	0.0010	8762213	0.0208	0.188	0.0010	8763047
Total Zirconium (Zr)	mg/L	0.00220	0.00010	8762213	0.00119	0.00059	0.00010	8763047
Total Calcium (Ca)	mg/L	55.5	0.25	8760458	84.4	79.3	0.25	8760458
Total Magnesium (Mg)	mg/L	5.25	0.25	8760458	10.6	12.9	0.25	8760458
Total Potassium (K)	mg/L	3.65	0.25	8760458	1.20	4.90	0.25	8760458
Total Sodium (Na)	mg/L	0.95	0.25	8760458	0.87	1.20	0.25	8760458
Total Sulphur (S)	mg/L	5.0	3.0	8760458	25.0	5.7	3.0	8760458
RDL = Reportable Detection Limit								

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2929			RZ2930		
Sampling Date		2017/09/12 09:23			2017/09/12 09:55		
COC Number		08444212			08444212		
	UNITS	MW15-02	RDL	QC Batch	BH95G-21	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	234	0.50	8760453	230	0.50	8760453
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.000020	0.000020	8762158	<0.000020	0.000020	8762158
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	0.0209	0.0030	8764745	3.89	0.0030	8763047
Total Antimony (Sb)	mg/L	0.000034	0.000020	8764745	0.00025	0.00010	8763047
Total Arsenic (As)	mg/L	0.00130	0.000020	8764745	0.00692	0.000020	8763047
Total Barium (Ba)	mg/L	0.0912	0.000050	8764745	0.816	0.000050	8763047
Total Beryllium (Be)	mg/L	<0.000010	0.000010	8764745	0.000338	0.000010	8763047
Total Bismuth (Bi)	mg/L	<0.000010	0.000010	8764745	0.000475	0.000010	8763047
Total Boron (B)	mg/L	<0.010	0.010	8764745	<0.010	0.010	8763047
Total Cadmium (Cd)	mg/L	0.0000163	0.0000050	8764745	0.000256	0.0000050	8763047
Total Chromium (Cr)	mg/L	0.00014	0.00010	8764745	0.00493	0.00010	8763047
Total Cobalt (Co)	mg/L	0.000110	0.000010	8764745	0.00408	0.000010	8763047
Total Copper (Cu)	mg/L	0.00037	0.00010	8764745	0.0537	0.00010	8763047
Total Iron (Fe)	mg/L	0.0666	0.0050	8764745	10.9	0.0050	8763047
Total Lead (Pb)	mg/L	0.000268	0.000020	8764745	0.0252	0.000020	8763047
Total Lithium (Li)	mg/L	0.00175	0.00050	8764745	0.0100	0.00050	8763047
Total Manganese (Mn)	mg/L	0.00353	0.00010	8764745	0.193	0.00010	8763047
Total Molybdenum (Mo)	mg/L	0.000771	0.000050	8764745	0.000255	0.000050	8763047
Total Nickel (Ni)	mg/L	0.00094	0.00010	8764745	0.00762	0.00010	8763047
Total Phosphorus (P)	mg/L	0.0060	0.0050	8764745	0.680	0.0050	8763047
Total Selenium (Se)	mg/L	0.00178	0.000040	8764745	0.000122	0.000040	8763047
Total Silicon (Si)	mg/L	2.27	0.050	8764745	8.35	0.050	8763047
Total Silver (Ag)	mg/L	0.000016	0.000010	8764745	0.000439	0.000010	8763047
Total Strontium (Sr)	mg/L	0.290	0.000050	8764745	0.256	0.000050	8763047
Total Thallium (Tl)	mg/L	<0.000020	0.000020	8764745	0.0000590	0.000020	8763047
Total Tin (Sn)	mg/L	0.00025	0.00020	8764745	<0.00020	0.00020	8763047
Total Titanium (Ti)	mg/L	<0.0020	0.0020	8764745	0.0944	0.0020	8763047
Total Uranium (U)	mg/L	0.00311	0.0000050	8764745	0.00736	0.0000050	8763047
Total Vanadium (V)	mg/L	<0.00020	0.00020	8764745	0.0102	0.00020	8763047
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2929			RZ2930		
Sampling Date		2017/09/12 09:23			2017/09/12 09:55		
COC Number		08444212			08444212		
	UNITS	MW15-02	RDL	QC Batch	BH95G-21	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0018	0.0010	8764745	0.104	0.0010	8763047
Total Zirconium (Zr)	mg/L	0.00031	0.00010	8764745	0.00512	0.00010	8763047
Total Calcium (Ca)	mg/L	74.3	0.25	8760458	68.0	0.25	8760458
Total Magnesium (Mg)	mg/L	11.7	0.25	8760458	14.6	0.25	8760458
Total Potassium (K)	mg/L	2.33	0.25	8760458	2.40	0.25	8760458
Total Sodium (Na)	mg/L	0.74	0.25	8760458	1.08	0.25	8760458
Total Sulphur (S)	mg/L	21.2	3.0	8760458	16.1	3.0	8760458
RDL = Reportable Detection Limit							

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		RZ2931			RZ2932		RZ2933		
<b>Sampling Date</b>		2017/09/12 14:18			2017/09/12 15:37		2017/09/13 13:10		
<b>COC Number</b>		08444212			08444212		08444212		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25S</b>	<b>RDL</b>	<b>MW16-12S</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	323	0.50	8760453	569	0.50	1160	0.50	8760453
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**Elements**

Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8762158	<0.0000020	0.0000020	<0.0000020	0.0000020	8762158
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	0.0662 (1)	0.0030	8764745	12.3	0.0030	145	0.030	8763047
Total Antimony (Sb)	mg/L	0.000073	0.000020	8764745	0.00038	0.00010	0.00103	0.00020	8763047
Total Arsenic (As)	mg/L	0.000997	0.000020	8764745	0.0165	0.000020	0.121	0.00020	8763047
Total Barium (Ba)	mg/L	0.0399	0.000050	8764745	0.270	0.000050	6.51	0.00050	8763047
Total Beryllium (Be)	mg/L	<0.000010	0.000010	8764745	0.000869	0.000010	0.00784	0.00010	8763047
Total Bismuth (Bi)	mg/L	<0.000010	0.000010	8764745	0.000439	0.000010	0.00465	0.00010	8763047
Total Boron (B)	mg/L	<0.010	0.010	8764745	<0.010	0.010	<0.10	0.10	8763047
Total Cadmium (Cd)	mg/L	0.000363	0.0000050	8764745	0.000528	0.0000050	0.00505	0.000050	8763047
Total Chromium (Cr)	mg/L	0.00015	0.00010	8764745	0.0255	0.00010	0.428	0.0010	8763047
Total Cobalt (Co)	mg/L	0.000218	0.000010	8764745	0.00935	0.000010	0.181	0.00010	8763047
Total Copper (Cu)	mg/L	0.00075	0.00010	8764745	0.0276	0.00010	0.873	0.0010	8763047
Total Iron (Fe)	mg/L	1.56	0.0050	8764745	30.2	0.0050	241	0.050	8763047
Total Lead (Pb)	mg/L	0.000633	0.000020	8764745	0.0320	0.000020	0.206	0.00020	8763047
Total Lithium (Li)	mg/L	0.00874	0.00050	8764745	0.0272	0.00050	0.644	0.0050	8763047
Total Manganese (Mn)	mg/L	0.264	0.00010	8764745	0.731	0.00010	3.01	0.0010	8763047
Total Molybdenum (Mo)	mg/L	0.000388	0.000050	8764745	0.00183	0.000050	0.0132	0.00050	8763047
Total Nickel (Ni)	mg/L	0.00114	0.00010	8764745	0.0210	0.00010	0.715	0.0010	8763047
Total Phosphorus (P)	mg/L	0.0172	0.0050	8764745	1.52	0.0050	4.92	0.050	8763047
Total Selenium (Se)	mg/L	0.000134	0.000040	8764745	0.000087	0.000040	0.00276	0.00040	8763047
Total Silicon (Si)	mg/L	4.42	0.050	8764745	23.9	0.050	154	0.50	8763047
Total Silver (Ag)	mg/L	0.000019	0.000010	8764745	0.000172	0.000010	0.00253	0.00010	8763047
Total Strontium (Sr)	mg/L	0.497	0.000050	8764745	0.568	0.000050	2.13	0.00050	8763047
Total Thallium (Tl)	mg/L	0.0000029	0.0000020	8764745	0.000247	0.0000020	0.00367	0.000020	8763047
Total Tin (Sn)	mg/L	<0.00020	0.00020	8764745	0.00046	0.00020	0.0030	0.0020	8763047
Total Titanium (Ti)	mg/L	0.0036 (2)	0.0020	8764745	0.498	0.0020	7.44	0.020	8763047

RDL = Reportable Detection Limit  
 (1) Duplicate RPD above control limit - (10% of analytes failure allowed). Matrix Spike outside acceptance criteria re-analysis yields similar results.  
 (2) Matrix Spike outside acceptance criteria due to sample matrix interference, re-analysis yields similar results.

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		RZ2931			RZ2932		RZ2933		
Sampling Date		2017/09/12 14:18			2017/09/12 15:37		2017/09/13 13:10		
COC Number		08444212			08444212		08444212		
	UNITS	MW15-11S	RDL	QC Batch	BH95G-25S	RDL	MW16-12S	RDL	QC Batch
Total Uranium (U)	mg/L	0.00865	0.0000050	8764745	0.00702	0.0000050	0.0148	0.000050	8763047
Total Vanadium (V)	mg/L	<0.00020	0.00020	8764745	0.0345	0.00020	0.475	0.0020	8763047
Total Zinc (Zn)	mg/L	0.0059	0.0010	8764745	0.0865	0.0010	2.58	0.010	8763047
Total Zirconium (Zr)	mg/L	0.00126	0.00010	8764745	0.00100	0.00010	0.0293	0.0010	8763047
Total Calcium (Ca)	mg/L	87.3	0.25	8760458	148	0.25	177	2.5	8760458
Total Magnesium (Mg)	mg/L	25.5	0.25	8760458	48.4	0.25	173	2.5	8760458
Total Potassium (K)	mg/L	4.21	0.25	8760458	9.95	0.25	67.1	2.5	8760458
Total Sodium (Na)	mg/L	3.57	0.25	8760458	2.73	0.25	30.7	2.5	8760458
Total Sulphur (S)	mg/L	32.0	3.0	8760458	68.7	3.0	<30	30	8760458
RDL = Reportable Detection Limit									



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		RZ2934		
<b>Sampling Date</b>		2017/09/13 17:00		
<b>COC Number</b>		08444212		
	<b>UNITS</b>	<b>MW15-10S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	647	0.50	8760453
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8762158
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	111	0.030	8763047
Total Antimony (Sb)	mg/L	0.00044	0.00020	8763047
Total Arsenic (As)	mg/L	0.0665	0.00020	8763047
Total Barium (Ba)	mg/L	2.16	0.00050	8763047
Total Beryllium (Be)	mg/L	0.00435	0.00010	8763047
Total Bismuth (Bi)	mg/L	0.00240	0.00010	8763047
Total Boron (B)	mg/L	<0.10	0.10	8763047
Total Cadmium (Cd)	mg/L	0.0103	0.000050	8763047
Total Chromium (Cr)	mg/L	0.364	0.0010	8763047
Total Cobalt (Co)	mg/L	0.112	0.00010	8763047
Total Copper (Cu)	mg/L	0.562	0.0010	8763047
Total Iron (Fe)	mg/L	213	0.050	8763047
Total Lead (Pb)	mg/L	0.415	0.00020	8763047
Total Lithium (Li)	mg/L	0.0997	0.0050	8763047
Total Manganese (Mn)	mg/L	2.79	0.0010	8763047
Total Molybdenum (Mo)	mg/L	0.00380	0.00050	8763047
Total Nickel (Ni)	mg/L	0.277	0.0010	8763047
Total Phosphorus (P)	mg/L	10.7	0.050	8763047
Total Selenium (Se)	mg/L	0.00443	0.00040	8763047
Total Silicon (Si)	mg/L	113	0.50	8763047
Total Silver (Ag)	mg/L	0.0109	0.00010	8763047
Total Strontium (Sr)	mg/L	0.643	0.00050	8763047
Total Thallium (Tl)	mg/L	0.00158	0.000020	8763047
Total Tin (Sn)	mg/L	<0.0020	0.0020	8763047
Total Titanium (Ti)	mg/L	1.64	0.020	8763047
Total Uranium (U)	mg/L	0.0138	0.000050	8763047
Total Vanadium (V)	mg/L	0.295	0.0020	8763047
RDL = Reportable Detection Limit				

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		RZ2934		
<b>Sampling Date</b>		2017/09/13 17:00		
<b>COC Number</b>		08444212		
	<b>UNITS</b>	<b>MW15-10S</b>	<b>RDL</b>	<b>QC Batch</b>
Total Zinc (Zn)	mg/L	1.54	0.010	8763047
Total Zirconium (Zr)	mg/L	0.0123	0.0010	8763047
Total Calcium (Ca)	mg/L	148	2.5	8760458
Total Magnesium (Mg)	mg/L	67.3	2.5	8760458
Total Potassium (K)	mg/L	19.1	2.5	8760458
Total Sodium (Na)	mg/L	2.8	2.5	8760458
Total Sulphur (S)	mg/L	<30	30	8760458
RDL = Reportable Detection Limit				

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2886  
**Sample ID:** MW15-03S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764633	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763317	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765402	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765404	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764641	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/16	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2886 Dup  
**Sample ID:** MW15-03S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	Name REDACTED

**Maxxam ID:** RZ2887  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765493	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2887  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	Name REDACTED
Fluoride - Low Level	ISE/ISE	8763317	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Elements by ICPMS Low Level (total)	ICP/CRCM	8762292	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/16	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2887 Dup  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	Name REDACTED
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2888  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - unfiltered/unpreserved	TRAA/COL	8763887	2017/09/19	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763317	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2888  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	Name REDACTED
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8764400	N/A	2017/09/20	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/16	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2888 Dup  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	Name REDACTED
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	

**Maxxam ID:** RZ2889  
**Sample ID:** MW15-04D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765493	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763317	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2889  
**Sample ID:** MW15-04D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	Name REDACTED
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/16	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2890  
**Sample ID:** MW15-07D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765493	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764525	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763317	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2890  
**Sample ID:** MW15-07D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	Name REDACTED
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/16	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2890 Dup  
**Sample ID:** MW15-07D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	Name REDACTED

**Maxxam ID:** RZ2901  
**Sample ID:** MW15-07S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764633	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763317	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Elements by ICPMS Low Level (total)	ICP/CRCM	8762292	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765402	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765404	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764641	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2901  
**Sample ID:** MW15-07S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/16	2017/09/19	Name REDACTED
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2901 Dup  
**Sample ID:** MW15-07S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Low Level (total)	ICP/CRCM	8762292	N/A	2017/09/21	Name REDACTED
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2907  
**Sample ID:** MW15-09S  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765442	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2907 Dup  
**Sample ID:** MW15-09S  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	Name REDACTED
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2908  
**Sample ID:** MW15-10D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765442	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764525	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAF	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8764745	2017/09/20	2017/09/21	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2908 Dup  
**Sample ID:** MW15-10D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765442	2017/09/19	2017/09/19	Name REDACTED
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764525	N/A	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	

**Maxxam ID:** RZ2909  
**Sample ID:** DUP-1  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764525	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/19	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2910  
**Sample ID:** MW16-14D  
**Matrix:** Water

**Collected:** 2017/09/15  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2910  
**Sample ID:** MW16-14D  
**Matrix:** Water

**Collected:** 2017/09/15  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	Name REDACTED
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764525	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8764745	2017/09/20	2017/09/21	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2911  
**Sample ID:** MW16-12D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2911  
**Sample ID:** MW16-12D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Name REDACTED
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Elements by ICPMS Low Level (total)	ICP/CRCM	8762292	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2912  
**Sample ID:** MW16-16D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2912  
**Sample ID:** MW16-16D  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	Name REDACTED
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2913  
**Sample ID:** MW16-17  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2914  
**Sample ID:** MW16-15D  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2914  
**Sample ID:** MW16-15D  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	Name REDACTED
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2915  
**Sample ID:** DUP-3  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2915  
**Sample ID:** DUP-3  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst Name REDACTED
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8762433	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2916  
**Sample ID:** MW16-15S  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst Name REDACTED
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764633	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764525	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8765959	N/A	2017/09/22	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8765960	N/A	2017/09/25	
Ion Balance	CALC	8765961	N/A	2017/09/25	
Sum of cations, anions	CALC	8766325	N/A	2017/09/21	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8765963	N/A	2017/09/22	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764641	N/A	2017/09/19	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2916  
**Sample ID:** MW16-15S  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	Name REDACTED
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

**Maxxam ID:** RZ2916 Dup  
**Sample ID:** MW16-15S  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	Name REDACTED
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	

**Maxxam ID:** RZ2917  
**Sample ID:** MW15-01  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2917  
**Sample ID:** MW15-01  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	Name REDACTED

**Maxxam ID:** RZ2918  
**Sample ID:** BH95G-2  
**Matrix:** Water

**Collected:** 2017/09/11  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8765537	N/A	2017/09/20	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2919  
**Sample ID:** BH95G-15D  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2919  
**Sample ID:** BH95G-15D  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	Name REDACTED
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/20	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/20	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761824	N/A	2017/09/20	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

**Maxxam ID:** RZ2920  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8765959	N/A	2017/09/21	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762132	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8765960	N/A	2017/09/22	
Ion Balance	CALC	8765961	N/A	2017/09/22	
Sum of cations, anions	CALC	8766325	N/A	2017/09/21	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8765963	N/A	2017/09/21	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2920  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Name REDACTED
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2920 Dup  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst Name REDACTED
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	

**Maxxam ID:** RZ2921  
**Sample ID:** BH95G-32  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst Name REDACTED
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763318	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8763047	2017/09/19	2017/09/20	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2921  
**Sample ID:** BH95G-32  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	Name REDACTED
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

**Maxxam ID:** RZ2922  
**Sample ID:** BH95G-131  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764633	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8763178	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAF	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8763047	2017/09/19	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764641	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8768202	2017/09/22	2017/09/22	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8768204	2017/09/22	2017/09/22	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2923  
**Sample ID:** BH95G-22  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765493	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764525	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8765537	N/A	2017/09/20	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2923 Dup  
**Sample ID:** BH95G-22  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	Name REDACTED
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	

**Maxxam ID:** RZ2924  
**Sample ID:** BH95G-31  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765493	2017/09/19	2017/09/19	Name REDACTED

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2924  
**Sample ID:** BH95G-31  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	Name REDACTED
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8762213	2017/09/18	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765492	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2925  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2925  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Name REDACTED
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Elements by ICPMS Low Level (total)	ICP/CRCM	8762292	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

**Maxxam ID:** RZ2925 Dup  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Name REDACTED
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Low Level (total)	ICP/CRCM	8762292	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	

**Maxxam ID:** RZ2926  
**Sample ID:** BH95G-33D  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2926  
**Sample ID:** BH95G-33D  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	Name REDACTED
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8763047	2017/09/19	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

**Maxxam ID:** RZ2927  
**Sample ID:** DUP-2  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764630	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8763047	2017/09/19	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761357	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761358	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764632	N/A	2017/09/19	



Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2927  
**Sample ID:** DUP-2  
**Matrix:** Water

**Collected:** 2017/09/14  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764030	2017/09/19	2017/09/19	Name REDACTED
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

**Maxxam ID:** RZ2928  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/09/15  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765446	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763788	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764633	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763785	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Elements by ICPMS Low Level (total)	ICP/CRCM	8762292	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8761359	N/A	2017/09/17	
Nitrite (N) (low level)	TRAA/COL	8761360	N/A	2017/09/17	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
pH Water	AT/ALK	8763782	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764641	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

**Maxxam ID:** RZ2928 Dup  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/09/15  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	Name REDACTED
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Low Level (total)	ICP/CRCM	8762292	N/A	2017/09/21	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2929  
**Sample ID:** MW15-02  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765493	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/19	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8764745	2017/09/20	2017/09/21	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2930  
**Sample ID:** BH95G-21  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765493	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2930  
**Sample ID:** BH95G-21  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance	CALC	8760663	N/A	2017/09/20	Name REDACTED
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8763047	2017/09/19	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765498	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2931  
**Sample ID:** MW15-11S  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764633	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/20	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763073	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8764745	2017/09/20	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/20	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2931  
**Sample ID:** MW15-11S  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	Name REDACTED
Sulphate - Low Level	KONE/COL	8764641	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/19	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	

**Maxxam ID:** RZ2931 Dup  
**Sample ID:** MW15-11S  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Digested LL (total)	ICP/CRCM	8764745	2017/09/20	2017/09/20	Name REDACTED

**Maxxam ID:** RZ2932  
**Sample ID:** BH95G-25S  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764633	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8763047	2017/09/19	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765402	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765404	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764641	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764026	2017/09/19	2017/09/19	

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2932  
**Sample ID:** BH95G-25S  
**Matrix:** Water

**Collected:** 2017/09/12  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Suspended Solids-Low Level	BAL/BAL	8761694	2017/09/18	2017/09/18	Name REDACTED

**Maxxam ID:** RZ2933  
**Sample ID:** MW16-12S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765493	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763812	2017/09/19	2017/09/20	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764524	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763811	2017/09/19	2017/09/20	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8769868	N/A	2017/09/25	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8769874	N/A	2017/09/25	
Ion Balance	CALC	8769876	N/A	2017/09/25	
Sum of cations, anions	CALC	8769877	N/A	2017/09/25	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8769975	N/A	2017/09/25	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8763047	2017/09/19	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763798	2017/09/19	2017/09/20	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8764033	2017/09/19	2017/09/19	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8764034	2017/09/16	2017/09/19	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	

**Maxxam ID:** RZ2933 Dup  
**Sample ID:** MW16-12S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	Name REDACTED

Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** RZ2934  
**Sample ID:** MW15-10S  
**Matrix:** Water

**Collected:** 2017/09/13  
**Shipped:**  
**Received:** 2017/09/15

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8765486	2017/09/19	2017/09/19	Name REDACTED
Alkalinity - Low Level	AT/ALK	8763796	2017/09/19	2017/09/19	
Chloride - Low Level	KONE/COL	8764643	N/A	2017/09/19	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8764523	N/A	2017/09/20	
Conductance - Low Level	AT/ALK	8763795	2017/09/19	2017/09/19	
Fluoride - Low Level	ISE/ISE	8763963	N/A	2017/09/19	
Hardness Total (calculated as CaCO3)	CALC	8760453	N/A	2017/09/21	
Hardness (calculated as CaCO3)	CALC	8760454	N/A	2017/09/19	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8763266	N/A	2017/09/19	
Mercury (Total-LowLevel) by CVAf	CV/AF	8762158	2017/09/18	2017/09/18	
Ion Balance (as Cations/Anions Ratio)	CALC	8760662	N/A	2017/09/20	
Ion Balance	CALC	8760663	N/A	2017/09/20	
Sum of cations, anions	CALC	8760834	N/A	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8760456	N/A	2017/09/19	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8761829	N/A	2017/09/18	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8763047	2017/09/19	2017/09/20	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8760458	N/A	2017/09/21	
Ammonia-N Low Level (Preserved)	KONE/COL	8765496	N/A	2017/09/20	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8765406	N/A	2017/09/19	
Nitrite (N) (low level)	TRAA/COL	8765408	N/A	2017/09/19	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8760534	N/A	2017/09/20	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/09/16	
pH Water	AT/ALK	8763791	2017/09/19	2017/09/19	
Sulphate - Low Level	KONE/COL	8764663	N/A	2017/09/19	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8768202	2017/09/22	2017/09/22	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8768204	2017/09/22	2017/09/22	
Total Suspended Solids-Low Level	BAL/BAL	8763138	2017/09/18	2017/09/19	



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### GENERAL COMMENTS

Sample RZ2886 [MW15-03S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2887 [MW15-03D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level).

Sample RZ2888 [MW15-04S] : Sample analyzed past method specified hold time for Carbon (DOC) - unfiltered/unpreserved . {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2889 [MW15-04D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2890 [MW15-07D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2901 [MW15-07S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level).

Sample RZ2907 [MW15-09S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2908 [MW15-10D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2909 [DUP-1] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2910 [MW16-14D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2911 [MW16-12D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level).

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Sample RZ2912 [MW16-16D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2913 [MW16-17] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2914 [MW16-15D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2915 [DUP-3] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2916 [MW16-15S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2917 [MW15-01] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2918 [BH95G-2] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample received past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample received past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample received past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2919 [BH95G-15D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2920 [BH95G-25D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2921 [BH95G-32] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2922 [BH95G-131] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level



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metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2923 [BH95G-22] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2924 [BH95G-31] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2925 [FIELD BLANK] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Ion Balance: NC = Not Calculable due to low ion sum [ $< 0.4$  meq/L].

Sample RZ2926 [BH95G-33D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2927 [DUP-2] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2928 [TRIP BLANK] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.}

Sample RZ2929 [MW15-02] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2930 [BH95G-21] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2931 [MW15-11S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2932 [BH95G-25S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2933 [MW16-12S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample

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analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample RZ2934 [MW15-10S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER) Comments**

Sample RZ2908 [MW15-10D] Elements by ICPMS Low Level (dissolved): RDL raised due to concentration over linear range, sample dilution required.  
Sample RZ2911 [MW16-12D] Elements by ICPMS Low Level (dissolved): RDL raised due to concentration over linear range, sample dilution required.  
Sample RZ2911 [MW16-12D] Elements by ICPMS Low Level (dissolved): RDL raised due to concentration over linear range, sample dilution required.  
Sample RZ2933 [MW16-12S] Elements by ICPMS Low Level (dissolved): RDL raised due to concentration over linear range, sample dilution required.

**LOW LEVEL TOTAL METALS WITH CV HG (WATER) Comments**

Sample RZ2911 [MW16-12D] Elements by ICPMS Low Level (total): RDL raised due to concentration over linear range, sample dilution required.

**LL TOTAL METALS (DIGESTED) WITH CV HG Comments**

Sample RZ2886 [MW15-03S] Elements by ICPMS Digested LL (total): RDL raised due to concentration over linear range, sample dilution required.  
Sample RZ2908 [MW15-10D] Elements by ICPMS Digested LL (total): RDL raised due to concentration over linear range, sample dilution required.  
Sample RZ2916 [MW16-15S] Elements by ICPMS Digested LL (total): RDL raised due to concentration over linear range, sample dilution required.  
Method Blank Elements by ICPMS Digested LL (total): Antimony blank outside acceptance criteria, detection limit adjusted accordingly  
Sample RZ2923 [BH95G-22] Elements by ICPMS Digested LL (total): RDL raised due to concentration over linear range, sample dilution required.  
Sample RZ2933 [MW16-12S] Elements by ICPMS Digested LL (total): RDL raised due to concentration over linear range, sample dilution required.  
Sample RZ2934 [MW15-10S] Elements by ICPMS Digested LL (total): RDL raised due to concentration over linear range, sample dilution required.  
Sample RZ2889, Elements by ICPMS Low Level (dissolved): Test repeated.  
Sample RZ2910, Elements by ICPMS Low Level (dissolved): Test repeated.  
Sample RZ2911, Elements by ICPMS Low Level (dissolved): Test repeated.  
Sample RZ2916, Elements by ICPMS Low Level (dissolved): Test repeated.  
Sample RZ2920, Elements by ICPMS Low Level (dissolved): Test repeated.  
Sample RZ2927, Elements by ICPMS Low Level (dissolved): Test repeated.  
Sample RZ2930, Elements by ICPMS Low Level (dissolved): Test repeated.

**Results relate only to the items tested.**

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**QUALITY ASSURANCE REPORT**

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8761357	Nitrate plus Nitrite (N)	2017/09/17	104	80 - 120	107	80 - 120	<0.0020	mg/L	0.28	25
8761358	Nitrite (N)	2017/09/17	98	80 - 120	100	80 - 120	<0.0020	mg/L	16	25
8761359	Nitrate plus Nitrite (N)	2017/09/17	104	80 - 120	107	80 - 120	<0.0020	mg/L	0.72	25
8761360	Nitrite (N)	2017/09/17	97	80 - 120	101	80 - 120	<0.0020	mg/L	4.9	25
8761694	Total Suspended Solids	2017/09/18			98	80 - 120	<1.0	mg/L		
8761824	Dissolved Aluminum (Al)	2017/09/19	110	80 - 120	116	80 - 120	<0.00050	mg/L	13	20
8761824	Dissolved Antimony (Sb)	2017/09/19	104	80 - 120	105	80 - 120	<0.000020	mg/L	1.3	20
8761824	Dissolved Arsenic (As)	2017/09/19	110	80 - 120	106	80 - 120	<0.000020	mg/L	1.4	20
8761824	Dissolved Barium (Ba)	2017/09/19	NC	80 - 120	108	80 - 120	<0.000020	mg/L	4.2	20
8761824	Dissolved Beryllium (Be)	2017/09/19	104	80 - 120	110	80 - 120	<0.000010	mg/L	NC	20
8761824	Dissolved Bismuth (Bi)	2017/09/19	99	80 - 120	106	80 - 120	<0.0000050	mg/L	NC	20
8761824	Dissolved Boron (B)	2017/09/19	101	80 - 120	105	80 - 120	<0.010	mg/L	NC	20
8761824	Dissolved Cadmium (Cd)	2017/09/19	103	80 - 120	106	80 - 120	<0.0000050	mg/L	11	20
8761824	Dissolved Chromium (Cr)	2017/09/19	97	80 - 120	99	80 - 120	<0.00010	mg/L	3.4	20
8761824	Dissolved Cobalt (Co)	2017/09/19	94	80 - 120	100	80 - 120	<0.0000050	mg/L	19	20
8761824	Dissolved Copper (Cu)	2017/09/19	94	80 - 120	102	80 - 120	<0.000050	mg/L	5.8	20
8761824	Dissolved Iron (Fe)	2017/09/19	116	80 - 120	109	80 - 120	<0.0010	mg/L	5.0	20
8761824	Dissolved Lead (Pb)	2017/09/19	102	80 - 120	109	80 - 120	<0.0000050	mg/L	0.77	20
8761824	Dissolved Lithium (Li)	2017/09/19	102	80 - 120	111	80 - 120	<0.00050	mg/L	8.5	20
8761824	Dissolved Manganese (Mn)	2017/09/19	105	80 - 120	101	80 - 120	<0.000050	mg/L	12	20
8761824	Dissolved Molybdenum (Mo)	2017/09/19	NC	80 - 120	107	80 - 120	<0.000050	mg/L	2.8	20
8761824	Dissolved Nickel (Ni)	2017/09/19	98	80 - 120	100	80 - 120	<0.000020	mg/L	1.0	20
8761824	Dissolved Phosphorus (P)	2017/09/19					<0.0020	mg/L	0.73	20
8761824	Dissolved Selenium (Se)	2017/09/19	112	80 - 120	112	80 - 120	<0.000040	mg/L	9.7	20
8761824	Dissolved Silicon (Si)	2017/09/19					<0.050	mg/L	1.1	20
8761824	Dissolved Silver (Ag)	2017/09/19	106	80 - 120	115	80 - 120	<0.0000050	mg/L	15	20
8761824	Dissolved Strontium (Sr)	2017/09/19	NC	80 - 120	105	80 - 120	<0.000050	mg/L	1.9	20
8761824	Dissolved Thallium (Tl)	2017/09/19	100	80 - 120	107	80 - 120	<0.0000020	mg/L	NC	20
8761824	Dissolved Tin (Sn)	2017/09/19	97	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8761824	Dissolved Titanium (Ti)	2017/09/19	105	80 - 120	97	80 - 120	<0.00050	mg/L	NC	20
8761824	Dissolved Uranium (U)	2017/09/19	103	80 - 120	110	80 - 120	<0.0000020	mg/L	2.5	20

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8761824	Dissolved Vanadium (V)	2017/09/19	99	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8761824	Dissolved Zinc (Zn)	2017/09/19	115	80 - 120	103	80 - 120	<0.00010	mg/L	5.0	20
8761824	Dissolved Zirconium (Zr)	2017/09/19	101	80 - 120	98	80 - 120	<0.00010	mg/L	NC	20
8761829	Dissolved Aluminum (Al)	2017/09/18	109	80 - 120	112	80 - 120	<0.00050	mg/L	NC	20
8761829	Dissolved Antimony (Sb)	2017/09/18	103	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8761829	Dissolved Arsenic (As)	2017/09/18	109	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8761829	Dissolved Barium (Ba)	2017/09/18	NC	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8761829	Dissolved Beryllium (Be)	2017/09/18	99	80 - 120	105	80 - 120	<0.000010	mg/L	NC	20
8761829	Dissolved Bismuth (Bi)	2017/09/18	93	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8761829	Dissolved Boron (B)	2017/09/18	98	80 - 120	103	80 - 120	<0.010	mg/L	NC	20
8761829	Dissolved Cadmium (Cd)	2017/09/18	99	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8761829	Dissolved Chromium (Cr)	2017/09/18	94	80 - 120	96	80 - 120	<0.00010	mg/L	NC	20
8761829	Dissolved Cobalt (Co)	2017/09/18	91	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8761829	Dissolved Copper (Cu)	2017/09/18	86	80 - 120	98	80 - 120	<0.000050	mg/L	NC	20
8761829	Dissolved Iron (Fe)	2017/09/18	NC	80 - 120	105	80 - 120	<0.0010	mg/L	NC	20
8761829	Dissolved Lead (Pb)	2017/09/18	99	80 - 120	106	80 - 120	<0.0000050	mg/L	NC	20
8761829	Dissolved Lithium (Li)	2017/09/18	NC	80 - 120	108	80 - 120	<0.00050	mg/L	NC	20
8761829	Dissolved Manganese (Mn)	2017/09/18	NC	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8761829	Dissolved Molybdenum (Mo)	2017/09/18	112	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8761829	Dissolved Nickel (Ni)	2017/09/18	90	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8761829	Dissolved Phosphorus (P)	2017/09/18					<0.0020	mg/L	NC	20
8761829	Dissolved Selenium (Se)	2017/09/18	112	80 - 120	104	80 - 120	<0.000040	mg/L	NC	20
8761829	Dissolved Silicon (Si)	2017/09/18					<0.050	mg/L	NC	20
8761829	Dissolved Silver (Ag)	2017/09/18	103	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8761829	Dissolved Strontium (Sr)	2017/09/18	NC	80 - 120	100	80 - 120	<0.000050	mg/L	NC	20
8761829	Dissolved Thallium (Tl)	2017/09/18	97	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8761829	Dissolved Tin (Sn)	2017/09/18	99	80 - 120	100	80 - 120	<0.00020	mg/L	NC	20
8761829	Dissolved Titanium (Ti)	2017/09/18	95	80 - 120	99	80 - 120	<0.00050	mg/L	NC	20
8761829	Dissolved Uranium (U)	2017/09/18	101	80 - 120	107	80 - 120	<0.0000020	mg/L	NC	20
8761829	Dissolved Vanadium (V)	2017/09/18	99	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8761829	Dissolved Zinc (Zn)	2017/09/18	90	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20

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Site Location: KUDZ ZE KAYAH  
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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8761829	Dissolved Zirconium (Zr)	2017/09/18	NC	80 - 120	91	80 - 120	<0.00010	mg/L	NC	20
8762132	Total Mercury (Hg)	2017/09/18	103	80 - 120	105	80 - 120	<0.0000020	mg/L	NC	20
8762158	Total Mercury (Hg)	2017/09/18	103	80 - 120	106	80 - 120	<0.0000020	mg/L	NC	20
8762213	Total Aluminum (Al)	2017/09/20	96	80 - 120	105	80 - 120	<0.0030	mg/L	NC	20
8762213	Total Antimony (Sb)	2017/09/20	95	80 - 120	98	80 - 120	<0.000020	mg/L	NC	20
8762213	Total Arsenic (As)	2017/09/20	106	80 - 120	100	80 - 120	<0.000020	mg/L	1.5	20
8762213	Total Barium (Ba)	2017/09/20	NC	80 - 120	104	80 - 120	<0.000050	mg/L	0.51	20
8762213	Total Beryllium (Be)	2017/09/20	97	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8762213	Total Bismuth (Bi)	2017/09/20	92	80 - 120	102	80 - 120	<0.000010	mg/L	NC	20
8762213	Total Boron (B)	2017/09/20	88	80 - 120	97	80 - 120	<0.010	mg/L	0.16	20
8762213	Total Cadmium (Cd)	2017/09/20	96	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8762213	Total Chromium (Cr)	2017/09/20	97	80 - 120	97	80 - 120	<0.00010	mg/L	NC	20
8762213	Total Cobalt (Co)	2017/09/20	94	80 - 120	96	80 - 120	<0.000010	mg/L	18	20
8762213	Total Copper (Cu)	2017/09/20	96	80 - 120	100	80 - 120	<0.00010	mg/L	5.8	20
8762213	Total Iron (Fe)	2017/09/20	97	80 - 120	103	80 - 120	<0.0050	mg/L	0.12	20
8762213	Total Lead (Pb)	2017/09/20	96	80 - 120	105	80 - 120	<0.000020	mg/L	NC	20
8762213	Total Lithium (Li)	2017/09/20	NC	80 - 120	102	80 - 120	<0.00050	mg/L	2.8	20
8762213	Total Manganese (Mn)	2017/09/20	95	80 - 120	99	80 - 120	<0.00010	mg/L	4.1	20
8762213	Total Molybdenum (Mo)	2017/09/20	100	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8762213	Total Nickel (Ni)	2017/09/20	94	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8762213	Total Phosphorus (P)	2017/09/20					<0.0050	mg/L		
8762213	Total Selenium (Se)	2017/09/20	107	80 - 120	104	80 - 120	<0.000040	mg/L	NC	20
8762213	Total Silicon (Si)	2017/09/20					<0.050	mg/L	6.5	20
8762213	Total Silver (Ag)	2017/09/20	98	80 - 120	107	80 - 120	<0.000010	mg/L	NC	20
8762213	Total Strontium (Sr)	2017/09/20	NC	80 - 120	96	80 - 120	<0.000050	mg/L	1.3	20
8762213	Total Thallium (Tl)	2017/09/20	95	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8762213	Total Tin (Sn)	2017/09/20	89	80 - 120	97	80 - 120	<0.00020	mg/L	NC	20
8762213	Total Titanium (Ti)	2017/09/20	103	80 - 120	96	80 - 120	<0.0020	mg/L	NC	20
8762213	Total Uranium (U)	2017/09/20	99	80 - 120	103	80 - 120	<0.0000050	mg/L	0	20
8762213	Total Vanadium (V)	2017/09/20	100	80 - 120	99	80 - 120	<0.00020	mg/L	NC	20
8762213	Total Zinc (Zn)	2017/09/20	97	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8762213	Total Zirconium (Zr)	2017/09/20	86	80 - 120	96	80 - 120	<0.00010	mg/L	NC	20
8762292	Total Aluminum (Al)	2017/09/21	NC	80 - 120	109	80 - 120	<0.00050	mg/L	NC	20
8762292	Total Antimony (Sb)	2017/09/21	99	80 - 120	94	80 - 120	<0.000020	mg/L	NC	20
8762292	Total Arsenic (As)	2017/09/21	104	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8762292	Total Barium (Ba)	2017/09/21	NC	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8762292	Total Beryllium (Be)	2017/09/21	107	80 - 120	105	80 - 120	<0.000010	mg/L	NC	20
8762292	Total Bismuth (Bi)	2017/09/21	97	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8762292	Total Boron (B)	2017/09/21	108	80 - 120	104	80 - 120	<0.010	mg/L	NC	20
8762292	Total Cadmium (Cd)	2017/09/21	98	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8762292	Total Chromium (Cr)	2017/09/21	92	80 - 120	93	80 - 120	<0.00010	mg/L	NC	20
8762292	Total Cobalt (Co)	2017/09/21	86	80 - 120	91	80 - 120	<0.0000050	mg/L	NC	20
8762292	Total Copper (Cu)	2017/09/21	85	80 - 120	92	80 - 120	<0.000050	mg/L	NC	20
8762292	Total Iron (Fe)	2017/09/21	NC	80 - 120	102	80 - 120	<0.0010	mg/L	NC	20
8762292	Total Lead (Pb)	2017/09/21	100	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8762292	Total Lithium (Li)	2017/09/21	110	80 - 120	108	80 - 120	<0.00050	mg/L	NC	20
8762292	Total Manganese (Mn)	2017/09/21	NC	80 - 120	92	80 - 120	<0.000050	mg/L	NC	20
8762292	Total Molybdenum (Mo)	2017/09/21	104	80 - 120	98	80 - 120	<0.000050	mg/L	NC	20
8762292	Total Nickel (Ni)	2017/09/21	87	80 - 120	94	80 - 120	<0.000020	mg/L	NC	20
8762292	Total Phosphorus (P)	2017/09/21					<0.0020	mg/L	NC	20
8762292	Total Selenium (Se)	2017/09/21	104	80 - 120	102	80 - 120	<0.000040	mg/L	NC	20
8762292	Total Silicon (Si)	2017/09/21					<0.050	mg/L	NC	20
8762292	Total Silver (Ag)	2017/09/21	103	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8762292	Total Strontium (Sr)	2017/09/21	NC	80 - 120	97	80 - 120	<0.000050	mg/L	NC	20
8762292	Total Thallium (Tl)	2017/09/21	99	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
8762292	Total Tin (Sn)	2017/09/21	95	80 - 120	92	80 - 120	<0.00020	mg/L	NC	20
8762292	Total Titanium (Ti)	2017/09/21	103	80 - 120	95	80 - 120	<0.00050	mg/L	NC	20
8762292	Total Uranium (U)	2017/09/21	102	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8762292	Total Vanadium (V)	2017/09/21	94	80 - 120	94	80 - 120	<0.00020	mg/L	NC	20
8762292	Total Zinc (Zn)	2017/09/21	89	80 - 120	93	80 - 120	<0.00010	mg/L	NC	20
8762292	Total Zirconium (Zr)	2017/09/21	127 (2)	80 - 120	101	80 - 120	<0.00010	mg/L	NC	20
8762433	Total Suspended Solids	2017/09/19			102	80 - 120	<1.0	mg/L		



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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8763047	Total Aluminum (Al)	2017/09/20	NC	80 - 120	107	80 - 120	<0.0030	mg/L	8.0	20
8763047	Total Antimony (Sb)	2017/09/20	97	80 - 120	101	80 - 120	<0.00010	mg/L	2.6	20
8763047	Total Arsenic (As)	2017/09/20	108	80 - 120	104	80 - 120	<0.000020	mg/L	1.2	20
8763047	Total Barium (Ba)	2017/09/20	NC	80 - 120	99	80 - 120	<0.000050	mg/L	4.1	20
8763047	Total Beryllium (Be)	2017/09/20	105	80 - 120	98	80 - 120	<0.000010	mg/L	1.7	20
8763047	Total Bismuth (Bi)	2017/09/20	98	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8763047	Total Boron (B)	2017/09/20	NC	80 - 120	100	80 - 120	<0.010	mg/L	1.1	20
8763047	Total Cadmium (Cd)	2017/09/20	NC	80 - 120	98	80 - 120	<0.0000050	mg/L	0.030	20
8763047	Total Chromium (Cr)	2017/09/20	106	80 - 120	100	80 - 120	<0.00010	mg/L	5.3	20
8763047	Total Cobalt (Co)	2017/09/20	NC	80 - 120	99	80 - 120	<0.000010	mg/L	1.7	20
8763047	Total Copper (Cu)	2017/09/20	NC	80 - 120	102	80 - 120	<0.00010	mg/L	1.1	20
8763047	Total Iron (Fe)	2017/09/20	NC	80 - 120	106	80 - 120	<0.0050	mg/L	5.7	20
8763047	Total Lead (Pb)	2017/09/20	NC	80 - 120	103	80 - 120	<0.000020	mg/L	0.099	20
8763047	Total Lithium (Li)	2017/09/20	NC	80 - 120	103	80 - 120	<0.00050	mg/L	0.77	20
8763047	Total Manganese (Mn)	2017/09/20	NC	80 - 120	100	80 - 120	<0.00010	mg/L	2.0	20
8763047	Total Molybdenum (Mo)	2017/09/20	NC	80 - 120	100	80 - 120	<0.000050	mg/L	0.45	20
8763047	Total Nickel (Ni)	2017/09/20	NC	80 - 120	101	80 - 120	<0.00010	mg/L	4.8	20
8763047	Total Phosphorus (P)	2017/09/20					<0.0050	mg/L		
8763047	Total Selenium (Se)	2017/09/20	108	80 - 120	104	80 - 120	<0.000040	mg/L	3.2	20
8763047	Total Silicon (Si)	2017/09/20					<0.050	mg/L	7.2	20
8763047	Total Silver (Ag)	2017/09/20	103	80 - 120	103	80 - 120	<0.000010	mg/L	3.4	20
8763047	Total Strontium (Sr)	2017/09/20	NC	80 - 120	99	80 - 120	<0.000050	mg/L	1.1	20
8763047	Total Thallium (Tl)	2017/09/20	98	80 - 120	99	80 - 120	<0.0000020	mg/L	0	20
8763047	Total Tin (Sn)	2017/09/20	90	80 - 120	96	80 - 120	<0.00020	mg/L	NC	20
8763047	Total Titanium (Ti)	2017/09/20	NC	80 - 120	100	80 - 120	<0.0020	mg/L	3.1	20
8763047	Total Uranium (U)	2017/09/20	101	80 - 120	102	80 - 120	<0.0000050	mg/L	1.5	20
8763047	Total Vanadium (V)	2017/09/20	113	80 - 120	100	80 - 120	<0.00020	mg/L	8.9	20
8763047	Total Zinc (Zn)	2017/09/20	NC	80 - 120	101	80 - 120	<0.0010	mg/L	1.5	20
8763047	Total Zirconium (Zr)	2017/09/20	102	80 - 120	98	80 - 120	<0.00010	mg/L	NC	20
8763073	Dissolved Mercury (Hg)	2017/09/19	104	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
8763138	Total Suspended Solids	2017/09/19			100	80 - 120	<1.0	mg/L		

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8763178	Dissolved Mercury (Hg)	2017/09/19	105	80 - 120	103	80 - 120	<0.0000020	mg/L	NC	20
8763266	Dissolved Mercury (Hg)	2017/09/19	99	80 - 120	97	80 - 120	<0.0000020	mg/L	NC	20
8763317	Fluoride (F)	2017/09/19	103	80 - 120	98	80 - 120	0.014, RDL=0.010	mg/L	0	20
8763318	Fluoride (F)	2017/09/19	104	80 - 120	102	80 - 120	0.018, RDL=0.010	mg/L	0	20
8763782	pH	2017/09/19			101	97 - 103			0.12	20
8763785	Conductivity	2017/09/19			100	80 - 120	<1.0	uS/cm	0	20
8763788	Alkalinity (PP as CaCO3)	2017/09/19					<0.50	mg/L	NC	20
8763788	Alkalinity (Total as CaCO3)	2017/09/19	NC	80 - 120	97	80 - 120	<0.50	mg/L	0.46	20
8763788	Bicarbonate (HCO3)	2017/09/19					<0.50	mg/L	0.46	20
8763788	Carbonate (CO3)	2017/09/19					<0.50	mg/L	NC	20
8763788	Hydroxide (OH)	2017/09/19					<0.50	mg/L	NC	20
8763791	pH	2017/09/19			102	97 - 103			0.64	20
8763795	Conductivity	2017/09/19			101	80 - 120	<1.0	uS/cm	0.36	20
8763796	Alkalinity (PP as CaCO3)	2017/09/19					<0.50	mg/L	NC	20
8763796	Alkalinity (Total as CaCO3)	2017/09/19	99	80 - 120	98	80 - 120	0.52, RDL=0.50	mg/L	0.68	20
8763796	Bicarbonate (HCO3)	2017/09/19					0.63, RDL=0.50	mg/L	0.68	20
8763796	Carbonate (CO3)	2017/09/19					<0.50	mg/L	NC	20
8763796	Hydroxide (OH)	2017/09/19					<0.50	mg/L	NC	20
8763798	pH	2017/09/20			102	97 - 103			0.13	20
8763811	Conductivity	2017/09/20			100	80 - 120	<1.0	uS/cm	0.88	20
8763812	Alkalinity (PP as CaCO3)	2017/09/20					<0.50	mg/L	NC	20
8763812	Alkalinity (Total as CaCO3)	2017/09/20	NC	80 - 120	99	80 - 120	0.52, RDL=0.50	mg/L	0.094	20
8763812	Bicarbonate (HCO3)	2017/09/20					0.63, RDL=0.50	mg/L	0.094	20
8763812	Carbonate (CO3)	2017/09/20					<0.50	mg/L	NC	20
8763812	Hydroxide (OH)	2017/09/20					<0.50	mg/L	NC	20
8763887	Dissolved Organic Carbon (C)	2017/09/20	110	80 - 120	114	80 - 120	<0.50	mg/L	3.9	20
8763963	Fluoride (F)	2017/09/19	103	80 - 120	98	80 - 120	0.011, RDL=0.010	mg/L	3.7	20
8764026	Total Phosphorus (P)	2017/09/19	NC	80 - 120	105	80 - 120	<0.0020	mg/L	0.057	20



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Site Location: KUDZ ZE KAYAH  
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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8764030	Dissolved Phosphorus (P)	2017/09/19	99	80 - 120	103	80 - 120	<0.0020	mg/L	0.46	20
8764033	Dissolved Phosphorus (P)	2017/09/19	93	80 - 120	107	80 - 120	<0.0020	mg/L	2.1	20
8764034	Total Phosphorus (P)	2017/09/19	100	80 - 120	106	80 - 120	<0.0020	mg/L	4.6	20
8764400	Dissolved Mercury (Hg)	2017/09/20	91	80 - 120	92	80 - 120	<0.0000020	mg/L	NC	20
8764523	Dissolved Organic Carbon (C)	2017/09/20	113	80 - 120	111	80 - 120	<0.50	mg/L	6.4	20
8764524	Dissolved Organic Carbon (C)	2017/09/20	107	80 - 120	111	80 - 120	<0.50	mg/L	NC	20
8764525	Dissolved Organic Carbon (C)	2017/09/20	113	80 - 120	115	80 - 120	<0.50	mg/L	NC	20
8764630	Dissolved Chloride (Cl)	2017/09/19	101	80 - 120	103	80 - 120	<0.50	mg/L	6.3	20
8764632	Dissolved Sulphate (SO4)	2017/09/19	97	80 - 120	99	80 - 120	<0.50	mg/L	3.6	20
8764633	Dissolved Chloride (Cl)	2017/09/19	102	80 - 120	99	80 - 120	<0.50	mg/L	15	20
8764641	Dissolved Sulphate (SO4)	2017/09/19	NC	80 - 120	98	80 - 120	<0.50	mg/L	1.2	20
8764643	Dissolved Chloride (Cl)	2017/09/19	108	80 - 120	97	80 - 120	<0.50	mg/L	8.8	20
8764663	Dissolved Sulphate (SO4)	2017/09/19	NC	80 - 120	97	80 - 120	<0.50	mg/L	0.069	20
8764745	Total Aluminum (Al)	2017/09/20	158 (2)	80 - 120	106	80 - 120	<0.0030	mg/L	28 (2)	20
8764745	Total Antimony (Sb)	2017/09/20	107	80 - 120	98	80 - 120	<0.000020	mg/L	5.8	20
8764745	Total Arsenic (As)	2017/09/20	108	80 - 120	99	80 - 120	<0.000020	mg/L	5.3	20
8764745	Total Barium (Ba)	2017/09/20	NC	80 - 120	98	80 - 120	<0.000050	mg/L	0.57	20
8764745	Total Beryllium (Be)	2017/09/20	101	80 - 120	94	80 - 120	<0.000010	mg/L	NC	20
8764745	Total Bismuth (Bi)	2017/09/20	101	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8764745	Total Boron (B)	2017/09/20	102	80 - 120	105	80 - 120	<0.010	mg/L	NC	20
8764745	Total Cadmium (Cd)	2017/09/20	108	80 - 120	102	80 - 120	<0.0000050	mg/L	1.8	20
8764745	Total Chromium (Cr)	2017/09/20	106	80 - 120	100	80 - 120	<0.00010	mg/L	17	20
8764745	Total Cobalt (Co)	2017/09/20	101	80 - 120	99	80 - 120	<0.000010	mg/L	0.82	20
8764745	Total Copper (Cu)	2017/09/20	99	80 - 120	100	80 - 120	<0.00010	mg/L	3.0	20
8764745	Total Iron (Fe)	2017/09/20	NC	80 - 120	104	80 - 120	<0.0050	mg/L	1.7	20
8764745	Total Lead (Pb)	2017/09/20	101	80 - 120	98	80 - 120	<0.000020	mg/L	6.4	20
8764745	Total Lithium (Li)	2017/09/20	100	80 - 120	94	80 - 120	<0.00050	mg/L	3.3	20
8764745	Total Manganese (Mn)	2017/09/20	NC	80 - 120	96	80 - 120	<0.00010	mg/L	2.6	20
8764745	Total Molybdenum (Mo)	2017/09/20	104	80 - 120	101	80 - 120	<0.000050	mg/L	1.3	20
8764745	Total Nickel (Ni)	2017/09/20	101	80 - 120	98	80 - 120	<0.00010	mg/L	3.6	20
8764745	Total Phosphorus (P)	2017/09/20					<0.0050	mg/L	9.4	20

Maxxam Job #: B780105  
Report Date: 2017/09/25

**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8764745	Total Selenium (Se)	2017/09/20	104	80 - 120	102	80 - 120	<0.000040	mg/L	10	20
8764745	Total Silicon (Si)	2017/09/20					<0.050	mg/L	1.0	20
8764745	Total Silver (Ag)	2017/09/20	105	80 - 120	102	80 - 120	<0.000010	mg/L	12	20
8764745	Total Strontium (Sr)	2017/09/20	NC	80 - 120	95	80 - 120	<0.000050	mg/L	1.8	20
8764745	Total Thallium (Tl)	2017/09/20	104	80 - 120	98	80 - 120	<0.0000020	mg/L	15	20
8764745	Total Tin (Sn)	2017/09/20	97	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8764745	Total Titanium (Ti)	2017/09/20	138 (2)	80 - 120	105	80 - 120	<0.0020	mg/L	NC	20
8764745	Total Uranium (U)	2017/09/20	104	80 - 120	95	80 - 120	<0.0000050	mg/L	1.2	20
8764745	Total Vanadium (V)	2017/09/20	107	80 - 120	98	80 - 120	<0.00020	mg/L	0.25	20
8764745	Total Zinc (Zn)	2017/09/20	108	80 - 120	101	80 - 120	<0.0010	mg/L	5.9	20
8764745	Total Zirconium (Zr)	2017/09/20	NC	80 - 120	98	80 - 120	<0.00010	mg/L	3.7	20
8765402	Nitrate plus Nitrite (N)	2017/09/19	103	80 - 120	98	80 - 120	<0.0020	mg/L	NC	25
8765404	Nitrite (N)	2017/09/19	97	80 - 120	92	80 - 120	<0.0020	mg/L	NC	25
8765406	Nitrate plus Nitrite (N)	2017/09/19	102	80 - 120	102	80 - 120	<0.0020	mg/L	1.4	25
8765408	Nitrite (N)	2017/09/19	97	80 - 120	98	80 - 120	<0.0020	mg/L	4.4	25
8765442	Acidity (pH 4.5)	2017/09/19					<1.0	mg/L	NC	20
8765442	Acidity (pH 8.3)	2017/09/19			88	80 - 120	<1.0	mg/L	0.31	20
8765446	Acidity (pH 4.5)	2017/09/19					<1.0	mg/L	NC	20
8765446	Acidity (pH 8.3)	2017/09/19			87	80 - 120	<1.0	mg/L	NC	20
8765486	Acidity (pH 4.5)	2017/09/19					<1.0	mg/L	NC	20
8765486	Acidity (pH 8.3)	2017/09/19			91	80 - 120	<1.0	mg/L	4.0	20
8765492	Total Ammonia (N)	2017/09/20	89	80 - 120	106	80 - 120	<0.0050	mg/L	NC	20
8765493	Acidity (pH 4.5)	2017/09/19					<1.0	mg/L		
8765493	Acidity (pH 8.3)	2017/09/19			89	80 - 120	<1.0	mg/L		
8765496	Total Ammonia (N)	2017/09/20	NC	80 - 120	105	80 - 120	<0.0050	mg/L	1.0	20
8765498	Total Ammonia (N)	2017/09/20	90	80 - 120	104	80 - 120	<0.0050	mg/L	NC	20
8765537	Dissolved Sulphate (SO4)	2017/09/20			97	80 - 120	<0.50	mg/L		
8767166	Dissolved Cadmium (Cd)	2017/09/22			99	80 - 120	<0.0000050	mg/L		
8767166	Dissolved Strontium (Sr)	2017/09/22			98	80 - 120	<0.000050	mg/L		
8767166	Dissolved Zirconium (Zr)	2017/09/22			95	80 - 120	<0.00010	mg/L		
8768202	Dissolved Phosphorus (P)	2017/09/22			104	80 - 120	<0.0020	mg/L		

Maxxam Job #: B780105  
Report Date: 2017/09/25

**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8768204	Total Phosphorus (P)	2017/09/22			104	80 - 120	<0.0020	mg/L		
8770210	Dissolved Molybdenum (Mo)	2017/09/25			99	80 - 120	<0.000050	mg/L		
8770210	Dissolved Zinc (Zn)	2017/09/25			104	80 - 120	<0.00010	mg/L		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Dissolved greater than total. Reanalysis yields similar results.

(2) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.


Maxxam Job #: B780105  
Report Date: 2017/09/25

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Signature REDACTED

Name REDACTED  \_\_\_\_\_  
M.Sc., P.Chem., QP, Scientific Services Manager

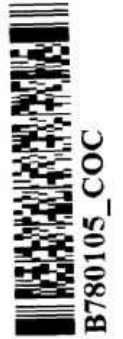
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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Turnaround time (TAT) Required							
Company Name: <b>BMC MINERALS LTD.</b>		Company Name: <b>ALEXCO ENVIRONMENTAL</b>				Quotation #: <b>B50743</b>				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)							
Contact Name:		Contact Name: <b>Name REDACTED</b>				P.O. #/ AFEM:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS							
Address: <b>530-1130 WEST PENDER ST Vancouver, BC, PC: V6E 4A4</b>		Address: <b>UNIT 3 151 INDUSTRIAL RD Whitehorse, YK PC: V1A 2V3</b>				Project #: <b>BMC-15-01</b>				Rush TAT (Surcharges will be applied)							
Phone:		Phone: <b>(867) 668-6463</b>				Site Location: <b>Kudze Kayah</b>				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days							
Email:		Email: <b>Email REDACTED</b>				Site #: <b>Name REDACTED</b>				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days							
Regulatory Criteria		Special Instructions		Analysis Requested				Rush Confirmation #:									
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify) USE SCENARIO # 12485		TOTAL LOW LEVEL METALS (INCL. MERCURY) DISSOLVED LOW LEVEL METALS (INCL. ARSENIC) LOW LEVEL TS ANIONS (CL, SO4, NO3, NO2) AMMONIA CONDUCTIVITY PH ALKALINITY & ACIDITY DOC TOTAL PHOSPHORUS - LOW LEVEL DISSOLVED PHOSPHORUS - LOW LEVEL				LABORATORY USE ONLY CUSTODY SEAL Present Intact COOLER TEMPERATURES COOLING MEDIA PRESENT COMMENTS									
SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																	
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	TOTAL LOW LEVEL METALS (INCL. MERCURY)	DISSOLVED LOW LEVEL METALS (INCL. ARSENIC)	LOW LEVEL TS	ANIONS (CL, SO4, NO3, NO2)	AMMONIA	CONDUCTIVITY	PH	ALKALINITY & ACIDITY	DOC	TOTAL PHOSPHORUS - LOW LEVEL	DISSOLVED PHOSPHORUS - LOW LEVEL	# OF CONTAINERS SUBMITTED	Hold - DO NOT ANALYSE
1	MW15-03 S	13-Sep-17	0911H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
3	MW15-03 D	13-Sep-17	0845H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
4	MW15-04 S	13-Sep-17	1055H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
5	MW15-04 D	13-Sep-17	1020H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
6	MW15-07 D	13-Sep-17	1529H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
7	MW15-07 S	13-Sep-17	1550H	Water	X	X	X	X	X	X	X	X	X	X	X	11	Name REDACTED
8	MW15-09 S	14-Sep-17	0850H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
9	MW15-10 D	13-Sep-17	1800H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
10	DUP-1	14-Sep-17	0900H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
11	MW16-14 D	15-Sep-17	0730H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
12	MW16-12 D	13-Sep-17	1335H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
13	MW16-16 D	13-Sep-17	1425H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
14	MW16-17	14-Sep-17	1509H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
15	MW16-15 D	12-Sep-17	1127H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
16	DUP-3	14-Sep-17	1535H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
17	MW16-15 S	12-Sep-17	1305H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
18	MW15-01	12-Sep-17	0900H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
19	BH95G-02	11-Sep-17	1655H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
20	BH95G-15 D	14-Sep-17	1435H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
21	BH95G-25 D	12-Sep-17	1511H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
22	BH95G-32	14-Sep-17	1555H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
23	BH95G-131	14-Sep-17	1930H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
24	BH95G-22	12-Sep-17	1645H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
25	BH95G-31	12-Sep-17	1615H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
26	Field Blank	14-Sep-17	2200H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
27	BH95G-33 D	14-Sep-17	1315H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
28	DUP-2	14-Sep-17	0900H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
29	Trip Blank	n/a	n/a	Water	X	X	X	X	X	X	X	X	X	X	X	11	
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)				DATE: (YYYY/MM/DD)	TIME: (HH:MM)								
Name REDACTED		2017/09/16	15:00 PM	Name REDACTED				2017/09/16	15:50								

Present	Intact	COOLER TEMPERATURES
Y	Y	38.8 / 10.6 / 10.8 / 6.5
Y	Y	7.7 / 14.6 / 6.6
Y	Y	10.8 / 16.6 / 6.6

5/6/6  
 7/11/15  
 2017-08-09  
 2017-08-09  
 2017-08-09



Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)										Turnaround Time (TAT) Required	
Company Name: <b>BMC MINERALS LTD.</b>		Company Name: <b>ALEXCO ENVIRONMENTAL</b>				Quotation #: <b>B50743</b>										<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)	
Contact Name:		Contact Name: <b>Name REDACTED</b>				P.O. #/ AFE#:										PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS	
Address: <b>530-1130 WEST PENDER ST</b>		Address: <b>UNIT 3 151 INDUSTRIAL RD</b>				Project #: <b>BMC-15-01</b>										Rush TAT (Surcharges will be applied)	
Vancouver, BC PC: V6E 4A4		Whitehorse, YK PC: V1A 2V3				Site Location: <b>Kudz Ze Kayah</b>										<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days	
Phone:		Phone: <b>(867) 668-6463</b>				Site #: <b>Name REDACTED</b>										Date Required:	
Email:		Email: <b>Email REDACTED</b>				Sampled By:											
Regulatory Criteria		Special Instructions				Analy										Rush Confirmation #:	
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify) <b>USE SCENARIO # 12485</b>				TOTAL LOW LEVEL METALS INCL. MERCURY DISSOLVED LOW LEVEL METALS INCL. MERCURY LOW LEVEL TSS ANIONS (Cl, F, SO4, NO2, NO3) AMMONIA CONDUCTIVITY pH ALKALINITY & ACIDITY DOC TOTAL PHOSPHORUS - LOW LEVEL DISSOLVED PHOSPHORUS - LOW LEVEL										LABORATORY USE ONLY CUSTODY SEAL Present    Intact Y    Y    8.8.8/10.6/10.6/15 Y    Y    7.7.8/4.6.6 Y    Y    10.8.7/6.6.7 COOLING MEDIA PRESENT (Y) / N COMMENTS	
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM																	
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	TOTAL LOW LEVEL METALS INCL. MERCURY	DISSOLVED LOW LEVEL METALS INCL. MERCURY	LOW LEVEL TSS	ANIONS (Cl, F, SO4, NO2, NO3)	AMMONIA	CONDUCTIVITY	pH	ALKALINITY & ACIDITY	DOC	TOTAL PHOSPHORUS - LOW LEVEL	DISSOLVED PHOSPHORUS - LOW LEVEL	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1	MW15-02	12-Sep-17	0923H	Water	X	X	X	X	X	X	X	X	X	X	X	11	Name REDACTED
2	BH95G-21	12-Sep-17	0955H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
3	MW15-11S	12-Sep-17	1418H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
4	BH95G-25S	12-Sep-17	1537H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
5	MW16-12S	13-Sep-17	1310H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
6	MW15-10S	13-Sep-17	1700H	Water	X	X	X	X	X	X	X	X	X	X	X	11	
7																	
8																	
9																	
10																	
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)				DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #							
Name REDACTED		9/15/17	5:00 PM	Name REDACTED				2017-09-16	15:50	8780105							

Your Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08446347

**Attention:** Name REDACTED

ALEXCO ENVIRONMENTAL GROUP INC.  
Unit 3 Calcite Business Centre  
151 Industrial Road  
WHITEHORSE, YT  
Canada Y1A 2V3

**Report Date: 2017/11/14**  
Report #: R2476471  
Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B799265**

**Received: 2017/11/06, 11:35**

Sample Matrix: Water  
# Samples Received: 17

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	17	2017/11/09	2017/11/08	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Low Level	17	2017/11/08	2017/11/08	BBY6SOP-00026	SM 22 2320 B m
Chloride - Low Level	17	N/A	2017/11/08	BBY6SOP-00011	SM 22 4500-Cl- E m
Carbon (DOC) - field filtered/preserved (1)	17	N/A	2017/11/09	BBY6SOP-00003	SM 22 5310 C m
Conductance - water	17	2017/11/08	2017/11/08	BBY6SOP-00026	SM 22 2510 B m
Fluoride - Low Level	17	N/A	2017/11/08	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3) (2)	17	N/A	2017/11/10	BBY WI-00033	Auto Calc
Hardness (calculated as CaCO3)	17	N/A	2017/11/09	BBY WI-00033	Auto Calc
Mercury (Dissolved-LowLevel) by CVAF	17	N/A	2017/11/08	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAF	17	2017/11/08	2017/11/08	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance (as Cations/Anions Ratio)	17	N/A	2017/11/09	BBY WI-00033	Auto Calc
Ion Balance	17	N/A	2017/11/09	BBY WI-00033	SM 22 1030E
Sum of cations, anions	17	N/A	2017/11/09	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	17	N/A	2017/11/09	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Low Level (dissolved)	11	N/A	2017/11/08	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Low Level (dissolved)	6	N/A	2017/11/09	BBY7SOP-00002	EPA 6020B R2 m
Elements by ICPMS Digested LL (total)	12	2017/11/08	2017/11/10	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Na, K, Ca, Mg, S by CRC ICPMS (total)	17	N/A	2017/11/10	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Elements by ICPMS Low Level (total)	5	N/A	2017/11/09	BBY7SOP-00003,	BCLM2005,EPA6020bR2m
Ammonia-N Low Level (Preserved)	17	N/A	2017/11/08	BBY6SOP-00009	EPA 350.1 m
Nitrate+Nitrite (N) (low level)	17	N/A	2017/11/08	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	17	N/A	2017/11/08	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N) Low Level Calc	17	N/A	2017/11/09	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	2	N/A	2017/11/08	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	14	N/A	2017/11/09	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (3)	17	2017/11/08	2017/11/08	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate - Low Level	15	N/A	2017/11/08	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate - Low Level	2	N/A	2017/11/09	BBY6SOP-00017	SM 22 4500-SO42- E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	17	2017/11/08	2017/11/08	BBY6SOP-00013	SM 22 4500-P E m



Your Project #: BMC-15-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08446347

**Attention:** Name REDACTED  
 ALEXCO ENVIRONMENTAL GROUP INC.  
 Unit 3 Calcite Business Centre  
 151 Industrial Road  
 WHITEHORSE, YT  
 Canada Y1A 2V3

**Report Date: 2017/11/14**  
 Report #: R2476471  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B799265**  
**Received: 2017/11/06, 11:35**

Sample Matrix: Water  
 # Samples Received: 17

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Phosphorus - Low Level Unpreserved	17	2017/11/08	2017/11/08	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	17	2017/11/08	2017/11/09	BBY6SOP-00034	SM 22 2540 D

**Remarks:**  
 Maxxam Analytics' laboratories are accredited to ISO/IEC 17025:2005 for specific parameters on scopes of accreditation. Unless otherwise noted, procedures used by Maxxam are based upon recognized Provincial, Federal or US method compendia such as CCME, MDDELCC, EPA, APHA.

All work recorded herein has been done in accordance with procedures and practices ordinarily exercised by professionals in Maxxam's profession using accepted testing methodologies, quality assurance and quality control procedures (except where otherwise agreed by the client and Maxxam in writing). All data is in statistical control and has met quality control and method performance criteria unless otherwise noted. All method blanks are reported: unless indicated otherwise, associated sample data are not blank corrected.

Maxxam Analytics' liability is limited to the actual cost of the requested analyses, unless otherwise agreed in writing. There is no other warranty expressed or implied. Maxxam has been retained to provide analysis of samples provided by the Client using the testing methodology referenced in this report. Interpretation and use of test results are the sole responsibility of the Client and are not within the scope of services provided by Maxxam, unless otherwise agreed in writing.

Solid sample results, except biota, are based on dry weight unless otherwise indicated. Organic analyses are not recovery corrected except for isotope dilution methods.

Results relate to samples tested.

This Certificate shall not be reproduced except in full, without the written approval of the laboratory.

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) DOC present in the sample should be considered as non-purgeable DOC.
- (2) "Total Hardness" was calculated from Total Ca and Mg concentrations and may be biased high (Hardness, or Dissolved Hardness, calculated from Dissolved Ca and Mg, should be used for compliance if available).
- (3) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.



Your Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08446347

**Attention:** Name REDACTED  
ALEXCO ENVIRONMENTAL GROUP INC.  
Unit 3 Calcite Business Centre  
151 Industrial Road  
WHITEHORSE, YT  
Canada Y1A 2V3

**Report Date: 2017/11/14**  
Report #: R2476471  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B799265**  
**Received: 2017/11/06, 11:35**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Name REDACTED, Project Manager

Email REDACTED  
Phone# Phone REDACTED

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		SK8985			SK8986		SK8987		
Sampling Date		2017/11/07 14:24			2017/11/02 13:50		2017/11/02 11:48		
COC Number		08446347			08446347		08446347		
	UNITS	TRIP BLANK	RDL	QC Batch	MW16-15D	RDL	MW15-11S	RDL	QC Batch
<b>Calculated Parameters</b>									
Anion Sum	meq/L	0.00060	N/A	8822801	4.1	N/A	7.1	N/A	8822801
Cation Sum	meq/L	0.0093	N/A	8822801	3.7	N/A	6.7	N/A	8822801
Filter and HNO3 Preservation	N/A			ONSITE	FIELD		FIELD		ONSITE
Ion Balance	N/A	NC	0.010	8822798	0.89	0.010	0.95	0.010	8822798
Ion Balance (% Difference)	%	88	N/A	8822799	5.9	N/A	2.6	N/A	8822799
Nitrate (N)	mg/L	<0.0020	0.0020	8822166	<0.0020	0.0020	0.0326	0.0020	8822166
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.012	0.010	8823749	0.086	0.010	0.140	0.010	8823749
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8825317	1.08	0.50	18.9	0.50	8825317
Acidity (pH 4.5)	mg/L	<1.0	1.0	8825016	<1.0	1.0	<1.0	1.0	8825086
Alkalinity (Total as CaCO3)	mg/L	<0.50	0.50	8824254	131	0.50	259	0.50	8824254
Acidity (pH 8.3)	mg/L	<1.0	1.0	8825016	1.3	1.0	10.8	1.0	8825086
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8824254	<0.50	0.50	<0.50	0.50	8824254
Bicarbonate (HCO3)	mg/L	<0.50	0.50	8824254	160	0.50	316	0.50	8824254
Carbonate (CO3)	mg/L	<0.50	0.50	8824254	<0.50	0.50	<0.50	0.50	8824254
Hydroxide (OH)	mg/L	<0.50	0.50	8824254	<0.50	0.50	<0.50	0.50	8824254
<b>Anions</b>									
Dissolved Sulphate (SO4)	mg/L	<0.50	0.50	8824324	69.7	0.50	88.7	0.50	8824324
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8824323	1.2	0.50	1.2	0.50	8824323
<b>Nutrients</b>									
Dissolved Phosphorus (P)	mg/L	0.0027	0.0020	8824297	0.0187	0.0020	0.0696	0.0020	8824297
Total Ammonia (N)	mg/L	0.0050	0.0050	8823677	0.024	0.0050	0.052	0.0050	8823677
Nitrate plus Nitrite (N)	mg/L	<0.0020	0.0020	8824492	<0.0020	0.0020	0.0326	0.0020	8824494
Nitrite (N)	mg/L	<0.0020	0.0020	8824493	<0.0020	0.0020	<0.0020	0.0020	8824495
Total Phosphorus (P)	mg/L	<0.0020	0.0020	8824300	0.209	0.0020	0.930 (1)	0.020	8824300
<b>Physical Properties</b>									
Conductivity	uS/cm	<2.0	2.0	8824247	382	2.0	620	2.0	8824247
pH	pH	5.05		8824240	8.01		8.06		8824240
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.									

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		SK8985			SK8986		SK8987		
<b>Sampling Date</b>		2017/11/07 14:24			2017/11/02 13:50		2017/11/02 11:48		
<b>COC Number</b>		08446347			08446347		08446347		
	<b>UNITS</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW16-15D</b>	<b>RDL</b>	<b>MW15-11S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	<1.0	1.0	8823651	298 (1)	10	1490 (1)	10	8823651
RDL = Reportable Detection Limit									
(1) RDL raised due to high concentration of solids in the sample.									

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		SK8988		SK8989		SK8990		SK8991		
Sampling Date		2017/11/02 12:30		2017/11/02 15:00		2017/11/02 15:50		2017/11/02 17:50		
COC Number		08446347		08446347		08446347		08446347		
	UNITS	BH95G-21	RDL	MW16-17	RDL	BH95G-33D	RDL	MW15-02	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	4.6	N/A	4.0	N/A	5.3	N/A	5.0	N/A	8822801
Cation Sum	meq/L	4.1	N/A	3.8	N/A	4.6	N/A	4.3	N/A	8822801
Filter and HNO3 Preservation	N/A	FIELD		FIELD		FIELD		FIELD		ONSITE
Ion Balance	N/A	0.90	0.010	0.95	0.010	0.87	0.010	0.87	0.010	8822798
Ion Balance (% Difference)	%	5.2	N/A	2.6	N/A	6.8	N/A	6.8	N/A	8822799
Nitrate (N)	mg/L	0.0100	0.0020	<0.0020	0.0020	0.276	0.0020	0.224	0.0020	8822166
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.089	0.010	0.520	0.010	0.052	0.010	0.085	0.010	8823749
Dissolved Organic Carbon (C)	mg/L	1.11	0.50	<0.50	0.50	0.97	0.50	<0.50	0.50	8825317
Acidity (pH 4.5)	mg/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8825086
Alkalinity (Total as CaCO3)	mg/L	176	0.50	166	0.50	187	0.50	186	0.50	8824254
Acidity (pH 8.3)	mg/L	2.7	1.0	1.3	1.0	4.6	1.0	2.7	1.0	8825086
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8824254
Bicarbonate (HCO3)	mg/L	215	0.50	202	0.50	228	0.50	227	0.50	8824254
Carbonate (CO3)	mg/L	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8824254
Hydroxide (OH)	mg/L	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8824254
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	48.5	0.50	30.7	0.50	72.7	0.50	58.9	0.50	8824324
Dissolved Chloride (Cl)	mg/L	0.69	0.50	1.1	0.50	1.0	0.50	0.59	0.50	8824323
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0740	0.0020	0.227	0.0020	0.0707	0.0020	<0.0020	0.0020	8824297
Total Ammonia (N)	mg/L	0.032	0.0050	0.031	0.0050	0.010	0.0050	0.0050	0.0050	8823677
Nitrate plus Nitrite (N)	mg/L	0.0100	0.0020	<0.0020	0.0020	0.276	0.0020	0.224	0.0020	8824492
Nitrite (N)	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	8824493
Total Phosphorus (P)	mg/L	0.877 (1)	0.020	0.231	0.0020	0.407	0.0020	<0.0020	0.0020	8824300
<b>Physical Properties</b>										
Conductivity	uS/cm	409	2.0	359	2.0	475	2.0	453	2.0	8824247
pH	pH	8.09		8.12		7.93		8.11		8824240
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		SK8988		SK8989		SK8990		SK8991		
Sampling Date		2017/11/02 12:30		2017/11/02 15:00		2017/11/02 15:50		2017/11/02 17:50		
COC Number		08446347		08446347		08446347		08446347		
	<b>UNITS</b>	<b>BH95G-21</b>	<b>RDL</b>	<b>MW16-17</b>	<b>RDL</b>	<b>BH95G-33D</b>	<b>RDL</b>	<b>MW15-02</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	914 (1)	20	247 (1)	6.7	515 (1)	10	<1.0	1.0	8823651
RDL = Reportable Detection Limit (1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		SK8992			SK8993			SK8994		
<b>Sampling Date</b>		2017/11/04 13:38			2017/11/03 14:04			2017/11/03 14:50		
<b>COC Number</b>		08446347			08446347			08446347		
	<b>UNITS</b>	<b>MW15-03D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25D</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Anion Sum	meq/L	4.4	N/A	8822801	11	N/A	8822801	12	N/A	8822801
Cation Sum	meq/L	4.0	N/A	8822801	11	N/A	8822801	11	N/A	8822801
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.91	0.010	8822798	0.95	0.010	8822798	0.92	0.010	8822798
Ion Balance (% Difference)	%	4.7	N/A	8822799	2.4	N/A	8822799	4.3	N/A	8822799
Nitrate (N)	mg/L	0.0028	0.0020	8822166	0.0025	0.0020	8822166	0.0026	0.0020	8822166

**Misc. Inorganics**

Fluoride (F)	mg/L	0.140	0.010	8823749	0.120	0.010	8823749	0.086	0.010	8823749
Dissolved Organic Carbon (C)	mg/L	<0.50	0.50	8825317	1.43	0.50	8825317	2.12	0.50	8825317
Acidity (pH 4.5)	mg/L	<1.0	1.0	8825086	<1.0	1.0	8825086	<1.0	1.0	8825086
Alkalinity (Total as CaCO3)	mg/L	196	0.50	8824254	348	0.50	8824254	360	0.50	8824254
Acidity (pH 8.3)	mg/L	2.4	1.0	8825086	13.1	1.0	8825086	17.6	1.0	8825086
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8824254	<0.50	0.50	8824254	<0.50	0.50	8824254
Bicarbonate (HCO3)	mg/L	239	0.50	8824254	424	0.50	8824254	439	0.50	8824254
Carbonate (CO3)	mg/L	<0.50	0.50	8824254	<0.50	0.50	8824254	<0.50	0.50	8824254
Hydroxide (OH)	mg/L	<0.50	0.50	8824254	<0.50	0.50	8824254	<0.50	0.50	8824254

**Anions**

Dissolved Sulphate (SO4)	mg/L	23.8	0.50	8824324	212 (1)	5.0	8825927	248 (1)	5.0	8824324
Dissolved Chloride (Cl)	mg/L	0.59	0.50	8824323	1.0	0.50	8824323	1.2	0.50	8824323

**Nutrients**

Dissolved Phosphorus (P)	mg/L	0.0036	0.0020	8824297	0.0338	0.0020	8824297	0.0580	0.0020	8824297
Total Ammonia (N)	mg/L	0.046	0.0050	8823677	0.22	0.0050	8823677	0.088	0.0050	8823677
Nitrate plus Nitrite (N)	mg/L	0.0028	0.0020	8824492	0.0025	0.0020	8824492	0.0026	0.0020	8824492
Nitrite (N)	mg/L	<0.0020	0.0020	8824493	<0.0020	0.0020	8824493	<0.0020	0.0020	8824493
Total Phosphorus (P)	mg/L	0.0037	0.0020	8824300	0.353	0.0020	8824300	0.626 (1)	0.020	8824300

**Physical Properties**

Conductivity	uS/cm	394	2.0	8824247	937	2.0	8824247	1020	2.0	8824247
pH	pH	8.11		8824240	8.07		8824240	8.05		8824240

RDL = Reportable Detection Limit  
N/A = Not Applicable  
(1) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		SK8992			SK8993			SK8994		
<b>Sampling Date</b>		2017/11/04 13:38			2017/11/03 14:04			2017/11/03 14:50		
<b>COC Number</b>		08446347			08446347			08446347		
	<b>UNITS</b>	<b>MW15-03D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	3.5	1.0	8823651	684 (1)	20	8823651	728 (1)	20	8823651

RDL = Reportable Detection Limit  
(1) RDL raised due to high concentration of solids in the sample.

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		SK8995		SK8996		SK8997		SK8998		
Sampling Date		2017/11/03 12:00		2017/11/04 14:20		2017/11/04 15:50		2017/11/04 11:27		
COC Number		08446347		08446347		08446347		08446347		
	UNITS	DUP-1	RDL	MW15-04S	RDL	MW15-04D	RDL	MW15-01	RDL	QC Batch
<b>Calculated Parameters</b>										
Anion Sum	meq/L	12	N/A	2.6	N/A	3.2	N/A	5.0	N/A	8822801
Cation Sum	meq/L	12	N/A	2.3	N/A	2.7	N/A	4.4	N/A	8822801
Filter and HNO3 Preservation	N/A	FIELD		FIELD		FIELD		FIELD		ONSITE
Ion Balance	N/A	0.98	0.010	0.87	0.010	0.84	0.010	0.87	0.010	8822798
Ion Balance (% Difference)	%	0.86	N/A	7.2	N/A	8.9	N/A	7.2	N/A	8822799
Nitrate (N)	mg/L	<0.0020	0.0020	0.216	0.0020	0.0090	0.0020	0.460	0.0020	8822166
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.085	0.010	0.078	0.010	0.200	0.010	0.086	0.010	8823749
Dissolved Organic Carbon (C)	mg/L	1.44	0.50	<0.50	0.50	0.51	0.50	1.32	0.50	8825317
Acidity (pH 4.5)	mg/L	<1.0	1.0	<1.0	1.0	<1.0	1.0	<1.0	1.0	8825086
Alkalinity (Total as CaCO3)	mg/L	362	0.50	120	0.50	139	0.50	144	0.50	8824254
Acidity (pH 8.3)	mg/L	15.4	1.0	<1.0	1.0	1.2	1.0	3.1	1.0	8825086
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8824254
Bicarbonate (HCO3)	mg/L	441	0.50	146	0.50	170	0.50	175	0.50	8824254
Carbonate (CO3)	mg/L	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8824254
Hydroxide (OH)	mg/L	<0.50	0.50	<0.50	0.50	<0.50	0.50	<0.50	0.50	8824254
<b>Anions</b>										
Dissolved Sulphate (SO4)	mg/L	241 (1)	5.0	8.99	0.50	19.9	0.50	102	0.50	8824324
Dissolved Chloride (Cl)	mg/L	1.3	0.50	0.60	0.50	0.78	0.50	0.56	0.50	8824323
<b>Nutrients</b>										
Dissolved Phosphorus (P)	mg/L	0.0674	0.0020	0.203	0.0020	0.0126	0.0020	0.0225	0.0020	8824297
Total Ammonia (N)	mg/L	0.059	0.0050	0.013	0.0050	0.015	0.0050	0.012	0.0050	8823677
Nitrate plus Nitrite (N)	mg/L	<0.0020	0.0020	0.216	0.0020	0.0090	0.0020	0.464	0.0020	8824492
Nitrite (N)	mg/L	<0.0020	0.0020	<0.0020	0.0020	<0.0020	0.0020	0.0037	0.0020	8824493
Total Phosphorus (P)	mg/L	0.318	0.0020	0.831 (1)	0.020	0.0974	0.0020	0.0503	0.0020	8824300
<b>Physical Properties</b>										
Conductivity	uS/cm	1030	2.0	238	2.0	293	2.0	455	2.0	8824247
pH	pH	7.97		8.03		7.95		7.84		8824240
RDL = Reportable Detection Limit N/A = Not Applicable (1) Detection limits raised due to dilution to bring analyte within the calibrated range.										



Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		SK8995		SK8996		SK8997		SK8998		
Sampling Date		2017/11/03 12:00		2017/11/04 14:20		2017/11/04 15:50		2017/11/04 11:27		
COC Number		08446347		08446347		08446347		08446347		
	UNITS	DUP-1	RDL	MW15-04S	RDL	MW15-04D	RDL	MW15-01	RDL	QC Batch
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	656 (1)	20	988 (1)	20	496 (1)	20	34.6	1.0	8823651
RDL = Reportable Detection Limit										
(1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		SK8999			SK9000			SK9001		
<b>Sampling Date</b>		2017/11/05 08:54			2017/11/05 10:00			2017/11/04 13:45		
<b>COC Number</b>		08446347			08446347			08446347		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>FIELD BLANK</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Anion Sum	meq/L	6.4	N/A	8822801	38	N/A	8822801	0.013	N/A	8822801
Cation Sum	meq/L	6.0	N/A	8822801	42	N/A	8822801	0.0097	N/A	8822801
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		ONSITE	FIELD		ONSITE
Ion Balance	N/A	0.94	0.010	8822798	1.1	0.010	8822798	0.72 (1)	0.010	8822798
Ion Balance (% Difference)	%	3.0	N/A	8822799	4.8	N/A	8822799	16	N/A	8822799
Nitrate (N)	mg/L	0.360	0.0020	8822166	0.0030	0.0020	8822166	<0.0020	0.0020	8822166

**Misc. Inorganics**

Fluoride (F)	mg/L	0.055	0.010	8823749	1.30	0.010	8823749	0.014	0.010	8823749
Dissolved Organic Carbon (C)	mg/L	0.82	0.50	8825317	0.56	0.50	8825317	<0.50	0.50	8825317
Acidity (pH 4.5)	mg/L	<1.0	1.0	8825086	<1.0	1.0	8825086	<1.0	1.0	8825016
Alkalinity (Total as CaCO3)	mg/L	259	0.50	8824254	1890	0.50	8824254	<0.50	0.50	8824254
Acidity (pH 8.3)	mg/L	3.6	1.0	8825086	441	1.0	8825086	<1.0	1.0	8825016
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8824254	<0.50	0.50	8824254	<0.50	0.50	8824254
Bicarbonate (HCO3)	mg/L	316	0.50	8824254	2310	0.50	8824254	<0.50	0.50	8824254
Carbonate (CO3)	mg/L	<0.50	0.50	8824254	<0.50	0.50	8824254	<0.50	0.50	8824254
Hydroxide (OH)	mg/L	<0.50	0.50	8824254	<0.50	0.50	8824254	<0.50	0.50	8824254

**Anions**

Dissolved Sulphate (SO4)	mg/L	54.8	0.50	8825927	<0.50	0.50	8824324	0.61	0.50	8824324
Dissolved Chloride (Cl)	mg/L	0.83	0.50	8824323	1.7	0.50	8824323	<0.50	0.50	8824323

**Nutrients**

Dissolved Phosphorus (P)	mg/L	0.0193	0.0020	8824297	0.0143	0.0020	8824297	0.0022	0.0020	8824297
Total Ammonia (N)	mg/L	0.013	0.0050	8823677	0.18	0.0050	8823677	0.0050	0.0050	8823677
Nitrate plus Nitrite (N)	mg/L	0.360	0.0020	8824492	0.0030	0.0020	8824492	<0.0020	0.0020	8824492
Nitrite (N)	mg/L	<0.0020	0.0020	8824493	<0.0020	0.0020	8824493	<0.0020	0.0020	8824493
Total Phosphorus (P)	mg/L	0.0305	0.0020	8824300	0.0787	0.0020	8824300	<0.0020	0.0020	8824300

**Physical Properties**

Conductivity	uS/cm	568	2.0	8824247	2910	2.0	8824247	<2.0	2.0	8824247
pH	pH	8.17		8824240	7.22		8824240	5.03		8824240

RDL = Reportable Detection Limit  
N/A = Not Applicable  
(1) Ion balance out of optimal range due to high measurement uncertainty at this level (Ion Sum < 0.4 meq/L for both cations and anions).

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		SK8999			SK9000			SK9001		
<b>Sampling Date</b>		2017/11/05 08:54			2017/11/05 10:00			2017/11/04 13:45		
<b>COC Number</b>		08446347			08446347			08446347		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>FIELD BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	11.6	1.0	8823651	158 (1)	5.0	8823651	<1.0	1.0	8823651
RDL = Reportable Detection Limit										
(1) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		SK8985	SK8986	SK8987		SK8988		
<b>Sampling Date</b>		2017/11/07 14:24	2017/11/02 13:50	2017/11/02 11:48		2017/11/02 12:30		
<b>COC Number</b>		08446347	08446347	08446347		08446347		
	<b>UNITS</b>	<b>TRIP BLANK</b>	<b>MW16-15D</b>	<b>MW15-11S</b>	<b>QC Batch</b>	<b>BH95G-21</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	<0.50	174	321	8821680	201	0.50	8821680

<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	8823612	<0.000020	0.000020	8823612

<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	<0.00050	0.00597	0.00288	8823097	0.00168	0.00050	8823097
Dissolved Antimony (Sb)	mg/L	<0.000020	0.000104	0.000114	8823097	0.000052	0.000020	8823097
Dissolved Arsenic (As)	mg/L	<0.000020	0.0127	0.00189	8823097	0.00103	0.000020	8823097
Dissolved Barium (Ba)	mg/L	<0.000020	0.0318	0.0369	8823097	0.0411	0.000020	8823097
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	8823097	<0.000010	0.000010	8823097
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	8823097	<0.0000050	0.0000050	8823097
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	8823097	<0.010	0.010	8823097
Dissolved Cadmium (Cd)	mg/L	<0.0000050	<0.0000050	<0.0000050	8823097	<0.0000050	0.0000050	8823097
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00019	<0.00010	8823097	<0.00010	0.00010	8823097
Dissolved Cobalt (Co)	mg/L	<0.0000050	0.0000790	0.000237	8823097	0.0000330	0.0000050	8823097
Dissolved Copper (Cu)	mg/L	<0.000050	<0.000050	<0.000050	8823097	<0.000050	0.000050	8823097
Dissolved Iron (Fe)	mg/L	<0.0010	0.0411	0.912	8823097	0.0034	0.0010	8823097
Dissolved Lead (Pb)	mg/L	<0.0000050	0.0000050	<0.0000050	8823097	0.0000070	0.0000050	8823097
Dissolved Lithium (Li)	mg/L	<0.00050	0.00268	0.0101	8823097	0.00585	0.00050	8823097
Dissolved Manganese (Mn)	mg/L	<0.000050	0.109	0.225	8823097	0.0535	0.000050	8823097
Dissolved Molybdenum (Mo)	mg/L	<0.000050	0.000667	0.000646	8823097	0.000360 (1)	0.000050	8828439
Dissolved Nickel (Ni)	mg/L	<0.000020	0.000177	0.000839	8823097	0.000097	0.000020	8823097
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0032	0.0037	8823097	0.0044	0.0020	8823097
Dissolved Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	8823097	<0.000040	0.000040	8823097
Dissolved Silicon (Si)	mg/L	<0.050	2.82	4.30	8823097	3.25	0.050	8823097
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	8823097	<0.0000050	0.0000050	8823097
Dissolved Strontium (Sr)	mg/L	<0.000050	0.170	0.509	8823097	0.187	0.000050	8823097
Dissolved Thallium (Tl)	mg/L	<0.0000020	0.0000020	<0.0000020	8823097	<0.0000020	0.0000020	8823097
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	8823097	<0.00020	0.00020	8823097
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	8823097	<0.00050	0.00050	8823097
Dissolved Uranium (U)	mg/L	<0.0000020	0.00328	0.0111	8823097	0.00414	0.0000020	8823097

RDL = Reportable Detection Limit  
(1) Test repeated.  
Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		SK8985	SK8986	SK8987		SK8988		
Sampling Date		2017/11/07 14:24	2017/11/02 13:50	2017/11/02 11:48		2017/11/02 12:30		
COC Number		08446347	08446347	08446347		08446347		
	UNITS	TRIP BLANK	MW16-15D	MW15-11S	QC Batch	BH95G-21	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	8823097	<0.00020	0.00020	8823097
Dissolved Zinc (Zn)	mg/L	<0.00010	0.00248	0.00049	8823097	0.00073	0.00010	8823097
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	0.00117	8823097	<0.00010	0.00010	8823097
Dissolved Calcium (Ca)	mg/L	<0.050	57.1	86.4	8821681	62.4	0.050	8821681
Dissolved Magnesium (Mg)	mg/L	<0.050	7.65	25.5	8821681	11.1	0.050	8821681
Dissolved Potassium (K)	mg/L	<0.050	2.18	4.12	8821681	1.33	0.050	8821681
Dissolved Sodium (Na)	mg/L	<0.050	2.70	3.37	8821681	1.07	0.050	8821681
Dissolved Sulphur (S)	mg/L	<3.0	21.0	29.1	8821681	14.7	3.0	8821681
RDL = Reportable Detection Limit								

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		SK8989		SK8990		SK8991		
<b>Sampling Date</b>		2017/11/02 15:00		2017/11/02 15:50		2017/11/02 17:50		
<b>COC Number</b>		08446347		08446347		08446347		
	<b>UNITS</b>	<b>MW16-17</b>	<b>QC Batch</b>	<b>BH95G-33D</b>	<b>QC Batch</b>	<b>MW15-02</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	185	8821680	229	8822797	213	0.50	8822797
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	8823612	<0.0000020	8823612	<0.0000020	0.0000020	8823612
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00185	8823097	0.00112	8823097	0.00157	0.00050	8823097
Dissolved Antimony (Sb)	mg/L	0.000022	8823097	0.000024	8823097	0.000027	0.000020	8823097
Dissolved Arsenic (As)	mg/L	0.000167	8823097	0.000176	8823097	0.000706	0.000020	8823097
Dissolved Barium (Ba)	mg/L	0.0401	8823097	0.0868	8823097	0.0808	0.000020	8823097
Dissolved Beryllium (Be)	mg/L	<0.000010	8823097	<0.000010	8823097	<0.000010	0.000010	8823097
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8823097	<0.0000050	8823097	<0.0000050	0.0000050	8823097
Dissolved Boron (B)	mg/L	<0.010	8823097	<0.010	8823097	<0.010	0.010	8823097
Dissolved Cadmium (Cd)	mg/L	<0.0000050	8823097	0.0000220	8823097	<0.0000050	0.0000050	8823097
Dissolved Chromium (Cr)	mg/L	<0.00010	8823097	<0.00010	8823097	<0.00010	0.00010	8823097
Dissolved Cobalt (Co)	mg/L	0.0000380	8823097	0.0000090	8823097	0.0000270	0.0000050	8823097
Dissolved Copper (Cu)	mg/L	<0.000050	8823097	0.000157	8823097	0.000096	0.000050	8823097
Dissolved Iron (Fe)	mg/L	0.164	8823097	0.0015	8823097	0.0016	0.0010	8823097
Dissolved Lead (Pb)	mg/L	<0.0000050	8823097	0.0000170	8823097	0.0000290 (1)	0.0000050	8828439
Dissolved Lithium (Li)	mg/L	0.00240	8823097	0.00107	8823097	0.00181	0.00050	8823097
Dissolved Manganese (Mn)	mg/L	0.0693	8823097	0.00126	8823097	0.000125	0.000050	8823097
Dissolved Molybdenum (Mo)	mg/L	0.000272	8823097	0.00106	8823097	0.000692	0.000050	8823097
Dissolved Nickel (Ni)	mg/L	0.000153	8823097	0.00112	8823097	0.000135	0.000020	8823097
Dissolved Phosphorus (P)	mg/L	0.0031	8823097	0.0040	8823097	0.0028	0.0020	8823097
Dissolved Selenium (Se)	mg/L	<0.000040	8823097	0.00568 (1)	8828439	0.00167	0.000040	8823097
Dissolved Silicon (Si)	mg/L	4.06	8823097	2.89	8823097	1.98	0.050	8823097
Dissolved Silver (Ag)	mg/L	<0.0000050	8823097	<0.0000050	8823097	<0.0000050	0.0000050	8823097
Dissolved Strontium (Sr)	mg/L	0.186	8823097	0.218	8823097	0.257	0.000050	8823097
Dissolved Thallium (Tl)	mg/L	<0.0000020	8823097	<0.0000020	8823097	<0.0000020	0.0000020	8823097
Dissolved Tin (Sn)	mg/L	<0.00020	8823097	<0.00020	8823097	<0.00020	0.00020	8823097
Dissolved Titanium (Ti)	mg/L	<0.00050	8823097	<0.00050	8823097	<0.00050	0.00050	8823097
Dissolved Uranium (U)	mg/L	0.00364	8823097	0.00415	8823097	0.00300	0.0000020	8823097

RDL = Reportable Detection Limit

(1) Test repeated.

Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		SK8989		SK8990		SK8991		
Sampling Date		2017/11/02 15:00		2017/11/02 15:50		2017/11/02 17:50		
COC Number		08446347		08446347		08446347		
	UNITS	MW16-17	QC Batch	BH95G-33D	QC Batch	MW15-02	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	8823097	<0.00020	8823097	<0.00020	0.00020	8823097
Dissolved Zinc (Zn)	mg/L	0.00028	8823097	0.00171	8823097	0.00130 (1)	0.00010	8828439
Dissolved Zirconium (Zr)	mg/L	0.00012	8823097	<0.00010	8823097	<0.00010	0.00010	8823097
Dissolved Calcium (Ca)	mg/L	59.4	8821681	77.9	8821681	67.7	0.050	8821681
Dissolved Magnesium (Mg)	mg/L	8.97	8821681	8.33	8821681	10.8	0.050	8821681
Dissolved Potassium (K)	mg/L	1.38	8821681	0.867	8821681	2.03	0.050	8821681
Dissolved Sodium (Na)	mg/L	1.32	8821681	0.735	8821681	0.694	0.050	8821681
Dissolved Sulphur (S)	mg/L	10.5	8821681	19.8	8821681	17.6	3.0	8821681
RDL = Reportable Detection Limit (1) Test repeated. Dissolved greater than total. Reanalysis yields similar results.								

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		SK8992	SK8993	SK8994	SK8995	SK8996		
Sampling Date		2017/11/04 13:38	2017/11/03 14:04	2017/11/03 14:50	2017/11/03 12:00	2017/11/04 14:20		
COC Number		08446347	08446347	08446347	08446347	08446347		
	<b>UNITS</b>	<b>MW15-03D</b>	<b>BH95G-25S</b>	<b>BH95G-25D</b>	<b>DUP-1</b>	<b>MW15-04S</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	196	526	557	592	110	0.50	8822797
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8823612
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00105	0.00052	0.00500	0.00203	0.00173	0.00050	8823097
Dissolved Antimony (Sb)	mg/L	0.000032	0.000023	0.000081	0.000079	0.000026	0.000020	8823097
Dissolved Arsenic (As)	mg/L	0.00264	0.00276	0.000921	0.000867	0.000164	0.000020	8823097
Dissolved Barium (Ba)	mg/L	0.0429	0.0569	0.0212	0.0211	0.0655	0.000020	8823097
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8823097
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8823097
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8823097
Dissolved Cadmium (Cd)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8823097
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00024	0.00010	8823097
Dissolved Cobalt (Co)	mg/L	0.0000990	0.000205	0.000276	0.000336	<0.0000050	0.0000050	8823097
Dissolved Copper (Cu)	mg/L	<0.000050	<0.000050	<0.000050	<0.000050	0.000112	0.000050	8823097
Dissolved Iron (Fe)	mg/L	0.161	2.06	1.07	1.02	<0.0010	0.0010	8823097
Dissolved Lead (Pb)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000050	<0.0000050	0.0000050	8823097
Dissolved Lithium (Li)	mg/L	0.00641	0.0117	0.0120	0.0123	<0.00050	0.00050	8823097
Dissolved Manganese (Mn)	mg/L	0.0510	0.399	0.338	0.366	0.000114	0.000050	8823097
Dissolved Molybdenum (Mo)	mg/L	0.00250	0.00155	0.000242	0.000241	0.00102 (1)	0.000050	8823097
Dissolved Nickel (Ni)	mg/L	0.000220	0.000409	0.000344	0.000456	0.000046	0.000020	8823097
Dissolved Phosphorus (P)	mg/L	0.0031	0.0027	0.0030	0.0036	0.0036	0.0020	8823097
Dissolved Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	0.000745	0.000040	8823097
Dissolved Silicon (Si)	mg/L	4.42	5.68	4.96	4.94	3.05	0.050	8823097
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000050	<0.0000050	0.0000050	8823097
Dissolved Strontium (Sr)	mg/L	0.223	0.478	0.479	0.517	0.139	0.000050	8823097
Dissolved Thallium (Tl)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8823097
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8823097
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	8823097
Dissolved Uranium (U)	mg/L	0.00266	0.00371	0.00745	0.00748	0.000506	0.0000020	8823097

RDL = Reportable Detection Limit

(1) Test repeated.

Dissolved greater than total. Reanalysis yields similar results.



Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		SK8992	SK8993	SK8994	SK8995	SK8996		
Sampling Date		2017/11/04 13:38	2017/11/03 14:04	2017/11/03 14:50	2017/11/03 12:00	2017/11/04 14:20		
COC Number		08446347	08446347	08446347	08446347	08446347		
	UNITS	MW15-03D	BH95G-25S	BH95G-25D	DUP-1	MW15-04S	RDL	QC Batch
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8823097
Dissolved Zinc (Zn)	mg/L	0.00353 (1)	0.00045	0.00870	0.00627	0.00033	0.00010	8823097
Dissolved Zirconium (Zr)	mg/L	0.00023	<0.00010	0.00292	0.00320	<0.00010	0.00010	8823097
Dissolved Calcium (Ca)	mg/L	54.0	141	140	145	38.7	0.050	8821681
Dissolved Magnesium (Mg)	mg/L	14.8	42.5	50.5	56.0	3.30	0.050	8821681
Dissolved Potassium (K)	mg/L	2.16	5.84	3.98	4.34	1.09	0.050	8821681
Dissolved Sodium (Na)	mg/L	1.36	2.51	2.12	2.32	0.890	0.050	8821681
Dissolved Sulphur (S)	mg/L	7.2	68.4	76.2	82.4	<3.0	3.0	8821681

RDL = Reportable Detection Limit

(1) Test repeated.

Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		SK8997	SK8998	SK8999		SK9000		
<b>Sampling Date</b>		2017/11/04 15:50	2017/11/04 11:27	2017/11/05 08:54		2017/11/05 10:00		
<b>COC Number</b>		08446347	08446347	08446347		08446347		
	<b>UNITS</b>	<b>MW15-04D</b>	<b>MW15-01</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	128	215	298	0.50	1970	0.50	8822797
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	0.000020	<0.000020	0.000020	8823612
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00090	0.00667	0.00204	0.00050	0.285	0.0025	8823097
Dissolved Antimony (Sb)	mg/L	<0.000020	0.000023	<0.000020	0.000020	<0.00010	0.00010	8823097
Dissolved Arsenic (As)	mg/L	0.000804	0.000071	0.000074	0.000020	0.00033	0.00010	8823097
Dissolved Barium (Ba)	mg/L	0.0543	0.0258	0.0262	0.000020	0.384	0.00010	8823097
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	0.000010	0.00112	0.000050	8823097
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000050	<0.000025	0.000025	8823097
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	0.010	<0.050	0.050	8823097
Dissolved Cadmium (Cd)	mg/L	0.0000150	0.0000100	0.00155	0.0000050	<0.000025	0.000025	8823097
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	<0.00050	0.00050	8823097
Dissolved Cobalt (Co)	mg/L	0.000266	0.0000590	<0.0000050	0.0000050	0.000103	0.000025	8823097
Dissolved Copper (Cu)	mg/L	<0.000050	0.000262	0.000527	0.000050	<0.00025	0.00025	8823097
Dissolved Iron (Fe)	mg/L	0.0016	0.0014	0.0019	0.0010	26.5	0.0050	8823097
Dissolved Lead (Pb)	mg/L	<0.0000050	<0.0000050	0.0000290	0.0000050	0.000223	0.000025	8823097
Dissolved Lithium (Li)	mg/L	0.00094	0.00163	0.00152	0.00050	0.257	0.0025	8823097
Dissolved Manganese (Mn)	mg/L	0.0975	0.00179	0.000205	0.000050	5.01	0.00025	8823097
Dissolved Molybdenum (Mo)	mg/L	0.00235	0.000622	0.00171	0.000050	<0.00025	0.00025	8823097
Dissolved Nickel (Ni)	mg/L	0.000631	0.000287	0.000482	0.000020	0.00054	0.00010	8823097
Dissolved Phosphorus (P)	mg/L	0.0042	0.0036	0.0071	0.0020	<0.010	0.010	8823097
Dissolved Selenium (Se)	mg/L	0.000165	0.000683	0.00597	0.000040	<0.00020	0.00020	8823097
Dissolved Silicon (Si)	mg/L	2.44	1.76	2.09	0.050	37.9	0.25	8823097
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000050	<0.000025	0.000025	8823097
Dissolved Strontium (Sr)	mg/L	0.196	0.185	0.220	0.000050	2.51	0.00025	8823097
Dissolved Thallium (Tl)	mg/L	0.0000020	<0.0000020	<0.0000020	0.0000020	<0.000010	0.000010	8823097
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	<0.0010	0.0010	8823097
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	0.00050	<0.0025	0.0025	8823097
Dissolved Uranium (U)	mg/L	0.000971	0.00247	0.00302	0.0000020	0.000258	0.000010	8823097
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	0.0019	0.0010	8823097

RDL = Reportable Detection Limit

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		SK8997	SK8998	SK8999		SK9000		
Sampling Date		2017/11/04 15:50	2017/11/04 11:27	2017/11/05 08:54		2017/11/05 10:00		
COC Number		08446347	08446347	08446347		08446347		
	UNITS	MW15-04D	MW15-01	BH95G-2	RDL	MW15-10D	RDL	QC Batch
Dissolved Zinc (Zn)	mg/L	0.00324	0.00221	0.0226	0.00010	0.00548	0.00050	8823097
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	<0.00010	0.00010	0.00191	0.00050	8823097
Dissolved Calcium (Ca)	mg/L	43.6	72.8	71.1	0.050	656	0.25	8821681
Dissolved Magnesium (Mg)	mg/L	4.56	8.11	29.2	0.050	80.1	0.25	8821681
Dissolved Potassium (K)	mg/L	1.96	0.515	0.393	0.050	8.43	0.25	8821681
Dissolved Sodium (Na)	mg/L	2.20	1.13	0.747	0.050	23.0	0.25	8821681
Dissolved Sulphur (S)	mg/L	5.7	29.0	15.6	3.0	<15	15	8821681
RDL = Reportable Detection Limit								

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		SK9001		
<b>Sampling Date</b>		2017/11/04 13:45		
<b>COC Number</b>		08446347		
	<b>UNITS</b>	<b>FIELD BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	<0.50	0.50	8822797
<b>Elements</b>				
Dissolved Mercury (Hg)	mg/L	<0.0000020	0.0000020	8823612
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	mg/L	<0.00050	0.00050	8823097
Dissolved Antimony (Sb)	mg/L	<0.000020	0.000020	8823097
Dissolved Arsenic (As)	mg/L	<0.000020	0.000020	8823097
Dissolved Barium (Ba)	mg/L	<0.000020	0.000020	8823097
Dissolved Beryllium (Be)	mg/L	<0.000010	0.000010	8823097
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000050	8823097
Dissolved Boron (B)	mg/L	<0.010	0.010	8823097
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.0000050	8823097
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00010	8823097
Dissolved Cobalt (Co)	mg/L	<0.0000050	0.0000050	8823097
Dissolved Copper (Cu)	mg/L	<0.000050	0.000050	8823097
Dissolved Iron (Fe)	mg/L	<0.0010	0.0010	8823097
Dissolved Lead (Pb)	mg/L	<0.0000050	0.0000050	8823097
Dissolved Lithium (Li)	mg/L	<0.00050	0.00050	8823097
Dissolved Manganese (Mn)	mg/L	<0.000050	0.000050	8823097
Dissolved Molybdenum (Mo)	mg/L	<0.000050	0.000050	8823097
Dissolved Nickel (Ni)	mg/L	<0.000020	0.000020	8823097
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0020	8823097
Dissolved Selenium (Se)	mg/L	<0.000040	0.000040	8823097
Dissolved Silicon (Si)	mg/L	<0.050	0.050	8823097
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000050	8823097
Dissolved Strontium (Sr)	mg/L	<0.000050	0.000050	8823097
Dissolved Thallium (Tl)	mg/L	<0.0000020	0.0000020	8823097
Dissolved Tin (Sn)	mg/L	<0.00020	0.00020	8823097
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00050	8823097
Dissolved Uranium (U)	mg/L	<0.0000020	0.0000020	8823097
Dissolved Vanadium (V)	mg/L	<0.00020	0.00020	8823097
RDL = Reportable Detection Limit				

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		SK9001		
<b>Sampling Date</b>		2017/11/04 13:45		
<b>COC Number</b>		08446347		
	<b>UNITS</b>	<b>FIELD BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Zinc (Zn)	mg/L	<0.00010	0.00010	8823097
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00010	8823097
Dissolved Calcium (Ca)	mg/L	<0.050	0.050	8821681
Dissolved Magnesium (Mg)	mg/L	<0.050	0.050	8821681
Dissolved Potassium (K)	mg/L	<0.050	0.050	8821681
Dissolved Sodium (Na)	mg/L	<0.050	0.050	8821681
Dissolved Sulphur (S)	mg/L	<3.0	3.0	8821681
RDL = Reportable Detection Limit				

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		SK8985	SK8991	SK8992		SK8999		
<b>Sampling Date</b>		2017/11/07 14:24	2017/11/02 17:50	2017/11/04 13:38		2017/11/05 08:54		
<b>COC Number</b>		08446347	08446347	08446347		08446347		
	<b>UNITS</b>	<b>TRIP BLANK</b>	<b>MW15-02</b>	<b>MW15-03D</b>	<b>QC Batch</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	<0.50	245	216	8822326	326	0.50	8822795
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**Elements**

Total Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	8823563	<0.000020	0.000020	8823563
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	<0.00050	<0.00050	0.0120	8824081	0.118	0.00050	8824081
Total Antimony (Sb)	mg/L	<0.000020	<0.000020	0.000036	8824081	0.000028	0.000020	8824081
Total Arsenic (As)	mg/L	<0.000020	0.000778	0.00343	8824081	0.000255	0.000020	8824081
Total Barium (Ba)	mg/L	<0.000020	0.0924	0.0487	8824081	0.0286	0.000020	8824081
Total Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	8824081	<0.000010	0.000010	8824081
Total Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	8824081	<0.0000050	0.0000050	8824081
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	8824081	<0.010	0.010	8824081
Total Cadmium (Cd)	mg/L	<0.0000050	<0.0000050	<0.0000050	8824081	0.00187	0.0000050	8824081
Total Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	8824081	0.00041	0.00010	8824081
Total Cobalt (Co)	mg/L	<0.0000050	0.0000426	0.000143	8824081	0.000288	0.0000050	8824081
Total Copper (Cu)	mg/L	<0.000050	0.000087	0.000605	8824081	0.00232	0.000050	8824081
Total Iron (Fe)	mg/L	<0.0010	0.0011	0.697	8824081	0.274	0.0010	8824081
Total Lead (Pb)	mg/L	<0.0000050	<0.0000050	0.0000826	8824081	0.00103	0.0000050	8824081
Total Lithium (Li)	mg/L	<0.00050	0.00187	0.00656	8824081	0.00152	0.00050	8824081
Total Manganese (Mn)	mg/L	<0.000050	0.000107	0.0588	8824081	0.00651	0.000050	8824081
Total Molybdenum (Mo)	mg/L	<0.000050	0.000756	0.00257	8824081	0.00177	0.000050	8824081
Total Nickel (Ni)	mg/L	<0.000020	0.000170	0.000224	8824081	0.00170	0.000020	8824081
Total Phosphorus (P)	mg/L	0.0022	0.0033	0.0068	8824081	0.0276	0.0020	8824081
Total Selenium (Se)	mg/L	<0.000040	0.00193	<0.000040	8824081	0.00616	0.000040	8824081
Total Silicon (Si)	mg/L	<0.050	2.21	4.65	8824081	2.33	0.050	8824081
Total Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	8824081	0.000112	0.0000050	8824081
Total Strontium (Sr)	mg/L	<0.000050	0.284	0.252	8824081	0.238	0.000050	8824081
Total Thallium (Tl)	mg/L	<0.0000020	<0.0000020	<0.0000020	8824081	0.0000040	0.0000020	8824081
Total Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	8824081	<0.00020	0.00020	8824081
Total Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	8824081	0.00557	0.00050	8824081
Total Uranium (U)	mg/L	<0.0000020	0.00317	0.00284	8824081	0.00303	0.0000020	8824081
Total Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	8824081	0.00044	0.00020	8824081

RDL = Reportable Detection Limit

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		SK8985	SK8991	SK8992		SK8999		
Sampling Date		2017/11/07 14:24	2017/11/02 17:50	2017/11/04 13:38		2017/11/05 08:54		
COC Number		08446347	08446347	08446347		08446347		
	UNITS	TRIP BLANK	MW15-02	MW15-03D	QC Batch	BH95G-2	RDL	QC Batch
Total Zinc (Zn)	mg/L	<0.00010	0.00018	0.00050	8824081	0.0474	0.00010	8824081
Total Zirconium (Zr)	mg/L	<0.00010	<0.00010	0.00055	8824081	0.00012	0.00010	8824081
Total Calcium (Ca)	mg/L	<0.050	77.8	57.8	8822327	74.4	0.050	8822327
Total Magnesium (Mg)	mg/L	<0.050	12.4	17.4	8822327	34.1	0.050	8822327
Total Potassium (K)	mg/L	<0.050	2.46	2.58	8822327	0.484	0.050	8822327
Total Sodium (Na)	mg/L	<0.050	0.786	1.51	8822327	0.786	0.050	8822327
Total Sulphur (S)	mg/L	<3.0	20.1	8.4	8822327	18.0	3.0	8822327
RDL = Reportable Detection Limit								

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		SK9001		
<b>Sampling Date</b>		2017/11/04 13:45		
<b>COC Number</b>		08446347		
	<b>UNITS</b>	<b>FIELD BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	<0.50	0.50	8822795
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.000020	0.000020	8823563
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	0.00051	0.00050	8824081
Total Antimony (Sb)	mg/L	<0.000020	0.000020	8824081
Total Arsenic (As)	mg/L	<0.000020	0.000020	8824081
Total Barium (Ba)	mg/L	<0.000020	0.000020	8824081
Total Beryllium (Be)	mg/L	<0.000010	0.000010	8824081
Total Bismuth (Bi)	mg/L	0.0000078	0.0000050	8824081
Total Boron (B)	mg/L	<0.010	0.010	8824081
Total Cadmium (Cd)	mg/L	<0.0000050	0.0000050	8824081
Total Chromium (Cr)	mg/L	<0.00010	0.00010	8824081
Total Cobalt (Co)	mg/L	<0.0000050	0.0000050	8824081
Total Copper (Cu)	mg/L	<0.000050	0.000050	8824081
Total Iron (Fe)	mg/L	<0.0010	0.0010	8824081
Total Lead (Pb)	mg/L	0.0000060	0.0000050	8824081
Total Lithium (Li)	mg/L	<0.00050	0.00050	8824081
Total Manganese (Mn)	mg/L	<0.000050	0.000050	8824081
Total Molybdenum (Mo)	mg/L	<0.000050	0.000050	8824081
Total Nickel (Ni)	mg/L	<0.000020	0.000020	8824081
Total Phosphorus (P)	mg/L	<0.0020	0.0020	8824081
Total Selenium (Se)	mg/L	<0.000040	0.000040	8824081
Total Silicon (Si)	mg/L	<0.050	0.050	8824081
Total Silver (Ag)	mg/L	<0.0000050	0.0000050	8824081
Total Strontium (Sr)	mg/L	<0.000050	0.000050	8824081
Total Thallium (Tl)	mg/L	<0.0000020	0.0000020	8824081
Total Tin (Sn)	mg/L	<0.00020	0.00020	8824081
Total Titanium (Ti)	mg/L	<0.00050	0.00050	8824081
Total Uranium (U)	mg/L	0.0000020	0.0000020	8824081
Total Vanadium (V)	mg/L	<0.00020	0.00020	8824081
RDL = Reportable Detection Limit				



Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		SK9001		
<b>Sampling Date</b>		2017/11/04 13:45		
<b>COC Number</b>		08446347		
	<b>UNITS</b>	<b>FIELD BLANK</b>	<b>RDL</b>	<b>QC Batch</b>
Total Zinc (Zn)	mg/L	<0.00010	0.00010	8824081
Total Zirconium (Zr)	mg/L	<0.00010	0.00010	8824081
Total Calcium (Ca)	mg/L	<0.050	0.050	8822327
Total Magnesium (Mg)	mg/L	<0.050	0.050	8822327
Total Potassium (K)	mg/L	<0.050	0.050	8822327
Total Sodium (Na)	mg/L	<0.050	0.050	8822327
Total Sulphur (S)	mg/L	<3.0	3.0	8822327
RDL = Reportable Detection Limit				

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		SK8986	SK8987	SK8988	SK8989	SK8990		
Sampling Date		2017/11/02 13:50	2017/11/02 11:48	2017/11/02 12:30	2017/11/02 15:00	2017/11/02 15:50		
COC Number		08446347	08446347	08446347	08446347	08446347		
	UNITS	MW16-15D	MW15-11S	BH95G-21	MW16-17	BH95G-33D	RDL	QC Batch

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	205	392	226	225	287	0.50	8822326
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**Elements**

Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000022	0.0000020	8823563
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	1.31	1.99	1.74	1.42	1.11	0.0030	8823996
Total Antimony (Sb)	mg/L	0.000212	0.000162	0.000068	0.000029	0.000103	0.000020	8823996
Total Arsenic (As)	mg/L	0.0223	0.00353	0.00312	0.000335	0.0110	0.000020	8823996
Total Barium (Ba)	mg/L	0.0744	0.153	0.284	0.274	0.141	0.000050	8823996
Total Beryllium (Be)	mg/L	0.000131	0.000223	0.000162	0.000172	0.000184	0.000010	8823996
Total Bismuth (Bi)	mg/L	0.000050	<0.000010	0.000066	0.000016	0.000023	0.000010	8823996
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8823996
Total Cadmium (Cd)	mg/L	0.00740	0.000872	0.000114	0.0000573	0.000123	0.0000050	8823996
Total Chromium (Cr)	mg/L	0.00200	0.00992	0.00209	0.00272	0.00185	0.00010	8823996
Total Cobalt (Co)	mg/L	0.00146	0.00286	0.00320	0.000691	0.00836	0.000010	8823996
Total Copper (Cu)	mg/L	0.00810	0.00699	0.0357	0.00301	0.0118	0.00010	8823996
Total Iron (Fe)	mg/L	6.79	16.1	5.94	11.0	4.61	0.0050	8823996
Total Lead (Pb)	mg/L	0.0225	0.0136	0.0100	0.00172	0.00320	0.000020	8823996
Total Lithium (Li)	mg/L	0.00429	0.0122	0.00792	0.00358	0.00283	0.00050	8823996
Total Manganese (Mn)	mg/L	0.350	0.789	0.132	0.343	1.24	0.00010	8823996
Total Molybdenum (Mo)	mg/L	0.000638	0.00443	0.000140	0.000372	0.000936	0.000050	8823996
Total Nickel (Ni)	mg/L	0.00176	0.0106	0.00483	0.00201	0.0386	0.00010	8823996
Total Phosphorus (P)	mg/L	0.199	0.985	0.596	0.264	0.516	0.0050	8823996
Total Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	0.00246	0.000040	8823996
Total Silicon (Si)	mg/L	4.37	6.35	5.49	5.58	4.43	0.050	8823996
Total Silver (Ag)	mg/L	0.000101	0.000315	0.000029	0.000212	0.000085	0.000010	8823996
Total Strontium (Sr)	mg/L	0.186	0.517	0.210	0.187	0.275	0.000050	8823996
Total Thallium (Tl)	mg/L	0.0000607	0.0000581	0.0000171	0.0000168	0.0000065	0.0000020	8823996
Total Tin (Sn)	mg/L	0.00041	<0.00020	<0.00020	<0.00020	0.00030	0.00020	8823996
Total Titanium (Ti)	mg/L	0.0405	0.0797	0.0255	0.0296	0.0303	0.0020	8823996
Total Uranium (U)	mg/L	0.00474	0.0221	0.00557	0.00571	0.00729	0.0000050	8823996
Total Vanadium (V)	mg/L	0.00214	0.00937	0.00536	0.00331	0.00450	0.00020	8823996

RDL = Reportable Detection Limit

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		SK8986	SK8987	SK8988	SK8989	SK8990		
Sampling Date		2017/11/02 13:50	2017/11/02 11:48	2017/11/02 12:30	2017/11/02 15:00	2017/11/02 15:50		
COC Number		08446347	08446347	08446347	08446347	08446347		
	UNITS	MW16-15D	MW15-11S	BH95G-21	MW16-17	BH95G-33D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.932	0.0674	0.0747	0.0476	0.0306	0.0010	8823996
Total Zirconium (Zr)	mg/L	0.00711	0.00605	0.00254	0.00840	0.00175	0.00010	8823996
Total Calcium (Ca)	mg/L	65.7	110	68.5	73.1	93.8	0.25	8822327
Total Magnesium (Mg)	mg/L	10.0	28.3	13.4	10.3	12.9	0.25	8822327
Total Potassium (K)	mg/L	3.13	5.17	1.90	1.82	1.32	0.25	8822327
Total Sodium (Na)	mg/L	2.73	3.27	1.16	1.35	0.91	0.25	8822327
Total Sulphur (S)	mg/L	23.9	28.5	16.1	11.4	24.4	3.0	8822327
RDL = Reportable Detection Limit								

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		SK8993	SK8994	SK8995	SK8996		
Sampling Date		2017/11/03 14:04	2017/11/03 14:50	2017/11/03 12:00	2017/11/04 14:20		
COC Number		08446347	08446347	08446347	08446347		
	<b>UNITS</b>	<b>BH95G-25S</b>	<b>BH95G-25D</b>	<b>DUP-1</b>	<b>MW15-04S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	559	632	635	144	0.50	8822326
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	0.000023	0.000020	8823563
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	1.85	4.33	1.33	2.76	0.0030	8823996
Total Antimony (Sb)	mg/L	0.000055	0.000511	0.000194	0.000032	0.000020	8823996
Total Arsenic (As)	mg/L	0.00864	0.00443	0.00265	0.00308	0.000020	8823996
Total Barium (Ba)	mg/L	0.0962	0.524	0.0839	0.220	0.000050	8823996
Total Beryllium (Be)	mg/L	0.000316	0.000415	0.000339	0.000157	0.000010	8823996
Total Bismuth (Bi)	mg/L	0.000084	0.000249	0.000072	0.000058	0.000010	8823996
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	8823996
Total Cadmium (Cd)	mg/L	0.000224	0.000225	0.000194	0.000289	0.000050	8823996
Total Chromium (Cr)	mg/L	0.00435	0.00423	0.00150	0.00584	0.00010	8823996
Total Cobalt (Co)	mg/L	0.00288	0.00365	0.00164	0.00802	0.000010	8823996
Total Copper (Cu)	mg/L	0.00659	0.00921	0.00624	0.0257	0.00010	8823996
Total Iron (Fe)	mg/L	13.5	14.8	10.7	3.94	0.0050	8823996
Total Lead (Pb)	mg/L	0.0124	0.0149	0.0119	0.0142	0.000020	8823996
Total Lithium (Li)	mg/L	0.0145	0.0151	0.0139	0.00207	0.00050	8823996
Total Manganese (Mn)	mg/L	0.488	0.655	0.626	0.405	0.00010	8823996
Total Molybdenum (Mo)	mg/L	0.00139	0.000429	0.000298	0.000795	0.000050	8823996
Total Nickel (Ni)	mg/L	0.00523	0.00535	0.00264	0.00830	0.00010	8823996
Total Phosphorus (P)	mg/L	0.589	0.485	0.478	0.872	0.0050	8823996
Total Selenium (Se)	mg/L	<0.000040	0.000059	<0.000040	0.000683	0.000040	8823996
Total Silicon (Si)	mg/L	8.42	11.3	7.08	5.93	0.050	8823996
Total Silver (Ag)	mg/L	0.000019	0.000093	0.000013	0.00111	0.000010	8823996
Total Strontium (Sr)	mg/L	0.461	0.495	0.517	0.180	0.000050	8823996
Total Thallium (Tl)	mg/L	0.0000222	0.0000735	0.0000279	0.0000144	0.000020	8823996
Total Tin (Sn)	mg/L	<0.00020	0.00026	<0.00020	<0.00020	0.00020	8823996
Total Titanium (Ti)	mg/L	0.0606	0.0776	0.0289	0.0490	0.0020	8823996
Total Uranium (U)	mg/L	0.00448	0.00908	0.00862	0.000872	0.000050	8823996
Total Vanadium (V)	mg/L	0.00646	0.00850	0.00390	0.0107	0.00020	8823996
RDL = Reportable Detection Limit							

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		SK8993	SK8994	SK8995	SK8996		
Sampling Date		2017/11/03 14:04	2017/11/03 14:50	2017/11/03 12:00	2017/11/04 14:20		
COC Number		08446347	08446347	08446347	08446347		
	UNITS	BH95G-25S	BH95G-25D	DUP-1	MW15-04S	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0235	0.287	0.281	0.0283	0.0010	8823996
Total Zirconium (Zr)	mg/L	0.00073	0.00335	0.00433	0.00037	0.00010	8823996
Total Calcium (Ca)	mg/L	151	153	155	49.9	0.25	8822327
Total Magnesium (Mg)	mg/L	44.1	61.0	60.1	4.84	0.25	8822327
Total Potassium (K)	mg/L	6.50	5.71	5.12	1.56	0.25	8822327
Total Sodium (Na)	mg/L	2.49	2.38	2.31	0.95	0.25	8822327
Total Sulphur (S)	mg/L	67.2	83.5	84.9	<3.0	3.0	8822327
RDL = Reportable Detection Limit							

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		SK8997	SK8998		SK9000		
Sampling Date		2017/11/04 15:50	2017/11/04 11:27		2017/11/05 10:00		
COC Number		08446347	08446347		08446347		
	UNITS	MW15-04D	MW15-01	RDL	MW15-10D	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	188	249	0.50	1880	0.50	8822795
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	0.0000027	0.0000020	<0.0000020	0.0000020	8823563
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	2.42	0.449	0.0030	2.00	0.015	8823996
Total Antimony (Sb)	mg/L	0.000076	0.000082	0.000020	0.00010	0.00010	8823996
Total Arsenic (As)	mg/L	0.00409	0.000803	0.000020	0.00103	0.00010	8823996
Total Barium (Ba)	mg/L	0.122	0.0364	0.000050	0.386	0.00025	8823996
Total Beryllium (Be)	mg/L	0.000405	0.000029	0.000010	0.00103	0.000050	8823996
Total Bismuth (Bi)	mg/L	0.000127	<0.000010	0.000010	0.000163	0.000050	8823996
Total Boron (B)	mg/L	<0.010	<0.010	0.010	<0.050	0.050	8823996
Total Cadmium (Cd)	mg/L	0.000240	0.0000485	0.0000050	0.00105	0.000025	8823996
Total Chromium (Cr)	mg/L	0.00710	0.00158	0.00010	0.00442	0.00050	8823996
Total Cobalt (Co)	mg/L	0.00311	0.000944	0.000010	0.00180	0.000050	8823996
Total Copper (Cu)	mg/L	0.0256	0.00276	0.00010	0.00855	0.00050	8823996
Total Iron (Fe)	mg/L	3.57	2.69	0.0050	29.9	0.025	8823996
Total Lead (Pb)	mg/L	0.00703	0.000922	0.000020	0.0116	0.00010	8823996
Total Lithium (Li)	mg/L	0.00240	0.00192	0.00050	0.228	0.0025	8823996
Total Manganese (Mn)	mg/L	0.266	0.0288	0.00010	4.69	0.00050	8823996
Total Molybdenum (Mo)	mg/L	0.00221	0.000903	0.000050	0.00064	0.00025	8823996
Total Nickel (Ni)	mg/L	0.00726	0.00207	0.00010	0.00309	0.00050	8823996
Total Phosphorus (P)	mg/L	0.336	0.0536	0.0050	0.080	0.025	8823996
Total Selenium (Se)	mg/L	0.000308	0.000854	0.000040	0.00026	0.00020	8823996
Total Silicon (Si)	mg/L	6.67	2.53	0.050	35.1	0.25	8823996
Total Silver (Ag)	mg/L	0.000104	0.000442	0.000010	0.000518	0.000050	8823996
Total Strontium (Sr)	mg/L	0.267	0.203	0.000050	2.26	0.00025	8823996
Total Thallium (Tl)	mg/L	0.0000510	0.0000068	0.0000020	0.000011	0.000010	8823996
Total Tin (Sn)	mg/L	0.00035	<0.00020	0.00020	<0.0010	0.0010	8823996
Total Titanium (Ti)	mg/L	0.0296	0.0264	0.0020	0.086	0.010	8823996
Total Uranium (U)	mg/L	0.00227	0.00259	0.0000050	0.000297	0.000025	8823996
Total Vanadium (V)	mg/L	0.00320	0.00225	0.00020	0.0067	0.0010	8823996
RDL = Reportable Detection Limit							

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		SK8997	SK8998		SK9000		
Sampling Date		2017/11/04 15:50	2017/11/04 11:27		2017/11/05 10:00		
COC Number		08446347	08446347		08446347		
	UNITS	MW15-04D	MW15-01	RDL	MW15-10D	RDL	QC Batch
Total Zinc (Zn)	mg/L	0.0191	0.0140	0.0010	0.0125	0.0050	8823996
Total Zirconium (Zr)	mg/L	0.00076	0.00072 (1)	0.00010	0.00188	0.00050	8823996
Total Calcium (Ca)	mg/L	64.8	84.5	0.25	624	1.3	8822327
Total Magnesium (Mg)	mg/L	6.40	9.32	0.25	78.6	1.3	8822327
Total Potassium (K)	mg/L	2.82	0.66	0.25	8.7	1.3	8822327
Total Sodium (Na)	mg/L	2.35	1.18	0.25	22.0	1.3	8822327
Total Sulphur (S)	mg/L	6.8	32.1	3.0	<15	15	8822327
RDL = Reportable Detection Limit							
(1) Matrix Spike outside acceptance criteria due to sample matrix interference, re-analysis yields similar results.							

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8985  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/11/07  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825016	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8821680	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Elements by ICPMS Low Level (total)	ICP/CRCM	8824081	N/A	2017/11/09	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8985 Dup  
**Sample ID:** TRIP BLANK  
**Matrix:** Water

**Collected:** 2017/11/07  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	Name REDACTED
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	

**Maxxam ID:** SK8986  
**Sample ID:** MW16-15D  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	



Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8986  
**Sample ID:** MW16-15D  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	Name REDACTED
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8821680	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824494	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824495	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8986 Dup  
**Sample ID:** MW16-15D  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	Name REDACTED
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	

**Maxxam ID:** SK8987  
**Sample ID:** MW15-11S  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8987  
**Sample ID:** MW15-11S  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Name REDACTED
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8821680	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/09	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824494	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824495	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	Name REDACTED
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8987 Dup  
**Sample ID:** MW15-11S  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	Name REDACTED

**Maxxam ID:** SK8988  
**Sample ID:** BH95G-21  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8821680	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8988  
**Sample ID:** BH95G-21  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	Name REDACTED
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8989  
**Sample ID:** MW16-17  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8821680	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/09	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8989  
**Sample ID:** MW16-17  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	Name REDACTED
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8990  
**Sample ID:** BH95G-33D  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8991  
**Sample ID:** MW15-02  
**Matrix:** Water

**Collected:** 2017/11/02  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Elements by ICPMS Low Level (total)	ICP/CRCM	8824081	N/A	2017/11/09	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8992  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8992  
**Sample ID:** MW15-03D  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Ion Balance	CALC	8822799	N/A	2017/11/09	Name REDACTED
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Elements by ICPMS Low Level (total)	ICP/CRCM	8824081	N/A	2017/11/09	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8993  
**Sample ID:** BH95G-25S  
**Matrix:** Water

**Collected:** 2017/11/03  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/09	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8993  
**Sample ID:** BH95G-25S  
**Matrix:** Water

**Collected:** 2017/11/03  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	Name REDACTED
Sulphate - Low Level	KONE/COL	8825927	N/A	2017/11/09	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8994  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/11/03  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/09	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	



Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8994 Dup  
**Sample ID:** BH95G-25D  
**Matrix:** Water

**Collected:** 2017/11/03  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	

**Maxxam ID:** SK8995  
**Sample ID:** DUP-1  
**Matrix:** Water

**Collected:** 2017/11/03  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAF	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAF	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/09	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	



Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8996  
**Sample ID:** MW15-04S  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822326	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8997  
**Sample ID:** MW15-04D  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822795	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8997  
**Sample ID:** MW15-04D  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed
Ion Balance	CALC	8822799	N/A	2017/11/09
Sum of cations, anions	CALC	8822801	N/A	2017/11/09
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09

Name REDACTED

**Maxxam ID:** SK8998  
**Sample ID:** MW15-01  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822795	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	

Name REDACTED

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8998  
**Sample ID:** MW15-01  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	Name REDACTED
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK8998 Dup  
**Sample ID:** MW15-01  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	Name REDACTED

**Maxxam ID:** SK8999  
**Sample ID:** BH95G-2  
**Matrix:** Water

**Collected:** 2017/11/05  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822795	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Elements by ICPMS Low Level (total)	ICP/CRCM	8824081	N/A	2017/11/09	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8825927	N/A	2017/11/09	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK8999  
**Sample ID:** BH95G-2  
**Matrix:** Water

**Collected:** 2017/11/05  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	Name REDACTED

**Maxxam ID:** SK9000  
**Sample ID:** MW15-10D  
**Matrix:** Water

**Collected:** 2017/11/05  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825086	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822795	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/09	
Elements by ICPMS Digested LL (total)	ICP/CRCM	8823996	2017/11/08	2017/11/10	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK9001  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Acidity pH 4.5 & pH 8.3 (as CaCO3)	AT/PH	8825016	2017/11/08	2017/11/08	Name REDACTED
Alkalinity - Low Level	AT/ALK	8824254	2017/11/08	2017/11/08	
Chloride - Low Level	KONE/COL	8824323	N/A	2017/11/08	
Carbon (DOC) - field filtered/preserved	TRAA/COL	8825317	N/A	2017/11/09	

Maxxam Job #: B799265  
Report Date: 2017/11/14

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

**TEST SUMMARY**

**Maxxam ID:** SK9001  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Conductance - water	AT/ALK	8824247	2017/11/08	2017/11/08	Name REDACTED
Fluoride - Low Level	ISE/ISE	8823749	N/A	2017/11/08	
Hardness Total (calculated as CaCO3)	CALC	8822795	N/A	2017/11/10	
Hardness (calculated as CaCO3)	CALC	8822797	N/A	2017/11/09	
Mercury (Dissolved-LowLevel) by CVAf	CV/AF	8823612	N/A	2017/11/08	
Mercury (Total-LowLevel) by CVAf	CV/AF	8823563	2017/11/08	2017/11/08	
Ion Balance (as Cations/Anions Ratio)	CALC	8822798	N/A	2017/11/09	
Ion Balance	CALC	8822799	N/A	2017/11/09	
Sum of cations, anions	CALC	8822801	N/A	2017/11/09	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	ICP/CRCM	8821681	N/A	2017/11/09	
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	
Na, K, Ca, Mg, S by CRC ICPMS (total)	ICP/CRCM	8822327	N/A	2017/11/10	
Elements by ICPMS Low Level (total)	ICP/CRCM	8824081	N/A	2017/11/09	
Ammonia-N Low Level (Preserved)	KONE/COL	8823677	N/A	2017/11/08	
Nitrate+Nitrite (N) (low level)	TRAA/COL	8824492	N/A	2017/11/08	
Nitrite (N) (low level)	TRAA/COL	8824493	N/A	2017/11/08	
Nitrogen - Nitrate (as N) Low Level Calc	CALC	8822166	N/A	2017/11/09	
Filter and HNO3 Preserve for Metals	ICP	ONSITE	N/A	2017/11/07	
pH Water	AT/ALK	8824240	2017/11/08	2017/11/08	
Sulphate - Low Level	KONE/COL	8824324	N/A	2017/11/08	
Phosphorus-P (LL Tot, dissolved) - UF/UP	KONE/COL	8824297	2017/11/08	2017/11/08	
Total Phosphorus - Low Level Unpreserved	KONE/COL	8824300	2017/11/08	2017/11/08	
Total Suspended Solids-Low Level	BAL/BAL	8823651	2017/11/08	2017/11/09	

**Maxxam ID:** SK9001 Dup  
**Sample ID:** FIELD BLANK  
**Matrix:** Water

**Collected:** 2017/11/04  
**Shipped:**  
**Received:** 2017/11/06

Test Description	Instrumentation	Batch	Extracted	Date Analyzed	Analyst
Elements by ICPMS Low Level (dissolved)	ICP/CRCM	8823097	N/A	2017/11/08	Name REDACTED

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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.0°C
Package 2	2.7°C
Package 3	3.0°C
Package 4	1.0°C

Sample SK8985 [TRIP BLANK] : Ion Balance: NC = Not Calculable due to low ion sum [ $< 0.4$  meq/L].

Sample SK8986 [MW16-15D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample received past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Nitrate+Nitrite (N) (low level). Sample received past method specified hold time for Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8987 [MW15-11S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample received past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Nitrate+Nitrite (N) (low level). Sample received past method specified hold time for Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8988 [BH95G-21] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample received past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Nitrate+Nitrite (N) (low level). Sample received past method specified hold time for Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8989 [MW16-17] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample received past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Nitrate+Nitrite (N) (low level). Sample received past method specified hold time for Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8990 [BH95G-33D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample received past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Nitrate+Nitrite (N) (low level). Sample received past method specified hold time for Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.



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Sample SK8991 [MW15-02] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample received past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample received past method specified hold time for Nitrate+Nitrite (N) (low level). Sample received past method specified hold time for Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level).

Sample SK8992 [MW15-03D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level).

Sample SK8993 [BH95G-25S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8994 [BH95G-25D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8995 [DUP-1] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8996 [MW15-04S] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8997 [MW15-04D] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK8998 [MW15-01] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sample was analyzed past method specified hold time for Nitrite (N) (low level). Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK9000 [MW15-10D] : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample SK9001 [FIELD BLANK] : Sample analyzed past method specified hold time for Phosphorus-P (LL Tot, dissolved) - UF/UP. {Exceedance of hold time increases the uncertainty of test results but does not necessarily imply that results are compromised.} Sample analyzed past method specified hold time for Total Phosphorus - Low Level Unpreserved. Sample was analyzed past method specified hold time for Nitrate+Nitrite (N) (low level). Sam

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**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER) Comments**

Sample SK9000 [MW15-10D] Elements by ICPMS Low Level (dissolved): RDL raised due to concentration over linear range, sample dilution required.

**LL TOTAL METALS (DIGESTED) WITH CV HG Comments**

Sample SK9000 [MW15-10D] Elements by ICPMS Digested LL (total): RDL raised due to concentration over linear range, sample dilution required.

Sample SK8988, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample SK8990, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample SK8991, Elements by ICPMS Low Level (dissolved): Test repeated.

**Results relate only to the items tested.**



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**QUALITY ASSURANCE REPORT**

ALEXCO ENVIRONMENTAL GROUP INC.  
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Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8823097	Dissolved Aluminum (Al)	2017/11/08	102	80 - 120	111	80 - 120	<0.00050	mg/L	NC	20
8823097	Dissolved Antimony (Sb)	2017/11/08	94	80 - 120	92	80 - 120	<0.000020	mg/L	NC	20
8823097	Dissolved Arsenic (As)	2017/11/08	NC	80 - 120	96	80 - 120	<0.000020	mg/L	NC	20
8823097	Dissolved Barium (Ba)	2017/11/08	NC	80 - 120	93	80 - 120	<0.000020	mg/L	NC	20
8823097	Dissolved Beryllium (Be)	2017/11/08	96	80 - 120	101	80 - 120	<0.000010	mg/L	NC	20
8823097	Dissolved Bismuth (Bi)	2017/11/08	96	80 - 120	94	80 - 120	<0.0000050	mg/L	NC	20
8823097	Dissolved Boron (B)	2017/11/08	98	80 - 120	100	80 - 120	<0.010	mg/L	NC	20
8823097	Dissolved Cadmium (Cd)	2017/11/08	92	80 - 120	93	80 - 120	<0.0000050	mg/L	NC	20
8823097	Dissolved Chromium (Cr)	2017/11/08	90	80 - 120	93	80 - 120	<0.00010	mg/L	NC	20
8823097	Dissolved Cobalt (Co)	2017/11/08	91	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8823097	Dissolved Copper (Cu)	2017/11/08	87	80 - 120	94	80 - 120	<0.000050	mg/L	NC	20
8823097	Dissolved Iron (Fe)	2017/11/08	99	80 - 120	94	80 - 120	<0.0010	mg/L	NC	20
8823097	Dissolved Lead (Pb)	2017/11/08	95	80 - 120	94	80 - 120	<0.0000050	mg/L	NC	20
8823097	Dissolved Lithium (Li)	2017/11/08	98	80 - 120	101	80 - 120	<0.00050	mg/L	NC	20
8823097	Dissolved Manganese (Mn)	2017/11/08	NC	80 - 120	94	80 - 120	<0.000050	mg/L	NC	20
8823097	Dissolved Molybdenum (Mo)	2017/11/08	99	80 - 120	94	80 - 120	<0.000050	mg/L	NC	20
8823097	Dissolved Nickel (Ni)	2017/11/08	90	80 - 120	97	80 - 120	<0.000020	mg/L	NC	20
8823097	Dissolved Phosphorus (P)	2017/11/08					<0.0020	mg/L	NC	20
8823097	Dissolved Selenium (Se)	2017/11/08	100	80 - 120	101	80 - 120	<0.000040	mg/L	NC	20
8823097	Dissolved Silicon (Si)	2017/11/08					<0.050	mg/L	NC	20
8823097	Dissolved Silver (Ag)	2017/11/08	100	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8823097	Dissolved Strontium (Sr)	2017/11/08	NC	80 - 120	92	80 - 120	<0.000050	mg/L	NC	20
8823097	Dissolved Thallium (Tl)	2017/11/08	95	80 - 120	93	80 - 120	<0.0000020	mg/L	NC	20
8823097	Dissolved Tin (Sn)	2017/11/08	92	80 - 120	87	80 - 120	<0.00020	mg/L	NC	20
8823097	Dissolved Titanium (Ti)	2017/11/08	95	80 - 120	95	80 - 120	<0.00050	mg/L	NC	20
8823097	Dissolved Uranium (U)	2017/11/08	103	80 - 120	94	80 - 120	<0.0000020	mg/L	NC	20
8823097	Dissolved Vanadium (V)	2017/11/08	91	80 - 120	92	80 - 120	<0.00020	mg/L	NC	20
8823097	Dissolved Zinc (Zn)	2017/11/08	92	80 - 120	97	80 - 120	<0.00010	mg/L	NC	20
8823097	Dissolved Zirconium (Zr)	2017/11/08	91	80 - 120	86	80 - 120	<0.00010	mg/L	NC	20
8823563	Total Mercury (Hg)	2017/11/08	97	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8823612	Dissolved Mercury (Hg)	2017/11/08	97	80 - 120	103	80 - 120	<0.0000020	mg/L	NC	20

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Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8823651	Total Suspended Solids	2017/11/09			96	80 - 120	<1.0	mg/L		
8823677	Total Ammonia (N)	2017/11/08	94	80 - 120	99	80 - 120	<0.0050	mg/L	8.0	20
8823749	Fluoride (F)	2017/11/08	101	80 - 120	102	80 - 120	0.014, RDL=0.010	mg/L	0	20
8823996	Total Aluminum (Al)	2017/11/10	NC	80 - 120	99	80 - 120	<0.0030	mg/L	4.0	20
8823996	Total Antimony (Sb)	2017/11/10	104	80 - 120	103	80 - 120	<0.000020	mg/L	6.3	20
8823996	Total Arsenic (As)	2017/11/10	110	80 - 120	111	80 - 120	<0.000020	mg/L	3.4	20
8823996	Total Barium (Ba)	2017/11/10	NC	80 - 120	102	80 - 120	<0.000050	mg/L	3.5	20
8823996	Total Beryllium (Be)	2017/11/10	100	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8823996	Total Bismuth (Bi)	2017/11/10	108	80 - 120	112	80 - 120	<0.000010	mg/L	NC	20
8823996	Total Boron (B)	2017/11/10	99	80 - 120	102	80 - 120	<0.010	mg/L	NC	20
8823996	Total Cadmium (Cd)	2017/11/10	101	80 - 120	105	80 - 120	<0.0000050	mg/L	2.1	20
8823996	Total Chromium (Cr)	2017/11/10	105	80 - 120	108	80 - 120	<0.00010	mg/L	2.0	20
8823996	Total Cobalt (Co)	2017/11/10	102	80 - 120	108	80 - 120	<0.000010	mg/L	0.84	20
8823996	Total Copper (Cu)	2017/11/10	99	80 - 120	106	80 - 120	<0.00010	mg/L	0.73	20
8823996	Total Iron (Fe)	2017/11/10	NC	80 - 120	117	80 - 120	<0.0050	mg/L	5.8	20
8823996	Total Lead (Pb)	2017/11/10	95	80 - 120	99	80 - 120	<0.000020	mg/L	0.62	20
8823996	Total Lithium (Li)	2017/11/10	101	80 - 120	104	80 - 120	<0.00050	mg/L	7.1	20
8823996	Total Manganese (Mn)	2017/11/10	NC	80 - 120	109	80 - 120	<0.00010	mg/L	0.76	20
8823996	Total Molybdenum (Mo)	2017/11/10	109	80 - 120	106	80 - 120	<0.000050	mg/L	3.0	20
8823996	Total Nickel (Ni)	2017/11/10	102	80 - 120	109	80 - 120	<0.00010	mg/L	2.6	20
8823996	Total Phosphorus (P)	2017/11/10					<0.0050	mg/L	2.2	20
8823996	Total Selenium (Se)	2017/11/10	105	80 - 120	105	80 - 120	<0.000040	mg/L	4.8	20
8823996	Total Silicon (Si)	2017/11/10					<0.050	mg/L	5.9	20
8823996	Total Silver (Ag)	2017/11/10	110	80 - 120	111	80 - 120	<0.000010	mg/L	9.4	20
8823996	Total Strontium (Sr)	2017/11/10	NC	80 - 120	101	80 - 120	<0.000050	mg/L	2.6	20
8823996	Total Thallium (Tl)	2017/11/10	99	80 - 120	101	80 - 120	<0.0000020	mg/L	11	20
8823996	Total Tin (Sn)	2017/11/10	100	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8823996	Total Titanium (Ti)	2017/11/10	NC	80 - 120	98	80 - 120	<0.0020	mg/L	1.0	20
8823996	Total Uranium (U)	2017/11/10	98	80 - 120	98	80 - 120	<0.0000050	mg/L	0.86	20
8823996	Total Vanadium (V)	2017/11/10	115	80 - 120	109	80 - 120	<0.00020	mg/L	2.6	20

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Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8823996	Total Zinc (Zn)	2017/11/10	NC	80 - 120	117	80 - 120	<0.0010	mg/L	0.95	20
8823996	Total Zirconium (Zr)	2017/11/10	192 (1)	80 - 120	91	80 - 120	<0.00010	mg/L	3.0	20
8824081	Total Aluminum (Al)	2017/11/09	96	80 - 120	101	80 - 120	<0.00050	mg/L	NC	20
8824081	Total Antimony (Sb)	2017/11/09	100	80 - 120	105	80 - 120	<0.000020	mg/L	NC	20
8824081	Total Arsenic (As)	2017/11/09	97	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8824081	Total Barium (Ba)	2017/11/09	97	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8824081	Total Beryllium (Be)	2017/11/09	94	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
8824081	Total Bismuth (Bi)	2017/11/09	98	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8824081	Total Boron (B)	2017/11/09	96	80 - 120	98	80 - 120	<0.010	mg/L	NC	20
8824081	Total Cadmium (Cd)	2017/11/09	101	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8824081	Total Chromium (Cr)	2017/11/09	101	80 - 120	106	80 - 120	<0.00010	mg/L	NC	20
8824081	Total Cobalt (Co)	2017/11/09	102	80 - 120	109	80 - 120	<0.0000050	mg/L	NC	20
8824081	Total Copper (Cu)	2017/11/09	101	80 - 120	106	80 - 120	<0.000050	mg/L	NC	20
8824081	Total Iron (Fe)	2017/11/09	106	80 - 120	110	80 - 120	<0.0010	mg/L	NC	20
8824081	Total Lead (Pb)	2017/11/09	96	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8824081	Total Lithium (Li)	2017/11/09	97	80 - 120	100	80 - 120	<0.00050	mg/L	NC	20
8824081	Total Manganese (Mn)	2017/11/09	95	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8824081	Total Molybdenum (Mo)	2017/11/09	99	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8824081	Total Nickel (Ni)	2017/11/09	103	80 - 120	108	80 - 120	<0.000020	mg/L	NC	20
8824081	Total Phosphorus (P)	2017/11/09					<0.0020	mg/L		
8824081	Total Selenium (Se)	2017/11/09	102	80 - 120	107	80 - 120	<0.000040	mg/L	NC	20
8824081	Total Silicon (Si)	2017/11/09					<0.050	mg/L	NC	20
8824081	Total Silver (Ag)	2017/11/09	107	80 - 120	113	80 - 120	<0.0000050	mg/L	NC	20
8824081	Total Strontium (Sr)	2017/11/09	94	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8824081	Total Thallium (Tl)	2017/11/09	97	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8824081	Total Tin (Sn)	2017/11/09	103	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8824081	Total Titanium (Ti)	2017/11/09	93	80 - 120	97	80 - 120	<0.00050	mg/L	NC	20
8824081	Total Uranium (U)	2017/11/09	95	80 - 120	100	80 - 120	<0.0000020	mg/L	NC	20
8824081	Total Vanadium (V)	2017/11/09	103	80 - 120	107	80 - 120	<0.00020	mg/L	NC	20
8824081	Total Zinc (Zn)	2017/11/09	105	80 - 120	110	80 - 120	<0.00010	mg/L	NC	20
8824081	Total Zirconium (Zr)	2017/11/09	94	80 - 120	93	80 - 120	<0.00010	mg/L	NC	20

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Report Date: 2017/11/14

**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8824240	pH	2017/11/08			101	97 - 103			0.12	20
8824247	Conductivity	2017/11/08			99	80 - 120	<2.0	uS/cm	0.59	20
8824254	Alkalinity (PP as CaCO3)	2017/11/08					<0.50	mg/L	NC	20
8824254	Alkalinity (Total as CaCO3)	2017/11/08	NC	80 - 120	102	80 - 120	<0.50	mg/L	1.4	20
8824254	Bicarbonate (HCO3)	2017/11/08					<0.50	mg/L	1.4	20
8824254	Carbonate (CO3)	2017/11/08					<0.50	mg/L	NC	20
8824254	Hydroxide (OH)	2017/11/08					<0.50	mg/L	NC	20
8824297	Dissolved Phosphorus (P)	2017/11/08	NC	80 - 120	105	80 - 120	<0.0020	mg/L	2.0	20
8824300	Total Phosphorus (P)	2017/11/08	NC	80 - 120	94	80 - 120	<0.0020	mg/L	0.83	20
8824323	Dissolved Chloride (Cl)	2017/11/08	96	80 - 120	100	80 - 120	0.55, RDL=0.50	mg/L	4.0	20
8824324	Dissolved Sulphate (SO4)	2017/11/08	NC	80 - 120	98	80 - 120	<0.50	mg/L	3.7	20
8824492	Nitrate plus Nitrite (N)	2017/11/08	104	80 - 120	106	80 - 120	<0.0020	mg/L	NC	25
8824493	Nitrite (N)	2017/11/08	95	80 - 120	103	80 - 120	<0.0020	mg/L	NC	25
8824494	Nitrate plus Nitrite (N)	2017/11/08	NC	80 - 120	102	80 - 120	<0.0020	mg/L		
8824495	Nitrite (N)	2017/11/08	100	80 - 120	98	80 - 120	<0.0020	mg/L		
8825016	Acidity (pH 4.5)	2017/11/08					<1.0	mg/L		
8825016	Acidity (pH 8.3)	2017/11/08			100	80 - 120	<1.0	mg/L		
8825086	Acidity (pH 4.5)	2017/11/08					<1.0	mg/L	NC	20
8825086	Acidity (pH 8.3)	2017/11/08			100	80 - 120	<1.0	mg/L	5.4	20
8825317	Dissolved Organic Carbon (C)	2017/11/09	101	80 - 120	104	80 - 120	<0.50	mg/L	NC	20
8825927	Dissolved Sulphate (SO4)	2017/11/09	99	80 - 120	101	80 - 120	<0.50	mg/L		
8828439	Dissolved Lead (Pb)	2017/11/14			99	80 - 120	<0.0000050	mg/L		
8828439	Dissolved Molybdenum (Mo)	2017/11/14			102	80 - 120	<0.000050	mg/L		
8828439	Dissolved Selenium (Se)	2017/11/14			100	80 - 120	<0.000040	mg/L		

Maxxam Job #: B799265  
Report Date: 2017/11/14

**QUALITY ASSURANCE REPORT(CONT'D)**

ALEXCO ENVIRONMENTAL GROUP INC.  
Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8828439	Dissolved Zinc (Zn)	2017/11/14			105	80 - 120	<0.00010	mg/L		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spike amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than the native sample concentration)

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (absolute difference <= 2x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

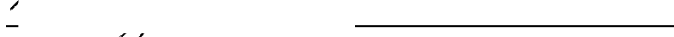
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Client Project #: BMC-15-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: CL

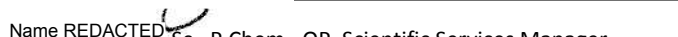
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The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

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Name REDACTED Ph.D., P.Chem., Scientific Specialist

Signature REDACTED

  
Name REDACTED Sc., P.Chem., QP, Scientific Services Manager

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Page 1

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Company Name: <b>BMC MINERALS LTD.</b>		Company Name: <b>ALEXCO ENVIRONMENTAL</b>			Quotation #: <b>B50743</b>			<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)									
Contact Name:		Contact Name: <b>Name REDACTED</b>			P.D. #/ AFE#:			PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS									
Address: <b>530-1130 WEST PENDER ST</b>		Address: <b>UNIT 3 151 INDUSTRIAL RD</b>			Project #: <b>BMC-15-01</b>			Rush TAT (Surcharges will be applied)									
Vancouver, BC PC: V6E 4A4		Whitehorse, YK PC: V1A 2V3			Site Location: <b>Kudz Ze Kayah</b>			<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days									
Phone:		Phone: <b>(867) 668-6463</b>			Site #: <b>Name REDACTED</b>			<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days									
Email:		Email: <b>Email REDACTED</b>			Sampled @			Date Required:									
Regulatory Criteria		Analysis Requested			Rush Confirmation #:												
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify) USE SCENARIO # 12485			LABORATORY USE ONLY												
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM					CUSTODY SEAL Y / N												
					COOLER TEMPERATURES												
					Present Intact												
					1,3,3/2,4,4												
					5,3,2												
					3,2,2												
					COOLING MEDIA PRESENT 0/1 N												
					COMMENTS												
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	TOTAL LOW LEVEL METALS INCL. MERCURY	DISSOLVED LOW LEVEL METALS INCL. MERCURY	LOW LEVEL TSS	ANIONS (CL, F, SO4, NO2, NO3)	AMMONIA	CONDUCTIVITY	PH	ALKALINITY & ACIDITY	DOC	TOTAL PHOSPHORUS - LOW LEVEL	DISSOLVED PHOSPHORUS - LOW LEVEL	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1	Trip Blank	n/a	n/a	Water	X	X	X	X	X	X	X	X	X	X	X		11
3	MW16-15D	2-Nov-17	1350h	Water	X	X	X	X	X	X	X	X	X	X	X		11
4	MW15-11S	2-Nov-17	1148h	Water	X	X	X	X	X	X	X	X	X	X	X		11
5	BH95G-21	2-Nov-17	1230h	Water	X	X	X	X	X	X	X	X	X	X	X		11
6	MW16-17	2-Nov-17	1500h	Water	X	X	X	X	X	X	X	X	X	X	X		11
7	BH95G-33D	2-Nov-17	1550h	Water	X	X	X	X	X	X	X	X	X	X	X		11
8	MW15-02	2-Nov-17	1750h	Water	X	X	X	X	X	X	X	X	X	X	X		11
9	MW15-03D	4-Nov-17	1338h	Water	X	X	X	X	X	X	X	X	X	X	X		11
10	BH95G-25S	3-Nov-17	1404h	Water	X	X	X	X	X	X	X	X	X	X	X		11
11	BH95G-25D	3-Nov-17	1450h	Water	X	X	X	X	X	X	X	X	X	X	X		11
12	DUP-1	3-Nov-17	1200h	Water	X	X	X	X	X	X	X	X	X	X	X		11
13	MW15-04S	4-Nov-17	1420h	Water	X	X	X	X	X	X	X	X	X	X	X		11
14	MW15-04D	4-Nov-17	1550h	Water	X	X	X	X	X	X	X	X	X	X	X		11
15	MW15-01	4-Nov-17	1127H	Water	X	X	X	X	X	X	X	X	X	X	X		11
16	BH95G-2	5-Nov-17	0854h	Water	X	X	X	X	X	X	X	X	X	X	X		11
17	MW15-10D	5-Nov-17	1000h	Water	X	X	X	X	X	X	X	X	X	X	X		11
18	Field Blank	4-Nov-17	1345h	Water	X	X	X	X	X	X	X	X	X	X	X		11
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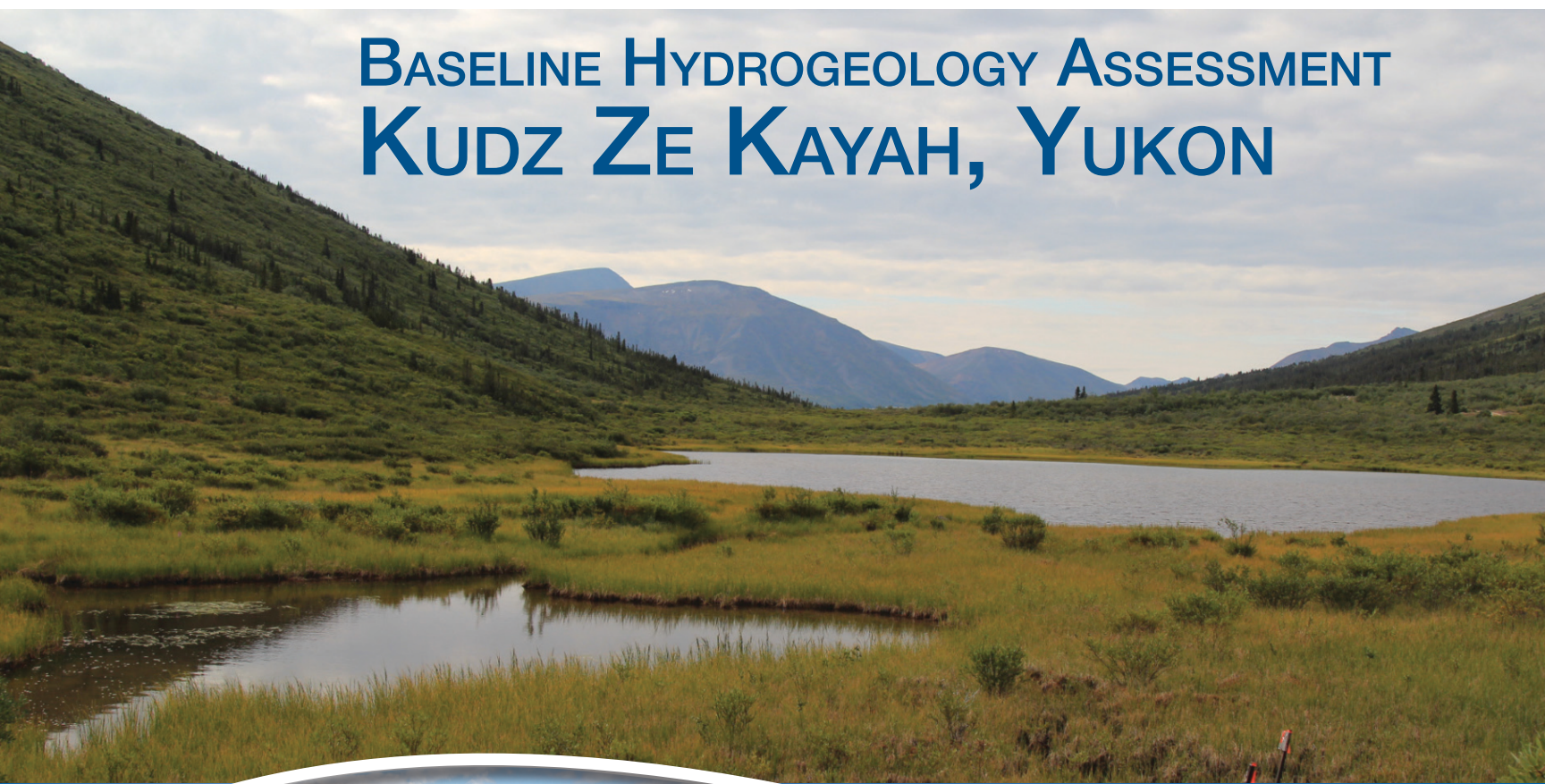
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APPENDIX G  
TETRA TECH BASELINE HYDROGEOLOGY ASSESSMENT,  
OCTOBER 2016



REPORT FOR

# BASELINE HYDROGEOLOGY ASSESSMENT KUDZ ZE KAYAH, YUKON



OCTOBER 2016  
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## ACRONYMS & ABBREVIATIONS

"	inches
µg/L	microgram per litre
µS/cm	micro Siemens per centimetre
AEG	Alexco Environmental Group
BMC	BMC Minerals (No. 1) Ltd.
CANMET	Canada Centre for Mineral and Energy Technology
CCME-AW	Canadian Council of Ministers of the Environment Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (CCME, 1999).
CHM	conceptual hydrogeological model
CSR-AW	Yukon CSR Schedule 3, Generic Numerical Water Quality Standards for Aquatic Life (Yukon Environment Act, Contaminated Sites Regulation, 2002).
DDH	diamond drill hole
DO	dissolved oxygen
E	easting
EC	electrical conductivity
FIG	Federal Interim Groundwater Quality Guidelines for Commercial and Industrial Land Uses and Protection of Freshwater Aquatic Life (Environment Canada, 2012).
Ft	foot
Golder	Golder Associates Ltd.
GSC	Geological Survey of Canada
hr	hour
ID	inner diameter
in	inch
IEE	Initial Environmental Evaluation
K	Hydraulic Conductivity
km	kilometre
kPa	kilo Pascal
KZK	Kudz Ze Kayah
L/s	litre per second
L	litre
lbs	pounds
LDL	laboratory detection limit
m	metre
m ah	metres along hole
m asl	metre above sea level
m bg	metre below ground
m btoc	metre below top of casing
m/m	metre per metre
m/s	metre per second
m <sup>2</sup> /s	square metre per second
m <sup>3</sup> /s	cubic metre per second

meq	milliequivalent per litre
mg/L	milligram per litre
Midnight Sun	Midnight Sun Drilling Inc.
min	minute
mm	millimetre
N	northing
NAD83	North American Datum of 1983
NTS	National Topography System
OD	outer diameter
PAC	potentially acid consuming
PVC	polyvinyl chloride
RPD	relative percent difference
QA/QC	quality assurance and quality control
RQD	rock quality designation
S/N	serial number
SPAG	strongly potentially acid generating
Tetra Tech EBA	Tetra Tech EBA Inc.
TDS	total dissolved solids
USgpm	US gallons per minute
UTM	Universal Transverse Mercator
VMS	volcanic massive sulphide
VWP	vibrating wire piezometer
WPAG	weakly potentially acid generating
YESAA	Yukon Environmental and Socioeconomic Assessment Act
YESAB	Yukon Environmental and Socioeconomic Assessment Board
YTT	Yukon Tanana Terrain



## LIMITATIONS OF REPORT

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## 1.0 INTRODUCTION

BMC Minerals (No. 1) Ltd. (BMC) is currently assessing the potential to develop the Kudz Ze Kayah Project (the KZK Project), a volcanic massive sulphide (VMS) deposit within the Finlayson VMS district, South Central Yukon. The KZK VMS deposit hosts zinc-rich polymetallic (zinc-lead-copper-silver-gold) massive-sulphide mineralization. The KZK Project is located in the northern Pelly Mountains, 135 km south of Ross River, Yukon. The KZK Property (the site) covers 23,000 hectares and is accessible by an all-weather tote road from the Robert Campbell Highway (Figure 1).

Tetra Tech EBA Inc. (Tetra Tech EBA) was retained by BMC to conduct a baseline hydrogeology assessment for the KZK Project in support of the preparation of a project proposal for assessment under the Yukon Environmental and Socio-economic Assessment Act (YESAA) and the subsequent application under the Waters Act for a Type A Water Use Licence.

This report presents the results of the hydrogeology baseline assessment for the KZK Project. The baseline assessment was based on information collected from a network of groundwater monitoring wells installed in the 1990s with additional wells installed in the summer of 2015. This report includes data collected during the first year of seasonal monitoring up until March 2016. Tetra Tech EBA understands that the seasonal groundwater monitoring has been continued and that additional monitoring wells were installed during the summer 2016 field program. However, any monitoring data collected after March 2016 and the details of the additional monitoring wells installed in 2016 are not included in this report but will be documented under separate cover.

### 1.1 Purpose and Objective

The purpose of this project was to review and evaluate existing hydrogeological information for Kudz Ze Kayah collected and documented as part of the baseline studies in 1994 and 1995 that were previously presented in the Initial Environmental Evaluation (IEE) (Cominco, 1996). The 2015/16 hydrogeology baseline program was then designed to fill data gaps that were observed in order to meet the current regulatory requirements. Groundwater information forms an essential part of the environmental baseline characterization that is required for a future assessment of the KZK mine project proposal under YESAA and a Type A Water Use Licence application as part of the mine permitting process.

The baseline groundwater information collected using the monitoring well network established at the site was used for the development of a conceptual hydrogeological model (CHM). The CHM demonstrates the understanding of the local groundwater regime, including a characterization of the hydrostratigraphic units encountered at the site, aquifer properties, recharge and discharge areas, general direction of groundwater flow, and groundwater-surface water interaction.

Groundwater samples collected in the areas of the proposed mine infrastructure was used to characterize baseline groundwater quality and identify spatial and temporal trends. A minimum of one year of seasonal groundwater data is typically required prior to a project proposal submission under YESAA and a minimum of two consecutive years of seasonal groundwater data is required for a Type A Water Licence application. In addition to some sporadically collected data in the 1990s, this report includes the results of four rounds of seasonal groundwater monitoring conducted in May, August/September, and November 2015, and March 2016, thus representing approximately one year of data. Seasonal groundwater monitoring is being continued at the site through 2016. The results of the ongoing groundwater monitoring will be presented in a supplementary report upon the completion of the 2016 of baseline groundwater monitoring.

## 1.2 Scope of Work

The scope of work for this baseline hydrogeology and groundwater quality assessment for the KZK Project included:

- Review of pertinent geological and hydrogeological background information;
- Review and evaluation of the historic hydrogeological information collected as part of the environmental baseline assessment for KZK in the 1990s (Cominco, 1996);
- Design of a field program to install groundwater monitoring wells and other subsurface instrumentation to re-initiate hydrogeological data collection and fill data gaps identified in the historic hydrogeological baseline data collected at KZK;
- Field oversight and coordination of monitoring well drilling and instrumentation installation;
- Design and field oversight for the installation of two test wells for conducting pumping tests in the area of the proposed open pit;
- Monitoring well development and groundwater sampling;
- Hydraulic testing including packer testing in select diamond drill holes, hydraulic response tests on monitoring wells, and two pumping tests in overburden and shallow bedrock within the area of the proposed open pit; and
- Comparison of the findings of the 2015/16 hydrogeology baseline assessment with the results of the historic baseline assessment (Cominco, 1996).

The hydrogeology baseline assessment provides a characterization of the groundwater regime in the vicinity of the proposed KZK mine site and addresses the following:

- Location and boundaries of hydrostratigraphic units identified within the study area;
- Estimated rate and direction of groundwater flow;
- Anticipated interaction of groundwater with surface water;
- Areas where permafrost may influence groundwater flow; and
- Groundwater quality of the overburden and bedrock aquifers.

The hydrogeology baseline assessment provides the basis for identifying potential effects on groundwater quantity and quality from the proposed mining activities. Where potential effects are identified, mitigation measures and contingency plans will be developed to minimize or eliminate potential effects that the proposed project may have on the groundwater resources in the vicinity and downgradient of the KZK Project.

## 1.3 Project Background

The KZK Property, which is 100% owned by BMC, hosts high grade zinc-copper- lead- gold-silver veins. The property was acquired by BMC in February 2015.

KZK environmental and socioeconomic baseline studies were conducted in the 1990s, along with an Environmental and Social Impact Assessment (under the Canadian Environmental Assessment Act). In 1999, a Type A Water User Licence (QZ97-026) was issued for the Project (valid until September 2018).

BMC is currently carrying out environmental and socioeconomic baseline studies at the KZK Project. These studies build on and add to the data collected by previous owners in the 1990's to support a project proposal submission to be made under YESAA. Subsequent to Yukon Environmental and Socio-economic Assessment Board (YESAB) approval, BMC intends to apply for a Quartz Mining License to allow for Project development and operation.

## 2.0 STUDY AREA

The study area (also referred to as the site) for the purpose of this hydrogeological baseline assessment encompasses the area of the main mineral deposit and conceptual open pit, Class A, B, and C storage areas, water management pond and polishing pond depicted on Figure 2. The Class A storage facility is proposed to contain dry-stack tailings and strongly potentially acid generating (SPAG) waste rock. The Class B storage facility will contain weakly potentially acid generating (WPAG) waste rock, and the Class C storage facility will contain potentially acid consuming (PAC) material.

### 2.1 Location

The KZK Project is located in southeastern Yukon, approximately 250 km northeast of Whitehorse. The proposed infrastructure has an approximate UTM/NAD83 location of 414700 E / 6816200 N in Zone 9N and lies on National Topography System (NTS) map sheet 105G/10.

### 2.2 Access

The site is road accessible by a 24 km long gravel tote road from the Robert Campbell Highway. The tote road joins the highway near Finlayson Lake airstrip, about 530 km by road northeast of Whitehorse.

### 2.3 Physiography

The study area is located in the northern foothills of the Pelly Mountains and within the Pelly Mountains ecoregion. The Pelly Mountains ecoregion is described as a rolling plateau topped by numerous mountain peaks and dissected in places by small rivers.

The relief in the study area is generally greater than 1,200 metres above mean sea level (m asl) on valley floors and up to 1,700 m asl at surrounding peaks. The Pelly Mountains ecoregion is the first major barrier to the flow of weather systems east of the St. Elias and Coast Mountains, so precipitation is relatively heavy. The higher elevations of this region result in cooler summers and less severe winters.

Throughout the Pelly Mountains ecoregion, permafrost can regularly be found in the alpine zone, but at lower elevations it is more variably distributed. In northern parts of the ecoregion, most valley floors are underlain by frozen ground, such as near Ross River and Finlayson Lake, where the base of permafrost is over 20 m below the ground surface (Smith et al., 2004). In these parts, only some south-facing slopes and river courses are permafrost-free (Smith et al., 2004).

With much of the ecoregion lying above treeline (between 1,350 and 1,500 m asl), shrub and dwarf shrub tundra dominate the vegetation at higher elevations. Coniferous, and sometimes mixed, forests mantle the slopes below 1,350 m asl. In the north of the ecoregion, while white spruce is the dominant tree species, black spruce is common on cool wet sites and paper birch can be a significant component of the canopy (Smith et al., 2004).

### 2.4 General Hydrology and Meteorology

The study area is drained by Geona Creek, which flows in a northerly direction along the valley that dissects the study area. At the southern end of the study area, Geona Creek flows across the sub-crop of the ABM deposit. To the north of the study area, Geona Creek flows into Finlayson Creek, which is a tributary of Finlayson River, a major regional drainage feature. A surface water divide exists immediately to the south of the ABM deposit.

The climatic conditions in the area of KZK were summarized by Geo-engineering Ltd. (2000) with additional data collected by Alexco Environmental Group (AEG) since 2015 (AEG, 2016a). The following presents a summary of key climate characteristics for Kudz Ze Kayah:

- The study area can be described as having a typical northern interior climate with daily mean temperatures ranging from around -25°C in January up to 15°C in July. Extreme temperatures range from -60°C in winter to 35°C in summer months.
- Total annual precipitation is estimated to be approximately 780 mm, with 290 mm falling as rain and 490 mm as snowfall (expressed as water equivalent). Annual lake evaporation is estimated to be approximately 330 mm. The snow pack generally peaks in early April although snow may continue to accumulate later in the year at higher elevations. Snow melt and ice breakup in streams generally occurs between late April and early May.
- Based on stream flow records, runoff is usually at its minimum in March and April prior to the snow-melt freshet. Runoff peaks in late May or early June due to snowmelt. Summer rainstorms can give rise to significant flood peaks between May and September, although these events are most likely to occur in June or July.
- Runoff was estimated to be about 63% of precipitation in the area of the KZK project.

## 2.5 Geology

The following sections provide a brief summary of the surficial and bedrock geology in the area of the Kudz Ze Kayah Property. More detailed discussion of the local geology and mineralization at Kudz Ze Kayah can be found in Geo-engineering (2000) and Golder (1996).

### 2.5.1 Surficial Geology

Regional 1:100 000 surficial geology maps (GSC Map 1797A, 1993) indicate that the ABM deposit area is underlain by a till veneer (less than 1 m thick or discontinuous) that may contain extensive areas of thin (less than 1 m) patchy colluvium (Figure 3). Till is described as morainal deposits; diamicton, mainly till, generally consisting of a silty sandy matrix containing pebbles, cobbles and minor boulders.

To the north of the deposit area, till is mapped as overlain by glaciofluvial deposits composed of sand, gravel, diamicton, and minor silts and clay. Geo-engineering (2000) noted that geotechnical investigations confirmed the presence of these deposits to over 40 m deep in the Geona Creek valley. South of the deposit area, till is overlain by alluvial fan sediments consisting of gravelly sand, silt and diamicton up to 10 m or more thick and colluvial apron sediments consisting of boulder diamicton, poorly sorted sands and gravels.

Borehole logs of subsurface conditions from drilling investigations undertaken in 1995 and 2015 generally concur with the mapped surficial geology, indicating that across the study area, overburden is primarily composed of till and glacial deposits ranging in thickness from a thin veneer on valley flanks, to more than 20 m near the centreline of the valley. Overburden deposits are commonly logged as consisting of an upper compact to dense brown sand with varying amounts of silt, gravel or cobble overlying a basal dense to very dense sand and gravel.

Bedrock exposures are encountered at higher elevations, steep slopes and in deep ravines where post-glacial erosion has removed the overburden mantle.

## 2.5.2 Bedrock Geology

The Pelly Mountains Ecoregion is within the Omineca Morphological Belt, an area of uplifted sedimentary, metamorphic and granitic rocks. The study area lies within a belt of metamorphosed rocks known as the Yukon–Tanana (also called Kootenay) terranes (YTT).

Geo-engineering (2000) describe the YTT in the study area as consisting of a layered sequence of metamorphosed sedimentary and volcanic rocks subdivided into three main assemblages: (1) a “lower unit” of pre Devonian Quartzite, pelitic schist and minor marble, (2) a “middle unit” of Late Devonian to lower Mississippian carbonaceous phyllite and schist with interbanded mafic and locally significant felsic volcanic units, and (3) an “upper unit” comprising Pennsylvanian marbles and quartzite. Volcanism in the “middle unit” was accompanied by the intrusion of two to three Late Devonian to Mississippian mafic to felsic metaplutonic suites. The ABM deposit is hosted within felsic volcanics of the “middle unit”.

Exploratory drilling programs in 1995 and 2015 have shown that bedrock in the vicinity of the ABM deposit mainly consists of felsic volcanics intersected with thick felsic tuff and sill/flow complexes that host the deposit. The host felsic volcanic sequence is described by Geo-engineering (2000) as underlying the extreme upper reaches of Geona Creek, Geona Lakes and South Lakes and extending east-west along strike. North of the ABM deposit, the study area is underlain by units of the metasedimentary sequence. These units occur on ridges east and west of Geona Creek (Figure 4).

Bedrock is assumed to be relatively competent, but with a highly fractured zone about two metres thick at the upper contact with the overlying sediments (Golder, 1995). Several northeast-southwest trending faults are mapped as intersecting the deposit area, including the East Fault, Northwest Fault and Fault Creek. Grain size analyses of fault gouge associated with these fault zones indicate that the gouge is comprised primarily of sand and gravel-sized material with a minor fine grained fraction.

Mineralization within the ABM deposit, which consists of the ABM and Krakatoa Zones, occurs as a stratabound body of massive sulphide up to 39 m thick, with a 700 m strike length and 400 m down-dip extent. Massive sulphide is not exposed at surface but subcrops beneath 2-20 m of overburden and dips 35 degrees to the north. A flexure at approximately 200 m depth flattens the dip to 15 degrees for the remaining 200 m. Host rocks to the mineralization are dominated by felsic volcanic and volcanoclastic rocks. Minor amounts of mudstone are intermingled with rhyolitic material or locally form discrete horizons up to several meters thick. A distinct mafic sill occurs in the footwall to the ABM deposit and is locally weakly mineralized.

## 2.5.3 Glacial History

Deposits left by Cordilleran ice sheets during the last two glaciations are found within the Pelly Mountains Ecoregion, including within the study area. During the postglacial period, streams incised into glacial sediments deposited alluvial fans and cut alluvial terraces. Intense mechanical weathering and mass wasting created colluvial mantles on mountain slopes. Rock glaciers advanced from cirques and from below precipitous slopes during the Little Ice Age (about 1550 to 1850 AD). These rock glaciers remain active in many areas (Jackson, 1994).

### 3.0 SUMMARY OF HISTORICAL HYDROGEOLOGICAL DATA AND GAP ANALYSIS

In 1995/96, Golder Associates Ltd. (Golder, 1996a and 1996b) conducted feasibility level geotechnical and hydrogeological site investigations for the KZK Project to support the overall project feasibility evaluation and the design for the tailings impoundment, waste rock storage facilities, mill site and open pit at the site.

The proposed design criteria for the pit slopes were based upon field investigations undertaken in association with the exploration drilling program in 1994 and additional drilling in 1995, as well as specific field investigations in the proposed Class B and C storage areas and a limited laboratory testing program. The focus of the field investigation was to gather information on the hydrogeological regime in the vicinity of the planned open pit, Class B and C storage areas and tailings dam options and to source a possible water supply for potable and process make-up water.

During the investigations, the following monitoring wells were installed to target proposed site infrastructure, including:

- Class B Storage Area – two monitoring wells (BH95G-32 and BH95G-33);
- Class C Storage Area – two monitoring wells (BH95G-30 and BH95G-31);
- South of Open Pit – one monitoring well (BH95G-29);
- Tailings dam sites A (not being considered in current mine plan) – five monitoring wells (BH95G-6, BH95G-7, BH95G-8, BH95G-9 and BH95G-10);
- Tailings dam sites B (not being considered in current mine plan) – four monitoring wells (BH95G-2, BH95G-3, BH95G-4, and BH95G-5);
- Tailings dam site C (not being considered in current mine plan) – one monitoring well (BH95G-12);
- Tailings dam site D (not being considered in current mine plan) – seven monitoring wells (BH95G-13, BH95G-14, BH95G-15, BH95G-17, BH95G-18, BH95G-19, BH95G-21);
- Open Pit area – thirteen monitoring wells (BH95G-20, BH95G-21, BH95G-22, BH95G-23, BH95G-24, BH95G-25, BH95G-26, BH95-129, BH95-131, BH95-135, BH95-146, BH95-148, and BH95-150);
- Mill Site (location changed in current mine plan) – four monitoring wells (BH95G-35, BH95G-36, BH95G-37 and BH95G-20M); and
- Water supply exploration well (not being considered in current mine plan) – one monitoring well (BH95G-27).

Hydraulic conductivity tests (falling and rising head tests) were conducted to estimate the hydraulic conductivity of the overburden (BH95G-21S, BH95G-22, BH95G-23, BH95G-24, BH95G-25S, BH95G-26, BH95G-29), fractured bedrock (BH95G-15D, BH95G-21D, BH95G-20, BH95G-21, BH95G-25S, BH95G-33) and competent bedrock (BH95-131, BH95-129) (Golder, 1996b). Hydraulic conductivity of the overburden and fractured bedrock varied between  $1 \times 10^{-6}$  m/s to  $1 \times 10^{-5}$  m/s, whereas the competent bedrock had lower inferred hydraulic conductivity values ranging between  $2.5 \times 10^{-7}$  m/s and  $2.6 \times 10^{-8}$  m/s.

The conceptual hydrogeological model created by Golder expected the groundwater table to generally mimic topography, with the groundwater table located near surface in the valley bottom and greater than 200m below the



mountains. They anticipated the groundwater table to be within the competent and fractured bedrock on the valley flanks and in the overburden in the valley bottoms. They found that the groundwater flows from the mountains to the valley bottoms. Artesian conditions encountered in the valley bottom indicated discharging groundwater, which is the result of the steep topography and upward hydraulic gradients.

The purpose of the mining geotechnical investigation was to address open pit slope design criteria and pit wall stability. The investigations also addressed mine dewatering requirements based on the groundwater conditions encountered in the area of the ABM deposit.

The hydrogeological data collected by Golder (1996a and 1996b) formed the basis for the updated baseline hydrogeology assessment presented in this report. However, changes to the regulatory regime and more stringent data requirements for the environmental assessment of proposed mining projects in the Yukon required the installation of additional monitoring wells and seasonal groundwater monitoring to supplement the data collected by Golder in 1995/96. Also, many of the existing monitoring wells were found to be in poor condition with no steel protective casing and very short PVC pipe stick-ups.

As part of the work plan development for the baseline hydrogeology assessment, Tetra Tech EBA designed a monitoring well network based on the historical mine plan (Cominco, 1996) that was aimed to satisfy the requirements of a project proposal review under YESAA. The monitoring well network was designed to provide groundwater information from all main aquifers in the area of each major piece of proposed mine infrastructure that may have an impact on groundwater quantity and/or quality during mine construction, operation, remediation, or post closure. The proposed monitoring well network consisted of:

- Historical monitoring wells that were able to be upgraded with proper stick-ups and steel protective casings for long-term use; and
- New monitoring wells in areas that were not covered by historical monitoring wells, or where historical monitoring wells were damaged beyond repair.

Table 1 presents the monitoring well network used for the baseline hydrogeology assessment for KZK Project, along with the date of construction and completion details for each monitoring well. The well logs of all monitoring wells used as part of this assessment are included in Appendix B1. Further details on the historical monitoring wells can be found in Golder (1996a and 1996b). The following sections provide additional detail on the new monitoring wells installed as part of the 2015 hydrogeology field program.

## 4.0 METHODS

The following sections describe the methods used for the field program and data analysis.

### 4.1 Monitoring Well and Instrumentation Installation

#### 4.1.1 Drilling

All drilling was completed using diamond drill rigs with NQ and HQ-size tools which produced a borehole diameter of 75.7 mm and 96.1 mm, respectively. Drilling was conducted by Geotech Drilling Services Ltd. of Prince George, BC. Drill water was taken from local creeks and lakes, and water was continuously pumped from the creek to a water tank located at the drill rig (as per the exploration permit). Excess and return water was drained to a sump at each drill site.

The diamond drill holes (DDHs) were drilled using a polymer-based drilling mud when required for borehole stability. Drillers were directed to use as little drilling polymer as possible. The borehole was flushed with water until there was no visible polymer in the return water prior to conducting a packer test or installing a monitoring well.

Table A presents the location, depth, and dip angle for the exploration drill holes used as part of the hydrogeological investigations. Figure 2 shows the location of the exploration drill holes where VWP's were installed, and where packer tests were conducted, as well as where monitoring wells were installed.

All monitoring wells and exploration hole collars were surveyed by Challenger Geomatics using professional surveying equipment. The vertical accuracy of the survey is about  $\pm 3$  cm.

Drill logs are included in Appendices B1 through B3. The geological logging was completed by Equity Exploration Consultants Ltd. (Equity) geologists.

#### 4.1.2 Monitoring Wells

Groundwater monitoring wells were installed in 2015 at 11 locations on site, eight of which are nested installations. These wells are located within the areas of the ABM deposit and proposed mine infrastructure, and are to be used for the ongoing assessment of groundwater elevations and quality. At most locations, a "deep" well was installed in the bedrock aquifer and a "shallow" well was installed within the shallow overburden aquifer where present. Well logs for all monitoring wells are included in Appendix B1.

Tetra Tech EBA observed the drilling of each borehole as the drilled depth approached the anticipated groundwater depth. The following procedures were employed in the determination of whether groundwater had been intercepted and the interval the deep groundwater monitoring well was to be screened over:

- When drilling close to the expected groundwater depth, drilling was halted, water switched off and water levels were monitored. Where water levels were observed to be rising, the depth to water was recorded several times in order to estimate the recovery rate. Water was then added to the borehole in small volumes (to accelerate recovery) until the water level was observed to be falling.
- The driller was asked to note any increases in water returns (an increase in return may indicate interception of groundwater). Artesian conditions were encountered at several locations across the site and an increase in return was noted at several locations.

**Table A: Exploration drill holes used for hydrogeological investigations and monitoring wells**

Hole ID	Alternate Hole ID	Borehole Diameter	Easting <sup>1</sup>	Northing <sup>1</sup>	Ground Elevation	Length	Azimuth	Dip
		mm	m	m	m asl <sup>2</sup>	m bgs <sup>3</sup>	degrees	degrees
K15-200	AMB16	96.1	414749	6815599	1408.9	211.5	180	-70
K15-248	ABM50	96.1	415203	6815283	1424.4	278.5	1	-75
K15-202	ABM18	96.1	414795	6815365	1400.2	71.0	180	-60
K15-204	ABM2	75.7	414549	6815464	1457.2	149.0	180	-60
K15-206	ABM6	75.7	414651	6815747	1430.5	237.0	180	-65
K15-242	ABM46R	75.7	415134	6815439	1400.6	161.0	167	-65
K15-265	ABM51R	75.7	415206	6815594	1424.0	285.0	181	-55
MW15-01	K15-211	96.1	414472	6816559	1487.3	20.0	-	-90
MW15-02	K15-214	96.1	414808	6816270	1429.8	33.0	-	-90
MW15-03	K15-222	96.1	416317	6816052	1465.2	16.9	-	-90
MW15-04	K15-220	96.1	415786	6816156	1451.0	32.3	-	-90
MW15-05	K15-219	96.1	415852	6816872	1463.8	28.6	-	-90
MW15-06	K15-217	96.1	415460	6816722	1387.5	10.0	-	-90
MW15-07	K15-215	96.1	414922	6817784	1360.0	33.1	-	-90
MW15-08	K15-212	96.1	414904	6818518	1332.5	36.9	-	-90
MW15-09	K15-208	96.1	414709	6819177	1319.2	41.3	-	-90
MW15-10	K15-210	96.1	414794	6819203	1318.0	32.4	-	-90
MW15-11	K15-318	96.1	415079	6815119	1386.0	36.4	-	-90
WW15-01	-	205	414893	6815295	1389.9	15.2	-	-90
WW15-02	-	205	414839	6815767	1395.5	38.1	-	-90

**Vibrating wire piezometer and packer tests**

**Packer tests**

**Monitoring well**

**Pumping test well**

<sup>1</sup> Collar Coordinates; UTM NAD 83, Zone 09N

<sup>2</sup> m asl – metres above mean sea level

<sup>3</sup> m bgs – metres below ground surface

Deep monitoring wells were constructed in accordance with the following general protocol:

- A minimum of 0.1 m of 10-20 filter sand was placed at the base of the borehole.
- A screened section of 10-slot (0.010”) 32 mm (1.25”) diameter (nominal) Schedule 40 polyvinyl chloride (PVC) pipe was placed in the borehole annulus to span the desired depth interval. Screen lengths were either 9.1 m or 12.2 m (30 or 40 ft).
- Above the screened section, the PVC standpipe was completed to surface using solid lengths of 32 mm (1.25”) diameter (nominal) Schedule 40 PVC pipe.
- 10-20 filter sand was added to about 0.9 m above the top of the screened section.

- The annulus between the PVC standpipe and borehole wall was backfilled with bentonite (coated bentonite pellets, bentonite pellets and bentonite chips) from the top of the sand pack to the ground surface at MW15-01 and MW15-02 and to the bottom of the sand pack of the shallow installation at all nested monitoring wells.

Shallow monitoring wells were constructed in accordance with the following general protocol:

- A minimum of 0.6 m of clean 10-20 filter sand was placed on top of the lower bentonite plug.
- A 3.0 m screened section of 10-slot (0.010") 32 mm (1.25") diameter (nominal) Schedule 40 PVC was placed at all shallow monitoring wells except at MW15-09S, which had a 6 m screened section, in the borehole annulus at the desired depth.
- The PVC standpipe was completed to surface using 32 mm (1.25") diameter (nominal) Schedule 40 PVC solid lengths.
- 10-20 filter sand was added to about 0.5 m above the top of the screened section.
- The borehole annulus was backfilled from the top of the sand to 0.3 m below ground surface (bgs) with bentonite (coated bentonite pellets, bentonite pellets and bentonite chips).
- The borehole was completed to slightly above surface with concrete (to minimize water pooling around the well), then a protective steel casing placed over the PVC and set in concrete.
- Once the protective steel casing was installed, the solid 32 mm (1.25") diameter (nominal) Schedule 40 PVC standpipe was extended from ground surface to an accessible point within the casing.

During the deep monitoring well construction, the following procedures were employed to ensure sand and bentonite intervals were placed at the correct intervals and to minimize the risk of bridging in the borehole annulus during addition:

- Sand and bentonite was added slowly to the well to minimize the risk of bridging in the borehole annulus.
- Coated bentonite pellets (which have a delayed swelling response when submerged in water) were used below the water table to ensure they would reach the base of the borehole.
- Settled depths were recorded regularly to limit the possibility of overfilling the annulus to above the desired interval.
- When placing the sand and bentonite into the borehole annulus, the drill rods were left in place to keep the borehole annulus open and prevent collapsing in order to best place the materials within the annulus. The depth of the drill rods were measured and compared to the top of the settled materials within the borehole. The drill rods were slowly lifted to ensure that material was not settling within the drill rods to prevent jacking of the monitoring wells.

### 4.1.3 205 mm Diameter Well Installation

Two large diameter (205 mm) groundwater wells were installed in the vicinity of the proposed mine pit at the southern end of the mine site in July and August, 2015. This phase of the drilling program was conducted in recognition of the key objectives of completing multipurpose wells that could be used for:

1. Long term pumping tests to infer bulk hydraulic conductivity of the overburden and bedrock aquifers;

2. Assessment of groundwater quality; and
3. Potential use as future dewatering/extraction wells.

#### 4.1.3.1 Well Locations

Figure 2 shows the locations of WW15-01 and WW15-02. Each well was located in consultation with BMC and Equity representatives to ensure the wells were located outside of the footprint of the proposed pit and other planned site developments.

Tetra Tech EBA note that both WW15-01 and WW15-02 were proposed to be located to the north of the proposed pit location. However, during the drilling of WW15-02, bedrock was observed to be close to surface (approximately 3.0 m bgs and there was no overburden aquifer present at this location. Following review of existing well logs and consultation with BMC and Equity representatives, the location of WW15-01 was amended to the south of the proposed pit location where an overburden aquifer was expected to be present.

#### 4.1.3.2 Well Installation – WW15-01

WW15-01 was drilled and constructed by Midnight Sun Drilling Inc. (Midnight Sun) of Whitehorse, Yukon, under the direction of Tetra Tech EBA on August 1 and 2, 2015. WW15-01 was designed and constructed to monitor and test overburden aquifer conditions, with the base of the well screen contacting the top of the underlying bedrock.

A well log describing the depth and thickness of geologic materials encountered during drilling is provided in Appendix B2. In summary, a sand and gravel fill was encountered from surface to 3.7 m bgs. The fill was underlain by natural gravels, some sand to 5.2 m bgs. From 5.2 m bgs to 11.0 m bgs, a damp silt, sand and gravel unit was logged. A sand and gravel unit was encountered from 11.0 m to 15.2 m bgs. This unit was generally uniform in composition, other than a 0.4 m layer from 12.2 m to 12.6 m bgs, where a medium to coarse sand was encountered. The borehole was drilled to 15.2 m bgs, the depth at which bedrock was intercepted.

Groundwater was encountered at 11.0 m bgs, in the sand and gravel unit immediately below the base of the silt, sand and gravel unit.

Field particle size analysis was conducted on samples obtained from 12.2 m and 14.0 m bgs to design an appropriate well screen for the aquifer encountered from 11.0 m to 15.2 m bgs. Particle size distribution results from these samples are included in Appendix B2 and indicate that the primary aquifer material is medium to coarse grained sand and fine gravel.

The well screen assembly was designed based on the results of field particle size analysis on the sample collected at 14.0 m bgs (using a 50% passing rate). A summary of WW15-01 construction details is provided in Table B and detailed on its well log in Appendix B2.

WW15-01 was developed on August 1 and 2, 2015 by air lifting and jetting. The well was not surged during development as the driller was concerned that surging would create excessive downhole pressure that could blow water to the surface on the outside of the casing. To minimise potential environmental effects of discharging groundwater to Geona Creek, all water removed from WW15-01 during development was directed to and stored in a temporary sump which had been excavated adjacent to the well (Figure A). Water in the sump infiltrated into the ground within approximately 12 hours of the cessation of development. Approximately 156,000 L was removed from WW15-01 during development. The visual clarity and turbidity measurements of the development water were considered acceptable to stop development after 2.75 hours. Detailed well development records are provided in Appendix B2.

**Table B: Well Construction Summary (WW15-01)**

Well Detail	Interval	Internal Diameter (m)	Slot Size (in)	Screen Open Area Length	Notes
	m bgs			m	
Casing	-0.64 to 11.6	0.205	-	-	Standard 8" steel water well casing
K-packer	11.2 to 11.3	0.176	-	-	K-packer friction fitted to casing. Fitted to top of riser with female threaded fitting. Top of K-packer is unthreaded.
Riser	11.3 to 12.0	0.176	Solid	Solid	-
Well Screen	12.0 to 15.2	0.176	0.080	3.0	Veriperm telescopic wire wrapped well screen, (0.1905 m (7.5 in) OD)



**Figure A: Sump adjacent to WW15-01 used to store development water.**



Following development, a surface seal was installed to minimise the potential for surface water ingress and impact from potential surficial contaminants. The surface seal was installed by overdrilling around the 205 mm (8") casing with 279 mm (11") casing to a depth of 4.3 m bgs. A neat Portland cement grout was injected into the annulus between the 203 mm (8") well casing as the 279 mm (11") casing was removed from the ground, leaving an approximate 38 mm (1.5") surface seal around the 203 mm (8") casing. The well was completed by welding on a flat steel plate to the top of the 203 mm (8") casing.

#### 4.1.3.3 Well Installation – WW15-02

WW15-02 was drilled and constructed by Midnight Sun under the direction of Tetra Tech EBA on July 30, 2015. This well was designed and constructed to target the shallow bedrock aquifer.

WW15-02 was drilled by advancing 203 mm casing through the overburden and into competent bedrock to a depth of 3.4 m bgs (to establish a seal between the overburden and bedrock units). Open hole drilling was continued in bedrock to a total depth of 38.1 m bgs. In accordance with the drilling work plan, drilling was halted at 38.1 m bgs as there had been no clear increase in water returns between 25.9 m and 38.1 m bgs, indicating competent and relatively unfractured bedrock had been intercepted. A well log describing the depth and thickness of geologic materials encountered during drilling is provided in Appendix B2.

The following points are noted in regards to observations of groundwater flow and yield during the drilling program:

- Groundwater was first noted in returns at 23.8 m bgs.
- Yield from the well at a depth of approximately 26 m bgs was estimated by the driller to be approximately 1 to 2 L/s. There was no observable increase in yield as the borehole depth was increased from 26 m to 38.1 m bgs.
- After the drill rods were tripped out of the borehole, groundwater was visually observed (through looking down the borehole with a flashlight) flowing into the borehole at four points approximately 13 m bgs. The rate of flow was estimated by the driller and Tetra Tech EBA to be approximately 0.3 L/s.

After the drill string was removed from the borehole a PVC liner was placed in the well to provide protection to equipment placed in the well (i.e. pump and monitoring equipment) from borehole collapse. As there was no observable increase in water returns during drilling from 26 m to 38.1 m bgs (and therefore inferred to be no major water bearing fractures in this interval), the liner was constructed with a 3.1 m solid section at the base of the borehole (35.0 to 38.1m bgs) to act as a sump to collect sediment and debris. A screened section was placed from 22.9 to 35 m bgs, and a second solid section from 22.9 m bgs to 0.76 m above ground. A summary of the well construction details is provided in Table C and detailed on the well log in Appendix B2.

WW15-02 was developed on July 30, 2015 by air lifting and jetting. The well was not surged during development as the driller was concerned that surging would create excessive downhole pressure that could blow water to the surface on the outside of the casing. To minimise potential environmental effects of discharging groundwater to Geona Creek, all water removed from WW15-02 during development was directed to and stored in a temporary sump, which had been excavated adjacent to the well. Water in the sump infiltrated to ground within approximately 12 hours of the cessation of development. A total of approximately 3,300 L was removed from WW15-02 during development. The visual clarity and turbidity measurements of the development water were considered acceptable to stop development after 35 minutes.

Following development, a surface seal was installed to minimise the potential for surface water ingress and impact from potential surficial contaminants. The surface seal was installed by overdrilling around the 203 mm (8") casing with 279 mm (11") casing to a depth of 2.6 m bgs. A neat portland cement grout was injected into the annulus between the 203 mm (8") well casing as the 279 mm (11") casing was removed from the ground, leaving an

approximate 38 mm (1.5”) surface seal around the 203 mm (8”) casing. The well was completed by welding on a flat steel plate to the top of the 203 mm (8”) casing.

**Table C: Well Construction Summary (WW15-02)**

Well Detail	Interval	Internal Diameter	Slot Size	Screen Open Area Length	Notes
	m bgs	m	in	m	
Steel Casing	-0.84 to 3.4	0.205	Solid	Solid	Standard 8” steel water well casing
Open Hole	3.4 to 38.1	0.203	-	-	-
PVC Casing	-0.76 to 22.9 35.0 to 38.1	0.133	Solid	Solid	Rice Schedule 40 PVC Water Well Casing
PVC Screen	22.9 to 35.0	0.133	0.020	12.1	Rice Schedule 40 PVC Slotted Water Well Casing

#### 4.1.4 Vibrating Wire Piezometers

Vibrating Wire Piezometers (VWPs) are used to measure piezometric levels and temperatures in boreholes. The sensing element of the VWP is a high strength steel wire attached to a diaphragm. The wire is excited by two coil magnets set around the connecting over tube. External pressure on the diaphragm will move the diaphragm a very small amount changing the tension on the vibrating wire. This tension change is directly proportional to the resonant frequency at which the wire will vibrate. The current resonant frequency of the wire is measured using a readout unit that connects to the cable at the surface. The resonant frequency is then converted into a pressure reading using the individual calibration record for each instrument. The calibration sheets for the VWPs installed at KZK are included in Appendix C.

Vibrating wire piezometers were installed to assess the vertical hydraulic gradient within the deeper bedrock aquifer in the area of the proposed open pit. The VWPs were installed in exploration boreholes K15-200 and K15-248 located to the west and east of Geona Creek, respectively. These two locations allow the vertical hydraulic gradient and subsurface temperatures in the deeper bedrock aquifer to be assessed on either side of Geona Creek which is believed to be a local groundwater discharge feature.

The vibrating wire instrument measures absolute pressure; subsequently measurements should be corrected for temperature and barometric pressure to calculate the actual piezometric pressure or hydraulic head. Each instrument includes a thermistor, which measures the temperature of the transducer and its surroundings. This temperature information is used to provide temperature correction to the output pressure readings. Barometric pressure readings from the KZK weather station were used to compensate the VWP data for barometric pressure changes.

Fresh water was brought to each site at least one day prior to VWP installation to allow water to equilibrate to local atmospheric conditions. VWPs were submerged in water and soaked before installation. The VWPs were installed in exploration boreholes with three VWPs installed in each borehole at various depths below the anticipated groundwater table. The VWPs were attached to the outside of a 25.4 mm (1-inch) diameter Schedule 80 PVC pipe that was lowered downhole through the open hole or drill rods depending on borehole stability. The PVC pipe was



then used as a tremie pipe to grout the VWP in place. Each hole was tremie-grouted using a cement-bentonite grout until grout return was observed through the surface casing. The surface casing was then removed and the well was completed with a protective steel casing secured in concrete. As recommended by Mikkelsen (2002), the cement-bentonite grout mix presented in Table D was used for the installation of the VWPs.

**Table D: Cement-bentonite Mix**

Material	Weight	Ratio by Weight
Water	30 gallons	2.5
Portland Cement	94 lbs (~2 bags)	1
Bentonite	25 lbs (1/2 bag, as required)	0.3

## 4.2 Hydraulic Well Testing

Hydraulic well testing consisted of packer, hydraulic response and pumping tests. Each of these tests is described in this section.

### 4.2.1 Packer Testing

Packer tests are used to infer the in situ hydraulic conductivity of a rock mass over a specific interval. All packer tests were conducted as constant head injection tests, i.e., water was injected at specific pressure steps and the resulting injection rate is recorded when flow has reached a quasi-steady state condition.

Packer tests were conducted in seven selected exploration drill holes (see Table A). The test holes were selected to provide a reasonable spatial coverage of the area of the proposed open pit. Golder (1996a) had identified a number of faults in the area of the ABM deposit. The packer test holes were also selected based on their likelihood to intersect those faults identified during previous exploration and geotechnical investigations.

A packer test system is composed of:

- A downhole assembly of two or three inflatable “packer” glands used to isolate the target interval within the DDH;
- A packer inflation system utilizing nitrogen (inert gas) to inflate the packer system and seal the test section; and,
- A water pressure system (in this case utilizing the drill mud pump and a clear water tank) to facilitate water injection at a constant pressure (head) into the tested interval with the ability to measure flow rate.

The packer tests were conducted after the drill had penetrated a specified depth or encountered a target test zone. A static water level measurement is important to determine the excess pressure ( $P_W^{max}$ ) to apply over the specific test interval. This is calculated as follows:

$$P_W^{max} = \sigma_v' = \gamma_s'(z_s) + \gamma_r'(z_{tz} - z_s)$$

Where  $\gamma_s'$  is the submerged unit weight of the overburden deposits;  $\gamma_r'$  is the submerged unit weight of the bedrock;  $z_s$  is the thickness of the overburden deposits; and  $(z_{tz} - z_s)$  is the thickness of bedrock over the tested interval. If the water pressure is too high, hydraulic fracturing or opening of fissures may alter the rock mass hydraulic

conductivity. CANMET (1977) recommends a maximum excess water pressure ( $P_W^{max}$ ) of 700 kPa. Therefore, the excess pressure was not allowed to exceed 700 kPa to avoid potential hydraulic fracturing of the bedrock. The packer inflation pressures ensure that the tested interval is properly sealed to prevent leakage of flow, slippage and damage to packers.

After the drill had reached the specified testing depth, the hole was flushed with clear water to remove any drill mud or cuttings, then the drill rods were pulled back to allow the water level to stabilize. Water for testing was pumped from a separate clean water tank. The downhole assembly was attached to the wireline and lowered through the drill rods with the bottom packer(s) extending through the drill bit into the open drill hole. The packer glands were then inflated using nitrogen gas to the calculated inflation pressure and the water pressure assembly was attached to the drill mud pump (pumping from the clean water tank). Water was then injected into the bedrock interval isolated by the packers under a constant pressure. The injection rate (flow rate) was measured by recording readings of total flow at regular time intervals. The packer tests were conducted in stages where the excess pressure was increased from 33% to 67% to 100% of  $P_W^{max}$  to a maximum pressure of 700 kPa.

Data from these tests were then analyzed to determine the hydraulic conductivity of the bedrock interval tested. The results were interpreted using the Thiem solution and the following assumptions were made:

- Steady-state condition was reached during the test;
- Laminar flow applies; and,
- Radius of influence of the test did not exceed 10 m.

The hydraulic conductivity  $K$  of the rock mass over the test zone is inferred from the field data using the following modified Thiem equation (e.g., Doe et al., 1980):

$$K = \frac{Q}{2\pi LH} \cdot \ln\left(\frac{L}{r}\right)$$

Where  $K$  is the hydraulic conductivity,  $Q$  is the flow rate ( $m^3/s$ ),  $L$  is the vertical length of the test zone (m),  $H$  is the excess head applied to the test zone (m water column), and  $r$  is the radius of the test zone (borehole radius) (m).

## 4.2.2 Hydraulic Response Testing

Hydraulic response tests were conducted to evaluate the hydraulic conductivity of the aquifer in the vicinity of the monitoring wells. Hydraulic response tests involve the instantaneous injection or withdrawal of a slug of water or solid cylinder of a known volume which cause a sudden change of the well water level. The slug injection causes an instantaneous increase in water level and a subsequent recovery phase during which the water level drops back to the static water level. This test is also referred to as a falling head test. In contrast, slug withdrawal causes an instantaneous drop in water level followed by a recovery phase with the water level rising back to the static water level. This test is also referred to as a rising head test. The recovery phase of the well water level is recorded by manual measurements and/or automatic pressure transducer readings. The recovery data can then be analyzed to infer the hydraulic conductivity of the aquifer material in the vicinity of the test well.

A series of falling and/or rising head tests were conducted on all test wells if the recovery was reasonably fast (i.e., less than 30 min). Only one or two tests were conducted on monitoring wells completed in low hydraulic conductivity formations with an associated slow recovery of the well water level during the hydraulic response test.

All hydraulic response test data were analyzed using the methods presented in Appendix D that are implemented in the software AquiferTest Pro Version 2014.1.

### 4.2.3 Pumping Tests

Pumping tests (12 hours in overburden and 24 hours in shallow bedrock) were undertaken at WW15-01 and WW15-02 in order to estimate the bulk hydraulic conductivities of the different hydrostratigraphic units (permeable overburden and shallow fractured bedrock) to better determine anticipated dewatering rates for a possible future open pit. The pumping tests also provided the opportunity to identify aquifer boundaries that may be present given the topography in the vicinity of the proposed open pit and collect groundwater quality samples.

Temporary submersible pumps were installed in WW15-01 and WW15-02 at the depths specified in Table E.

**Table E: Submersible Pump Placement (WW15-01 and WW15-02)**

Well ID	Pump Inlet Placement (m bgs)	Notes
WW15-01	9.4	<ul style="list-style-type: none"> <li>Inlet placed approximately 2.6 m above the top of the screen</li> </ul>
WW15-02	31.4	<ul style="list-style-type: none"> <li>Inlet placed approximately 3.6 m above the base of the screened section of liner in order to provide sufficient flow over the pump motor for cooling.</li> </ul>

At each well, a pressure transducer and logger was installed within a one-inch sounding tube to monitor water level response during each pumping test. Manual water level data were also collected during the testing program using a manual water level sounder. A barologger was placed at each wellhead to monitor the barometric pressure for the duration of testing so that water level data could be corrected for changes in atmospheric pressure.

Flow rates were controlled using a ball valve and rates monitored using a digital flow meter and confirmed throughout the testing program through manual measurements. Tetra Tech EBA measured temperature and field water quality parameters of discharge water at each well through the duration of the pumping test program.

#### 4.2.3.1 Observation Wells

Select wells in the vicinity of WW15-01 and WW15-02 were identified for use as observation wells, with groundwater elevations measured in the wells over the course of the pumping test program. A summary of observation wells is provided in Table F and the locations of observation wells shown in Figure 2.

**Table F: Observation Wells**

Pumping Well ID	Observation Well	Unit Observation Well Completed In	Distance From Pumping Well (m)	Direction From Pumping Well
WW15-01	BH95-23	Overburden (considered to be same unit as pumping well)	24	Southeast
WW15-02	BH95-21	Bedrock	132	South Southwest
	BH95-22	Bedrock	97	East Southeast
	ABM16	Bedrock	190	South Southwest

#### 4.2.3.2 Regulations Relating to Water Discharge

BMC currently holds a Type A Water Licence No. QZ97-026 (the Licence) for the KZK Project that was issued on November 2, 1999 and expires on September 28, 2018. Under this Licence, the licensee is authorized to dewater the overburden and bedrock in the area of the proposed open pit and discharge the water to Geona Creek (Part D.43, p. 10).

Both test wells WW15-01 and WW15-02 are located in the area of the proposed open pit and were completed so they can potentially be used as dewatering wells. Tetra Tech EBA, in consultation with BMC, therefore determined that the pumping tests can be completed under the existing Type A Water Licence.

Even though the Licence permits direct discharge of groundwater from the overburden and bedrock aquifers within the open pit area into Geona Creek, all groundwater produced during the drilling, development and pumping tests was discharged into the ground and returned to the same aquifers it was extracted from to minimize or eliminate any potential environmental impact.

Additionally, pumping tests were designed to minimize the amount of groundwater extracted during each of the tests. The maximum extraction rate was 191 m<sup>3</sup>/day for both pumping tests conducted, i.e., below the threshold of 300 m<sup>3</sup>/day for the requirement of a water licence for water use associated with a quartz mining undertaking. A Schedule 3 notice (Notification of Water Use Without a Licence) was deemed to be not required as BMC holds a valid Type A Water Licence.

#### 4.2.3.3 Pumping Test Program – WW15-01

Hydraulic testing was conducted from October 4 to 6, 2015 by Arctic Sky Welding under the supervision and direction of an onsite Tetra Tech EBA hydrogeologist.

Water pumped from the well during the pumping test program was directed to ground approximately 40 m from WW15-01 via lay flat hosing to a vegetated and low lying area to the north of the well. This was considered far enough from the pumping and observation wells for re-circulation of the pumped water into the aquifer not to be of concern. This location also maximised the distance to nearby surface water bodies (the closest lake is approximately 200 m north of WW15-01), allowing for higher pumping rates with less chance of overland flow reaching the lake. Overland flow was noted to be passive throughout the pumping test program and there was no observable transportation of particulate matter (i.e. silt, sand, or organic matter) between the discharge point and the maximum observed extent of flow.

Further information on the discharge of water to ground during the pumping test program is included in Tetra Tech EBA's November 2015 Technical Memo titled "Pumping Test Program – WW15-01 and WW15-02, Kudz Ze Kayah, October 2015" and included in Appendix E.

#### 4.2.3.4 Step-drawdown Pumping Test

A step-drawdown pumping test consisting of four 1-hour steps of approximately 2.4, 4.7, 9.5 and 15.8 L/s (37.5, 75, 150 and 250 USgpm) was undertaken at WW15-01 on October 4, 2015. The maximum drawdown during the 15.8 L/s (250 USgpm) step was 5.09 m (16.7 ft) below the static water level, at which point the water level was drawn down to the pump inlet. This occurred approximately two minutes into the 15.8 L/s (250 USgpm) step and the test was halted at this point.

After completing the step-drawdown test, Tetra Tech EBA determined that the well could be pumped at 4.4 L/s (70 USgpm) for a 12 hour constant rate test.

#### 4.2.3.5 Constant Rate Pumping Test

A constant rate pumping test was conducted on October 5, 2015 after the well had recovered to 96% of the pre-test static water level. The well was pumped at 4.4 L/s (70 USgpm) for 12 hours and the maximum drawdown during this test was 3.49 m (11.5 ft) below the pre-pumping static water level.

Following the completion of the constant rate pumping test, the groundwater level had recovered to 91 percent of drawdown (from static) after 11.5 hours, at which point the pump and associated pipework was removed from the well.

#### 4.2.3.6 Pumping Test Program – WW15-02

Hydraulic testing was conducted at WW15-02 from October 7 to 11, 2015 by Arctic Sky Welding under the supervision and direction of Tetra Tech EBA.

Prior to the commencement of the pumping test program, the static water level at WW15-02 was measured at 0.94 m above grade (level with the top of the steel casing) and was frozen within the casing. Water in the casing was thawed using a tiger torch applied to the outside of the steel casing. Following thawing and water level recovery, water was observed to be flowing over the top of the casing, indicating the static elevation is above the top of casing.

Water pumped from the well during the pumping test program was directed via lay flat hosing to a vegetated area approximately 60 m to the southeast of WW15-02. This was considered sufficient distance from the pumping and observation wells for re-circulation of the pumped water into the aquifer not to be of concern. This location also maximised the distance to nearby surface water bodies (the closest creek on the valley floor is approximately 200 m east of WW15-02), allowing for higher pumping rates with less chance of overland flow reaching the creek. Over the course of the pumping test program, overland flow was noted to be passive and there was no observable transportation of particulate matter (i.e. silt, sand, or organic matter) between the discharge point and the maximum observed extent of flow.

Further information on the discharge of water to ground during the pumping test program is included in Tetra Tech EBA's November 2015 Technical Memo titled "*Pumping Test Program – WW15-01 and WW15-02, Kudz Ze Kayah, October 2015*", included in Appendix E.

#### 4.2.3.7 Step-drawdown Pumping Test

A step-drawdown test was conducted at WW15-02 on October 7, 2015. During the first step of this test, Tetra Tech EBA observed that the contractor's flow meter was not reading flows accurately with the actual flow rate (based on flow into a 5 gal pail) on the order of three to four times the target flow rate. Due to the inaccurate flow meter readings, Tetra Tech EBA requested the contractor halt the test at the completion of the first step.

Following delivery to site of a flow meter capable of measuring low flow rates, a second step-drawdown pumping test consisting of four 1-hour steps of 0.13, 0.25, 0.76 and 1.9 L/s (2, 4, 12 and 30 USgpm) was undertaken at WW15-02 on October 9, 2015. The maximum drawdown during the 1.9 L/s (30 USgpm) step was 24.4 m (80 ft) below the static water level. At approximately 3.5 minutes into the fourth step, the drawdown increased rapidly and the pumping rate dropped below 1.9 L/s (30 USgpm), even with the discharge valve fully open. As the water level dropped, the pumping rate decreased further as the pump worked to overcome the increasing head. The step-drawdown test was halted after 18 min into the fourth step as useful data was no longer being collected.

After completing the step-drawdown, Tetra Tech EBA determined, based on the data collected from the step rate test that the well could be pumped at 0.7 L/s (11 USgpm) for the 24-hour constant rate test.

#### 4.2.3.8 Constant Rate Pumping Test

A constant rate pumping test was conducted on October 9, 2015 after the well had recovered to 91% of the pre-test static water level. The well was pumped at 0.7 L/s (11 USgpm) for two hours, at which point the water level had drawn down approximately 28 m (92 ft). This was a markedly different response to being pumped at this rate than what had been observed during the step-drawdown test. With drawdown showing no signs of stabilising and the water level nearing the pump inlet, the test was halted after two hours.

The well was left to recover to 92% of the pre-test static water level and a second constant rate test commenced on October 10, 2015. The well was pumped at 0.19 L/s (3 USgpm) for a 24 hour period and the maximum drawdown during this test was 5.73 m (18.8 ft) below the pre-test static water level.

The groundwater level had recovered to 63% of drawdown (from static) after 6 hours, at which point the pump and associated pipework was removed from the well.

### 4.3 Groundwater Level Measurements

Groundwater levels were recorded at each monitoring well using an electronic water level sounder as part of each round of groundwater monitoring. Groundwater levels were measured prior to disturbance by purging and sample collection.

All groundwater levels were measured relative to the top of the PVC well casing. The depth-to-water measurements were converted into piezometric elevations in m asl using the survey data.

### 4.4 Groundwater Sampling

The following sections describe the methods used for groundwater sample collection.

#### 4.4.1 Groundwater Sampling – Monitoring Wells

The groundwater monitoring wells installed at the site were purged and sampled using field methods in accordance with internal work methods that form part of Tetra Tech EBA's Quality Management System. The work methods are based upon generally accepted industry best practices and is in general accordance with applicable ASTM standards. Groundwater monitoring and sampling was completed by qualified Tetra Tech EBA hydrogeologists.

Prior to sampling, the static water level was measured in each well, using an electric measuring tape. Wells were then purged and sampled using an inertial pump. The monitoring wells were purged by removing a minimum of three well volumes (where possible) using a Waterra inertial pump prior to a sample being obtained. Where purge rates were high and required purged volumes low (i.e. less than 15 to 20 L), up to six holding volumes were purged prior to sample collection. Field parameters were recorded after approximately the first litre was purged from the well and then at regular intervals to sample collection.

As described above, while purging, physicochemical parameters (pH, temperature, electrical conductivity, and dissolved oxygen) were measured and recorded. All field measurements were conducted in a 1 L-bottle that was also used as a flow cell. The field parameters were measured using a YSI Professional Plus Multimeter. The pH probe was calibrated using a two-point calibration with pH 7 and pH 10 calibration solutions. The electrical conductivity probe was calibrated using a one-point calibration with a 1,413  $\mu\text{S}/\text{cm}$  standard. The pH and electrical conductivity readings were checked every day while in the field using pre-made calibration solutions and found to have drifted very little from calibrated values.



After each monitoring well was purged, samples were collected for analysis of low-level total and dissolved metals, acidity, alkalinity, anions, dissolved organic carbon, electrical conductivity, hardness, ammonia, total phosphorus, pH, total dissolved solids, dissolved orthophosphate and total Kjeldahl nitrogen.

In addition to the monitoring wells, two flowing artesian wells (designated ART-3 and ART-4) in the area of the ABM deposit were sampled prior to being capped. The two wells are located at 414798 E / 6815481 N (ART-3) and 414947 E / 6815750 N (ART-4). Both wells are located in the western portion of the proposed open pit.

Each sample was labelled with the location ID, project number and the date. New, clean sample containers and appropriate preservatives for each suite of tests were provided by the laboratory. Samples were appropriately preserved in the field and the majority of dissolved metals and dissolved organic carbon samples field filtered using a 0.45 µm filter. Samples were stored in coolers containing ice packs and delivered to the laboratory (Maxxam Analytics in Burnaby, BC) under chain of custody control within the appropriate holding times. The Maxxam laboratory is an accredited ISO/IEC 17025 testing laboratory.

#### **4.4.2 Groundwater Sampling – WW15-01 and WW15-02**

One sample was collected from WW15-01 by Tetra Tech EBA on October 5, 2015 immediately prior to the completion of the 12 hour constant rate pumping test and one sample was collected from WW15-02 by Tetra Tech EBA on October 11, 2015 immediately prior to the completion of the 24 hour constant rate pumping test.

Both samples were analyzed for total dissolved solids, alkalinity, electrical conductivity, pH, total organic carbon, total suspended solids, major ions (bicarbonate, carbonate, hydroxide, chloride, sulphate, and fluoride), dissolved metals, total metals, biological oxygen demand, and turbidity.

Samples were collected in laboratory supplied sample bottles in accordance with laboratory sampling protocols. All samples were stored on ice and shipped to Whitehorse via road then by air cargo to Maxxam Analytics, an accredited ISO/IEC 17025 testing laboratory located in Burnaby, BC.

#### **4.5 Capping of Flowing Wells**

At the request of BMC, Tetra Tech EBA and Arctic Sky Welding attended and capped a number of flowing artesian boreholes across the Project area. This work was conducted in conjunction with the October 2015 pumping test program. Male threaded NQ (60 mm ID) and NW (76.2 mm ID) size borehole caps made from machined aluminum were fitted directly into the female threaded borehole steel casing.

Where casing was corroded or out of shape, caps were fitted and secured using pipe and chain wrenches. These boreholes will likely require similar tools to remove the caps if access is needed in the future. If seepage was still evident following capping, the cap was removed and electrical tape was wrapped around the cap thread to enhance the seal.

Table G provides a summary of the capping work conducted. Tetra Tech EBA notes that ten borehole locations were attended by Arctic Sky Welding and their work was not viewed or verified.

#### **4.6 Ground Temperature Monitoring**

Ground temperatures were monitored using the VWP's installed at two locations within the area of the ABM deposit (K15-200 and K15-248; see Section 4.1.4). In addition, Knight Piesold (2016) installed four additional observation wells in early 2016 with ground temperature cables across the KZK Project area. Table H shows the location and completion details of the ground temperature observation wells. Figure 2 shows the location of the four ground temperature observation wells. The ground temperature observation wells were completed with 25 mm (1")

diameter PVC standpipes grouted in place. The thermistor cables were installed inside the PVC standpipe filled with silicone oil. Each of the observations wells is equipped with a datalogger collecting two measurements of ground temperatures per day.

**Table G: Borehole Capping Program (October 2015)**

Hole ID	Casing Size	Well Capped	Capped/ Attended by	Notes
K94021	NW	Yes	Tetra Tech EBA	Sealed using electrical tape around cap thread
K97172	NW	No	Tetra Tech EBA	Could not cap as PVC casing extending out of steel casing. Will need to be revisited with tool appropriate to internally cut PVC (i.e. a dremel), then capped
K95161	NW	Yes	Arctic Sky Welding and Tetra Tech EBA	Sealed using electrical tape around cap thread
K94026	NW	Yes	Arctic Sky Welding	Capped and sealed
K98190N	NW	No	Arctic Sky Welding	Two boreholes were understood to be at this location, only one could be located. Cap fitted to this borehole.
K98190S	NQ	Yes	Arctic Sky Welding	Capped and sealed
K95170	NQ	No	Arctic Sky Welding	Two boreholes were understood to be at this location, only one could be located. The casing of this borehole was too big for NQ or NW cap. Is possibly HQ size (77.9 mm ID)?
K95170	NW	No	Arctic Sky Welding	
K98194N	NQ	Yes	Arctic Sky Welding	Capped and sealed
K98194S	NW	Yes	Arctic Sky Welding	Capped and sealed
K98195N	NQ	Yes	Arctic Sky Welding	Capped and sealed
K98195S	NW	Yes	Arctic Sky Welding	Capped and sealed
K98191	NW	Yes	Arctic Sky Welding	Borehole identified by adjacent stake as K98191. This borehole was not on original list to be capped. Capped following conversation between Arctic Sky Welding and Equity Exploration representative (Kelli Bergh) where Equity Exploration directed Arctic Sky Welding to cap any additional flowing boreholes noted.



**Table H: Ground Temperature Observation Wells**

Final Drillhole ID	UTM NAD83 Zone 09N			Thermistor Cable ID	Datalogger ID	Thermistor Cable Length (m)	Depth of Thermistor Nodes (m bgs)
	Easting (m)	Northing (m)	Elevation (m asl)				
KP15-01	414,924	6,818,696	1,347	TS4038	04775	50	0.99
							1.99
							2.99
							4.49
							6.49
							9.49
							13.49
							20.49
							33.49
48.49							
KP15-02	415,347	6,816,411	1,387	TS4036	04777	30	1.58
							2.58
							3.58
							5.08
							7.08
							10.08
							14.08
							19.08
							24.08
29.08							
KP15-05	414,667	6,817,327	1,421	TS4035	04779	30	1.50
							2.50
							3.50
							5.00
							7.00
							10.00
							14.00
							19.00
							24.00
29.00							
KP15-06	414,792	6,819,016	1,318	TS4037	04776	50	1.30
							2.30
							3.30
							4.80
							6.80
							9.80
							13.80
							20.80
							33.80
48.80							

## 5.0 RESULTS AND DISCUSSION

### 5.1 Monitoring Well Completion

A total of 19 groundwater monitoring wells were installed at 11 locations to study the hydrogeological regime at the site. All monitoring wells were installed as nested pairs with the exception of MW15-01, MW15-02 and MW15-06. Figure 2 shows the locations of the newly installed monitoring wells.

Table 1 (attached) presents the well completion details for the monitoring wells installed as part of this project. Well logs indicating the lithologies encountered and well completion details are included in Appendix B1. Depth to groundwater and groundwater elevations are summarized in Table 2 (attached).

Issues were encountered during the monitoring well installation at MW15-05 and MW15-06. While installing the bentonite seal above the sand pack, the driller lost count of the number of drill rods that had been pulled. Consequently, bentonite chips were poured in the annulus between the drill rods and the monitoring wells. When removing another drill rod, the monitoring wells jacked. The shallow well, MW15-05S, lifted approximately 0.6 m resulting in the screened section being above the top of the sand pack. The deep well, MW15-05D, did not appear to be damaged but when confirming the depth to bottom within the well, the measurement taken after the well jacked was shallower than before. As bentonite was also noted within the well, it appears as though MW15-05D was damaged during the installation.

While installing the surface seal at MW15-06, the PVC standpipe broke approximately 0.6 m below ground. The PVC was extended using a coupler, however, some bentonite and sand entered the well. During the well development, some of the bentonite and sand were removed from the well.

No other issues were encountered during the drilling and monitoring well installations.

### 5.2 Vibrating Wire Piezometers

VWPs were installed into two exploration boreholes, ABM16/K15-200 and ABM50/K15-248 within the area of the proposed open pit. Table I summarizes the completion details of the two nested VWP installations including the depths of installation.

The pressure readings from the VWP were converted into piezometric elevations based on the elevation at which the instrument was installed. The raw and reduced data from the VWPs are presented in Appendix C. Inferred piezometric elevations are also summarized in Table J. The depths below ground presented in Table I should be considered approximate as the values do not take into account elevation changes between the drill collar and the actual location of the VWPs based on the azimuth and dip of the borehole.

#### 5.2.1 Inferred Piezometric Elevations

Groundwater piezometric elevations were inferred from the pore pressure measurements with the VWPs and direct measurements of the depth to groundwater in the deep monitoring wells. The depth to groundwater and groundwater elevation measurements collected at KZK are presented in Table 2 (attached) and Appendix C, and summarized in Table J below. The pore pressure measured by the VWPs is usually significantly affected by the disturbance due to drilling and grouting of the well and depending on the permeability of the formation and grout, it may take a considerable period of time for the pore pressures to re-equilibrate. The observed pore pressure readings from the VWPs (see Appendix C) suggest that the pore pressures have mostly returned to pre-disturbance conditions. However, additional readings from the VWPs are required to verify this observation.

The shallow monitoring wells MW15-03S through MW15-11S were installed within the overburden aquifer. The piezometric elevations measured in the shallow monitoring wells therefore reflect the shallow groundwater table within the overburden. Piezometric elevations observed in the shallow monitoring wells are summarized in Table K.

**Table I: VWP Installation Details**

Area	VWP ID	Well ID	Azimuth	Dip	VWP No.	Depth Along Hole (m)	Depth (m bgs)	VWP S/N
						m ah	m bgs	
ABM Open Pit (west of Geona Creek)	VWP15-01	ABM16/ K15-200	180	-70	1	49.99	46.98	33427
					2	124.97	117.43	33428
					3	199.95	187.89	33430
ABM Open Pit (east of Geona Creek)	VWP15-02	ABM50/ K15-248	180	-50	1	50.80	47.74	33426
					2	174.30	163.79	33429
					3	274.30	257.76	33431

'VWP' Vibrating Wire Piezometer

'm ah' meter along hole

'm bgs' meters below ground surface

'S/N' serial number

**Table J: Piezometric elevations inferred for the bedrock aquifer at KZK measured on September 22 and 23, 2015 (unless noted otherwise)**

Well ID	Easting	Northing	Top of Casing Elevation	Depth to Groundwater	Piezometric Elevation
	m	m	m asl	m btoc	m asl
MW15-01	414472	6816559	1488.54	11.42	1477.12
MW15-02	414808	6816270	1431.19	Flowing <sup>1</sup>	1431.19
MW15-03D	416317	6816052	1466.18	2.77	1463.41
MW15-04D	415786	6816156	1452.07	7.20	1444.87
MW15-05D	415852	6816872	1464.88	11.72	1453.16
MW15-07D	414922	6817784	1360.86	Flowing <sup>1</sup>	1360.86 <sup>1</sup>
MW15-08D	414904	6818518	1333.42	0.64	1332.78
MW15-09D	414709	6819177	1319.75	Flowing <sup>1</sup>	1319.75 <sup>1</sup>
MW15-10D	414794	6819203	1318.89	Flowing <sup>1,2</sup>	1318.89 <sup>1,2</sup>
MW15-11D	415079	6815119	1387.07	Flowing/frozen?	1387.07 <sup>1,3</sup>
K15-200-VWP-1	414749	6815599	1408.93	5.19	1403.74
K15-200-VWP-2	414749	6815599	1408.93	2.14	1406.79
K15-200-VWP-3	414749	6815599	1408.93	2.34	1406.59
K15-248-VWP-1	415207	6815283	1424.38	18.1	1406.28
K15-248-VWP-2	415207	6815283	1424.38	17.34	1407.04
K15-248-VWP-3	415207	6815283	1424.38	6.52	1417.86
BH95G-2	414341	6819836	1349.77	4.89	1344.88

Well ID	Easting	Northing	Top of Casing Elevation	Depth to Groundwater	Piezometric Elevation
	m	m	m asl	m btoc	m asl
BH95G-21	414802	6815641	1403.47	2.11	1401.36
BH95G-22	414928	6815729	1385.52	2.3	1383.22
BH95G-24	415037	6815258	1385.30	Flowing	1385.30
BH95G-25D	415074	6815522	1386.90	4.38	1382.52
BH95G-30	415437	6816766	1386.88	Frozen @ 0.61	1386.27
BH95G-31	415199	6816129	1391.74	1.09	1390.65
BH95G-32	415008	6816134	1387.46	4.95	1382.51
BH95G-33D	415130	6816745	1390.48	5.83	1384.65
BH95-129	414601	6815499	1444.66	5.63	1439.03
BH95-131	415182	6815377	1417.29	31.22	1386.07
BH95-146	414898	6815504	1390.23	Flowing	1390.23

UTM coordinates are measured in NAD83 and Zone 9V

<sup>1</sup> – Artesian conditions observed at this well. Groundwater elevation is assumed to be at the top of the PVC pipe.

<sup>2</sup> – Groundwater elevations measured on September 5, 2015.

<sup>3</sup> – Groundwater elevations measured on November 7, 2015.

**Table K: Piezometric elevations inferred for the overburden aquifer at KZK measured on September 22 and 23, 2015 (unless noted otherwise).**

Well ID	Easting	Northing	Top of Casing Elevation	Depth to Groundwater	Piezometric Elevation
	m	m	m btoc	m btoc	m asl
MW15-03S	416317	6816052	1466.19	4.81	1461.85
MW15-04S	415786	6816156	1452.06	7.84	1444.85
MW15-05S	415852	6816872	1464.88	Dry	-
MW15-06	415460	6816722	1388.56	0.39	1388.56
MW15-07S	414922	6817784	1360.90	1.55	1359.38
MW15-08S	414904	6818518	1333.51	Flowing <sup>1</sup>	1333.51 <sup>1</sup>
MW15-09S	414709	6819177	1319.66	0.10	1319.56
MW15-10S	414794	6819203	1318.92	0.37 <sup>2</sup>	1318.29 <sup>2</sup>
MW15-11S	415079	6815119	1387.14	2.13 <sup>3</sup>	1385.01 <sup>3</sup>
BH95G-23	414906	6815276	1387.18	0.83	1386.35
BH95G-25S	415073	6815522	1386.92	1.38	1385.54
BH95G-29	415197	6814543	1392.56	Flowing	1392.56
BH95G-33S	415130	6816745	1390.48	6.3	1384.18

UTM coordinates are measured in NAD83 and Zone 9V

<sup>1</sup> – Artesian conditions observed at this well. Groundwater elevation is assumed to be at the top of the PVC pipe.

<sup>2</sup> – Groundwater elevations measured on September 5, 2015.

<sup>3</sup> – Groundwater elevations measured on November 7, 2015.

## 5.3 Hydraulic Well Testing

The following sections present the results of the hydraulic well tests conducted to infer the hydraulic conductivity of the bedrock aquifer at KZK

### 5.3.1 Packer Testing Results

This section presents the results of the packer tests that were employed to collect data for determining the bedrock hydraulic conductivity in the areas of the main mineralized zones at KZK. The results of the individual packer tests are presented in Tables 3A and 3B (attached). The raw data and analysis for each packer test are included as Appendix F.

In addition to the packer tests conducted by Tetra Tech EBA, Knight Piesold also conducted packer tests on geotechnical drill holes in December 2015 using a similar method as described in Section 4.2.1 (Knight Piesold, 2016). The results of the packer tests conducted by Knight Piesold are also presented in Table 3B. However, as Tetra Tech EBA was not involved with conducting and analyzing of these packer tests, we cannot confirm the quality and accuracy of the data and rely on the information provided by Knight Piesold.

The packer tests were conducted at selected depth intervals deemed representative for both intersected bedrock sequences and structural features encountered as observed in the drill core. All test intervals were chosen over intervals expected to be below the groundwater table.

To assess the validity of the packer test data with respect to the assumptions implied by the analytical method of Thiem for inferring the aquifer hydraulic conductivity, the observed flow rate is plotted against the injection pressure for each pressure step (Figures 5a to 5g; attached). Ideally the flow rate should increase linearly with increasing injection pressure. However, deviation from the linear behaviour is often observed in packer test data and can be caused by a variety of reasons including, but not limited to, the following:

- Washing out of gouge material from fractures causing increased permeability;
- Fracture dilation or hydraulic fracturing due to excessive pressure;
- Clogging of fractures by transported material with a decrease in permeability; and,
- Turbulent (non-Darcian) flow due to excessive flow rate.

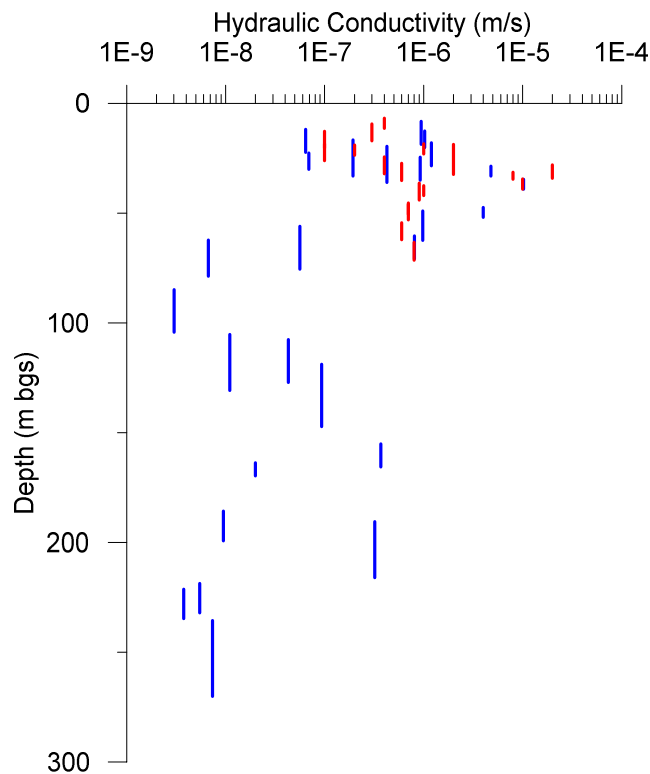
Tables 4A and 4B (attached) summarize the results of the diagnostic plot analysis and presents a data quality assessment. Packer tests with ideal linear flow behaviour are likely to result in reliable estimates of hydraulic conductivity using the method presented in Section 4.2.1. Moderate quality data will likely still result in reasonable estimates of hydraulic conductivity but should be used with some caution. Poor quality data with non-linear flow behaviour should be interpreted cautiously and may not result in representative estimates of hydraulic conductivity.

As shown in Tables 4A and 4B most packer tests yielded good to moderate quality data that are expected to provide reliable estimates of the bedrock hydraulic conductivity in the immediate vicinity of the test holes. The poor quality data may not satisfy the underlying assumptions of the analysis method presented in Section 4.2.1 and may not provide reliable estimates of bedrock hydraulic conductivity. These results are highlighted in Tables 3A and 3B, not included in Figure B, and should be used with caution.

Tables 3A to 3B (attached) presents the inferred hydraulic conductivities for each packer test. The inferred hydraulic conductivities range from about  $<1 \times 10^{-9}$  m/s to about  $1 \times 10^{-5}$  m/s which are typical values for fractured bedrock (e.g., Freeze and Cherry, 1979).

Equity Exploration Consultants also logged all drill core for some basic geotechnical parameters, including Recovery and Rock Quality Designation (RQD). Both Recovery and RQD are related to the degree of fracturing of the bedrock and therefore potentially to the permeability as well. Figures 6a and 6b (attached) shows the inferred hydraulic conductivities from packer tests along with the Recovery and RQD values. However, there is no clear correlation between the inferred hydraulic conductivities and Recovery or RQD.

Figure B shows the inferred hydraulic conductivities as a function of depth. Typically, hydraulic conductivities decrease with depth as a result of increased pressure due to the overlying rock mass and the associated closure of permeable features, such as joints and faults. A similar trend is apparent in Figure B with a decreasing trend in the inferred hydraulic conductivities with increasing depths.



**Figure B: Hydraulic conductivities inferred from packer tests vs. depth (blue – packer tests conducted by Tetra Tech EBA; red – packer tests conducted by Knight Piesold)**

### 5.3.2 Hydraulic Response Testing Results

Hydraulic response tests were conducted on all monitoring wells where artesian conditions were not present to infer the hydraulic conductivity of the bedrock and overburden aquifers. Multiple tests were conducted on each monitoring well to confirm the test results and reduce uncertainty if the recovery was sufficiently fast. Only one or two tests were conducted on monitoring wells that exhibited a very slow recovery. However, all hydraulic response tests conducted on slow recovery wells produced suitable response data and Tetra Tech EBA therefore deems the inferred hydraulic conductivities reliable.

Table L summarizes the hydraulic response test results for each individual monitoring well. The hydraulic response test data and detailed analysis are included in Appendix D.

The inferred hydraulic conductivities agree reasonably well with the results from the packer tests discussed in Section 5.3.1.

**Table L: Hydraulic Response Test Results**

Well ID	Number of Tests	Inferred Hydraulic Conductivity
		Geometric Mean
		(m/s)
MW15-01	3	1.2E-06
MW15-03S	4	8.5E-06
MW13-03D	4	1.9E-06
MW15-04S	3	1.1E-05
MW15-04D	4	9.2E-07
MW15-05D	5	1.3E-06
MW15-06	3	1.5E-06
MW15-07S	5	4.5E-06
MW15-08D	3	1.3E-07
MW15-09S	3	1.6E-06
MW15-10S	4	2.0E-06
MW15-11S	2	3.6E-05

### 5.3.3 Pumping Test Results

Pumping tests were conducted at WW15-01 and WW15-02 in order to estimate the bulk hydraulic conductivities of the permeable overburden and shallow fractured bedrock units.

#### 5.3.3.1 Pumping Test Results – WW15-01 (Overburden)

Water levels were recorded during the step-drawdown and constant rate tests at WW15-01 and observation well BH95G-23. Observed drawdown and recovery in both wells during the constant rate pumping test are shown in Figure E1 (Appendix E). Figure E1 shows the water level in WW15-01 continued to fall throughout the 12-hour pumping test and had not stabilised at the termination of the test.

Figure E2 presents a semi-log plot of time vs drawdown in WW15-01 and observation well BH95G-23. This figure shows a slowing in the rate of drawdown after approximately 5 hours, potentially indicating a recharge boundary had been encountered. Based on the surrounding setting, it is possible the recharge boundary may be associated with leakage from the pond, located approximately 40 m to the east of WW15-01.

Data recorded at BH95G-23, a small diameter (32 mm) well which is screened in the same aquifer as WW15-01 indicates a direct and rapid hydraulic connection between the two wells, with changes in pumping rates at WW15-01 during the step rate and constant rate tests observed almost immediately at BH95G-23.

Drawdown data at WW15-01 and BH95G-23 during the constant rate test were analyzed using the Cooper-Jacob Straight-Line Time-Drawdown and Theis recovery Methods (e.g., Fetter, 2001). Both interpretation methods were applied using the software AquiferTest Pro (by WHI, v2014.1), which was used to analyze the pumping test data (see Appendix E).

The results of the pumping test are presented in Table M. The observed hydraulic conductivity of about  $1 \times 10^{-4}$  m/s is typical for conductive sand and gravel deposits as encountered at WW15-01. However, this value is significantly higher than the geometric mean of the hydraulic conductivity of the overburden aquifer ( $4 \times 10^{-6}$  m/s) inferred from the hydraulic response tests (see Table 3A). It should be noted that the highest hydraulic conductivity inferred from the hydraulic response tests was also observed in the area of the ABM deposit (MW15-11S), which may indicate that the hydraulic conductivity of the overburden aquifer in the area of the proposed open pit is higher than the average of the study area.

Based on data collected from the observation well (BH95G-23) during the pumping test, the aquifer has a storativity value of  $6.5 \times 10^{-4}$ , which is in line with typical literature values for storativity values in confined aquifers (e.g., Fetter, 2001).

**Table M: Pumping Test Results WW15-01**

Well	Method	Transmissivity (T)	Hydraulic Conductivity (K) <sup>1</sup>	Storativity (S) <sup>2</sup>
		[m <sup>2</sup> /s]	[m/s]	[unitless]
<b>Pumping Well</b>				
WW15-01	Cooper-Jacob	5.1E-04	1.2E-04	-
	Theis Recovery	3.8E-04	9.0E-05	-
	<b>Mean</b>	<b>4.5E-04</b>	<b>1.1E-04</b>	-
<b>Observation Well</b>				
BH95G-23	Cooper-Jacob	5.1E-04	1.2E-04	6.5 E-04
	Theis Recovery	4.0E-04	9.6E-05	-
	<b>Mean</b>	<b>4.6E-04</b>	<b>1.1E-04</b>	-

<sup>1</sup>Assumes an aquifer thickness of 4.2 m <sup>2</sup> Based on radial distance from the pumping well of 24 m.

### 5.3.3.2 Pumping Test Results – WW15-02 (Bedrock)

Water levels were recorded during the step-drawdown and constant rate tests at WW15-02. Observed drawdown and recovery in WW15-02 during the constant rate pumping test is shown in Appendix E. As shown in Figure E3, the water level continued to fall throughout the 24-hour pumping test, although the data shows there was very little change in water level during the last 12 hours of the test (< 0.1 m).

Dataloggers were installed in nearby groundwater wells BH95G-21 and BH95G-22 during the pumping test program. Both of these wells are small diameter (32 mm) monitoring wells. BH95G-21 is screened in bedrock from approximately 6 to 9 m bgs while BH95G-22 is screened across the overburden and bedrock aquifers. The data recorded from these two wells showed no response to the pumping of WW15-02 during the step-drawdown or constant rate tests. Readings were also obtained from VWP's in K15-200 over the course of the pumping test program. The VWP's in K15-200 measures piezometric levels at three intervals in the bedrock aquifer; 47 m, 117 m and 188 m bgs. Measurements from the VWP's at 47 m and 188 m bgs did not show a response to the pumping of



WW15-02, with elevations generally increasing over the course of the pumping test program. The VWP at 117 m bgs showed an approximate 0.23 m decline in elevation over 12 hr period in the middle period of the pumping test, before showing a 0.03 m increase in elevation over the last eight hours of the test. Tetra Tech EBA consider this response is unlikely to be related to the pumping test at WW15-02 and is more likely related to exploration drilling work that was being conducted in the general vicinity.

While the absence of clear response in observation well infers there may not be a hydraulic connection between the pumping and observation wells/ VWP's, the pumping rates and time intervals of the testing program, particularly the 24-hour constant rate test (3 USgpm) may not have been sufficient to induce a response in the observation wells.

The drawdown data during the pumping test were analyzed using the Cooper-Jacob Straight-Line Time-Drawdown and Theis recovery Methods (e.g., Fetter, 2001). Both interpretation methods were applied using the software AquiferTest Pro (by WHI, v3.5), which was used to analyze the pumping test data (see Appendix E).

The results of the WW15-02 pumping test are presented in Table N. The observed hydraulic conductivity of about  $1.7 \times 10^{-6}$  m/s is in the expected range for fractured rock aquifer, such as that encountered at WW15-02.

**Table N: Pumping Test Results WW15-02**

Well	Method	Transmissivity (T)	Hydraulic Conductivity (K) <sup>1</sup>
		[m <sup>2</sup> /s]	[m/s]
WW15-02	Cooper-Jacob	7.6E-5	2.2E-6
	Theis Recovery	3.9E-5	1.1E-6
	<b>Mean</b>	<b>5.8E-5</b>	<b>1.7E-6</b>

<sup>1</sup>Assumes an aquifer thickness of 34.7 m

### 5.3.3.3 Well Capacity – WW15-01 and WW15-02

WW15-01 and WW15-02 were designed and constructed in recognition that they may be used during mining operations as dewatering/ extraction wells. Pumps used for dewatering/ extraction should be selected in recognition of the maximum theoretical yield that can be obtained from a well.

The maximum theoretical yield from a well is governed by multiple factors including maximum flow through the well screen (screen transmitting capacity) and maximum flow within the well casing/screen (to maintain laminar flow). When assessing the maximum pumping rate, it should be set at the smallest of the governing flow rates for the well.

#### WW15-01

Table O provides recommended maximum flow values for WW15-01, based on physical well details and assumes that the pump is placed within the screen to maximise its dewatering capability.

Table O shows that flow from WW15-01 will be constrained by the screen transmitting capacity value. In order to ensure laminar flow and maximise pump efficiency, the ideal pumping rate for WW15-01 is at or below 26 L/s (416 USgpm). If this well is to be used as a dewatering well, a pump should be selected in consideration of this constraining flow rate.

## WW15-02

Table P provides recommended maximum flow values for WW15-02 based on physical well details. These calculations are based on the 152 mm (6") PVC liner installed in the well.

Table P shows flow from WW15-02 will be constrained by the screen transmitting capacity. Therefore, in order to ensure laminar flow and maximise pump efficiency, based on the physical well details, the ideal pumping rate for WW15-02 is at or below 5.5 L/s (87 USgpm).

Tetra Tech EBA notes that in reality, flow from the well will be constrained by the yield from the aquifer. Based on the October 2015 pumping test program, pumping rates on the order of 0.7 L/s (11 USgpm) resulted in drawdown close to the base of the well. If this well is to be used as a dewatering well, the pump should be selected in consideration of this constraining flow rate, rather than the higher screen transmitting capacity value.

**Table O: Well Capacity - WW15-01**

Flow Type	Maximum Flow Value	
	L/s	USgpm
Screen Transmitting Capacity <sup>1</sup>	26	416
Casing/Well Screen (0.176 m [7" diameter]) <sup>2</sup>	39	615

<sup>1</sup>Assumes screen is fully saturated <sup>2</sup>Based on screen internal diameter as pump likely to be placed within screen for dewatering

**Table P: Well Capacity - WW15-02**

Flow Type	Maximum Flow Value <sup>1</sup>	
	L/s	USgpm
Screen Transmitting Capacity	5.5	87
Casing/ Well Screen (0.133 m [5.2" internal diameter]) <sup>2</sup>	31	338

<sup>1</sup> Assumes 12.1 m screen is fully saturated <sup>2</sup>Based on screen inner diameter (ID) of 0.133 m

<sup>2</sup> Based on screen section internal diameter as pump likely to be placed within screen for dewatering

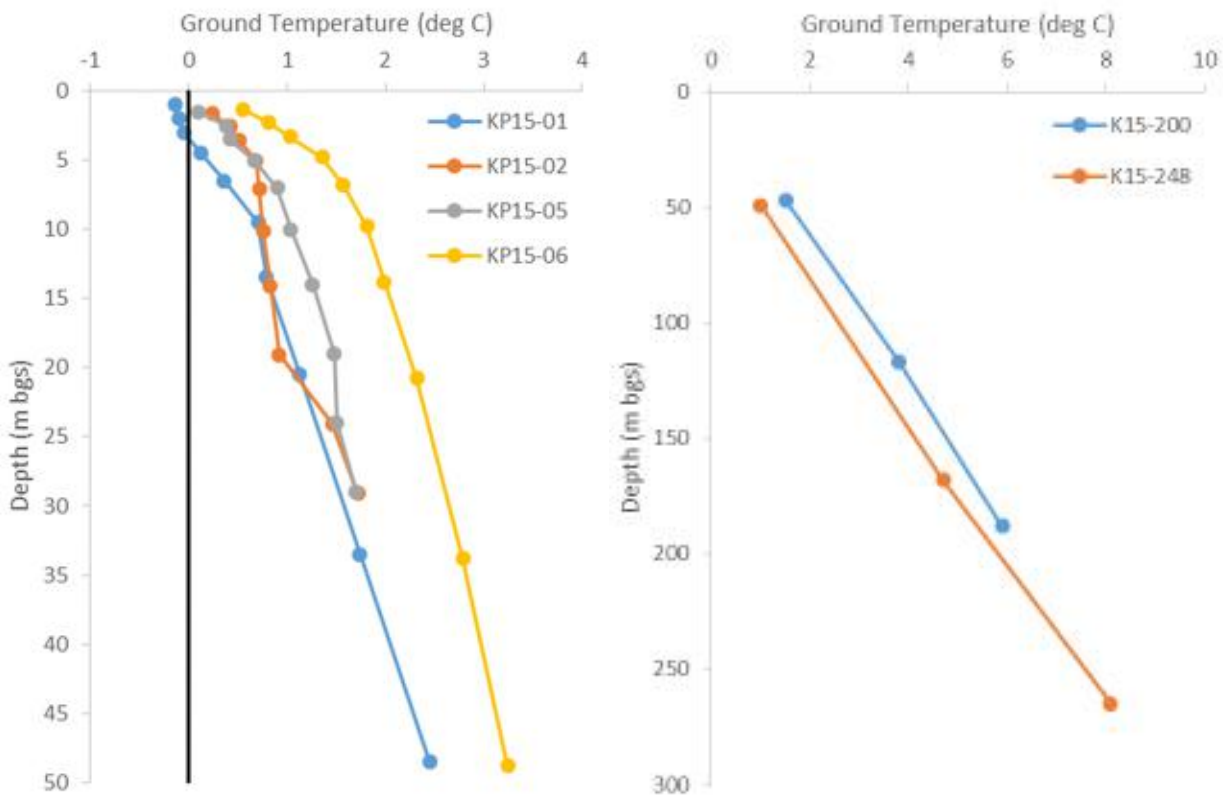
## 5.4 Ground Temperatures

Ground temperatures were measured using two observation wells with VWP's within the area of the ABM deposit and four ground temperature observation wells with thermistor cables located across the site. The VWP's were installed in August 2015 whereas the four ground temperature observation wells were installed in December 2015 with the thermistor cables deployed in February 2016. It is expected that drilling and well installation resulted in a disturbance of the ground temperature profile in the vicinity of the observation wells and that it would take several days to weeks for the ground temperatures to re-equilibrate. Ground temperatures were monitored in March 2016 about six weeks after the last disturbance caused by well completion. Data recorded twice a day for the ground temperature observation wells indicate that temperatures had re-equilibrated shortly after deployment of the

thermistor cables by consistent temperature readings below a depth of about 10 m bgs. Figure C shows the ground temperature profiles observed in the ground temperature observation wells and VWPs, respectively.

The ground temperature profiles presented in Figure C suggest that permafrost is absent at all six locations below a depth of about 50 m bgs, and completely absent (even at shallow depths) at the locations of the four ground temperature observations wells KP15-01, KP15-02, KP15-05, and KP15-06. The negative temperatures measured in KP15-01 near surface very likely represent seasonal frost rather than shallow permafrost.

The geothermal gradient inferred from the ground temperature measurements below about 15 m depth (i.e., below the depth of seasonal ground temperature fluctuations) is about 3°C per 100 m for wells KP15-05, KP15-06, K15-200 (VWP) and K15-248 (VWP) which is an average geothermal gradient for continental crust. However, ground temperatures recorded in KP15-01 and KP15-02 suggest a much larger geothermal gradient of about 50°C per km which would be an anomalously high geothermal gradient. It should be noted that KP15-01 and KP15-02 are only about 50 m and 30 m deep, respectively, and that the VWPs in K15-200 and K15-248 span a much larger depth range of about 150 m and 200 m, respectively; and hence, are likely to provide a more reliable estimate of the regional geothermal gradient. One possible explanation of the higher geothermal gradient observed in KP15-01 and KP15-02 is that the shallow ground temperatures at these locations are affected by upwelling of warmer groundwater from greater depth which would be in line with the observed upward vertical hydraulic gradients at most locations throughout the site (see Section 6.2).



**Figure C: Ground temperatures observed across the KZK project site. (A) Ground temperatures measured in ground temperature observation wells. (B) Ground temperatures measured by VWPs in the area of the ABM deposit.**

## 5.5 Groundwater Quality

The following sections present a characterization of the baseline groundwater quality at the site based on data collected to date.

### 5.5.1 Summary of Historical Groundwater Quality Data

In September 1995, groundwater samples were collected from select piezometers and exploration holes to characterize the quality of groundwater providing baseflow to Geona Creek and South Creek (Cominco, 1996; Table Q). One piezometer below the proposed tailings dam (BH95G-13D), and two in the area of the proposed open pit (BH95G-26 and BH95G-29) were sampled, and analyzed for a range of non-metal "general parameters" as well as total and dissolved metals. The general parameters included pH, conductivity, suspended solids, dissolved solids, hardness, alkalinity, nitrogen species, phosphorous and sulphate. Three other piezometers, located on the north and south sides of the open pit (BH95G-21 and BH95G-23), and west of the proposed Class C Storage Area (95G-31) were also sampled. These samples were analyzed for total and dissolved metals only. Flowing exploration boreholes were sampled including one each on the north and south sides of the open pit (T94-23 and T94-49). These samples were analyzed for general parameters and total and dissolved metals. Three other borehole samples (T94-14, T94-26 and T94-30) were analyzed for total and dissolved metals only. All of the exploration boreholes were cased through the overburden, and are open for the remaining length of the borehole in bedrock.

Analytical results showed that groundwater chemistry was similar to surface water chemistry (Table R). The groundwater pH was similar to that of surface water. Alkalinity, total dissolved solids and hardness were slightly higher in groundwater than in surface water. Sulphate concentrations were variable, with two wells (one shallow, one deep) having sulphate concentrations more than double the concentrations in surface water and the remaining three having similar concentration to surface water. Concentrations of nitrate, nitrite and ammonia were generally low except for a moderate level of nitrate-N (0.13 mg/L) in shallow well BH95G-26. The two shallow overburden wells (BH95G-26 and BH95G-29) had phosphorus concentrations an order of magnitude or more above those measured in surface water. Metal concentrations in both shallow and deep groundwater were low. In particular, copper and lead concentrations in all groundwater samples were equal to or lower than the concentrations in surface water. Exceptions to the pattern of low metals were elevated concentrations of arsenic and iron in the three deep bedrock wells within the orebody (T94-49, T94-30 and T94-13) and elevated arsenic, iron, cadmium and zinc in one overburden well.

The deep well (T94-49) with the highest arsenic and iron concentrations (170 µg/L and 4300 µg/L, respectively) also had elevated sulphate (71.4 mg/L) and the lowest pH and alkalinities of any of the wells measured. Zinc was also somewhat elevated (160 µg/L). Sulphate, pH and alkalinity were not measured in the shallow well that had elevated arsenic, iron, cadmium and zinc (BH95G-26).

**Table Q: Summary of Wells with Historical Groundwater Quality Data (Cominco, 1996)**

Borehole	Location	Well Screen (mbgs)	Flowing	Analyses		Field Measurements			
				General Parameters	Metals Only	pH	Cond (µS/cm)	Temp (°C)	DO (mg/L)
BH95G-13D	Tailings Dam	39.4-50.3	Y	X		8.2	202	3.0	4.2
BH95G-26	Open Pit	10.0-14.3	N	X		7.9	330	2.5	3.5
BH95G-29	Open Pit	14.3-19.2	N	X		8.0	228	2.5	2.4
BH95G-21	Open Pit	5.3-10.0	N		X	7.8	218	2.0	7.6
BH95G-23	Open Pit	8.8-12.8	Y		X	8.0	228	2.5	2.4
BH95G-31	Class C Storage	2.4-10.0	N		X	8.0	160	2.0	7.4
T94-23	Open Pit	-	Y	X		8.1	252	2.5	1.9
T94-49	Open Pit	-	Y	X		7.9	398	2.5	2.0
T94-14	Open Pit	-	Y		X	7.9	398	2.5	2.0
T94-26	Open Pit	-	Y		X	8.1	235	3.5	1.8
T94-30	Open Pit	-	Y		X	8.0	245	2.5	3.2

**Notes:**

Cond – Specific conductance

Temp – Water temperature

DO – Dissolved oxygen

**Table R: Historical Groundwater Quality Data (Cominco, 1996)**

PARAMETER	UNIT	BH95G-13	BH95G-31	BH95G-26	BH95G-21	BH95G-23	BH95G-29	T94-23	T94-26	T94-49	T94-30	T94-14
Specific Conductance	µS/cm	350	-	783	-	-	516	567	-	449	-	-
Nonfilterable Residue	mg/L	4	-	826	-	-	28	6	-	14	-	-
Filterable Residue (TDS)		210	-	386	-	-	224	463	-	240	-	-
Hardness, Dissolved		177	143	320_	193	111	204	236	201	170	201	355
Alkalinity Total 4.5		160	-	254	-	-	168	185	-	98.9	-	-
Ammonia Nitrogen		0.01	-	<0.005	-	-	<0.005	0.009	-	0.016	-	-
Nitrate Nitrogen		<0.02	-	0.13	-	-	<0.02	<0.02	-	<0.02	-	-
Nitrite Nitrogen		<0.005	-	<0.005	-	-	<0.005	<0.005	-	<0.005	-	-
Phosphorus - Total		<0.003	-	0.187	-	-	0.511	0.003	-	0.013	-	-
Sulfate		13.4	-	72.9	-	-	38.1	47.5	-	71.4	-	-
<b>Dissolved Metals</b>												
Silver	µg/L	<0.01	<0.01	0.02	<0.01	<0.01	<0.01	<0.01	<0.01	0.05	<0.01	0.03
Aluminum		7	15	<6 <sup>1</sup>	10	15	17	7	7	7	9	13
Arsenic		0.26	0.06	0.39	0.7	61	3.8	0.29	0.06	170	33	23
Barium		73	97	82	37	36	55	38	25	17	28	24
Cadmium		<0.01	0.02	0.16	<0.01	6	<0.01	<0.01	<0.01	<0.01	<0.01	<0.01
Cobalt		<0.4	0.4	0.4	<0.4	4.2	<0.4_	<0.4	<0.4	0.7	<0.4	<0.4
Chromium		0.5	11	8.7	0.3	1.3	0.5	0.3	0.3	0.6	0.3	0.3
Copper		0.2	0.7	0.3	0.2	<0.2	0.2	<0.2	<0.2	<0.2	<0.2	<0.2
Iron		320	54	38	8	4800	500	590	440	4300	2100	1800
Mercury		0.02	-	0.04	-	<0.01	0.04_	0.06	-	<0.01	<0.01	7
Manganese		160	10	56	46	570	120	46	20	240	250	20t
Molybdenum		2.9	0.5	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4	<0.4
Nickel		<1	8	4	<1	9	<1	<1	<1	1	<1	<1
Lead		<0.1	<0.1	<0.1	<0.1	0.3	0.2	<0.1	<0.1	<0.1	<0.1	<0.1
Selenium		<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05	<0.05
Zinc		2	3	27	3	2700	4	<1	<1	160	11	<1

## 5.5.2 Current Baseline Groundwater Quality

The following sections present the results of the groundwater monitoring events conducted in May, August/September, and November 2015, and March 2016. The laboratory analytical results of the monitoring events are summarized in Tables 5A to 5E (attached). Laboratory reports are included in Appendix G.

### 5.5.2.1 Quality Assurance and Quality Control (QA/QC)

A summary of the QA/QC procedures implemented for the groundwater monitoring program to ensure the validity of the data set is provided in Table S. Sample duplicate results and relative percent differences (RPD) are presented in Table 6 (attached).

**Table S: Groundwater monitoring QA/QC**

QA/QC Aspect	Evidence and Evaluation
Sample Integrity	<p>All samples were collected in new sample bottles provided by the laboratory (Maxxam Analytics, located in Burnaby BC). All preservatives were also provided by the laboratory. The samples were shipped on ice with a Laboratory Request Form/ Chain of Custody as soon as feasibly possible following the completion of the fieldwork.</p> <p>Tetra Tech EBA notes that given the remote location of the property and the intermittent courier service that operated between the camp and Whitehorse, samples often arrived at the Burnaby laboratory several days after sample collection. Tetra Tech EBA ensured that samples were placed on ice, packed in insulation and shipped in insulated coolers; however, the long transit times meant that on occasion samples arrived at the laboratory above the preferred temperature (4°C).</p>
Holding Times	<p>All samples were received by the laboratory within appropriate holding times with the following exceptions:</p> <ul style="list-style-type: none"> <li>▪ pH: holding time of 15 min was exceeded; however, pH was also measured in the field</li> <li>▪ Nitrate/nitrite: holding time of 3 days was exceeded for separate analysis of nitrate and nitrite. However, nitrate + nitrite were also analyzed as a combined parameter within the appropriate holding time of 28 days.</li> </ul>
Field Procedures	<p>Monitoring wells were sampled using Waterra inertial pumps. Field parameters were monitored while purging and samples were taken when field parameters were stabilized to ensure a representative sample was obtained.</p>
Calibration of Field Equipment	<p>The following calibration of field equipment was undertaken regularly during fieldwork and documented on standard field forms.</p> <ul style="list-style-type: none"> <li>▪ pH: three-point calibration with pH4, pH7 and pH10 calibration solutions</li> <li>▪ Electrical conductivity: one-point calibration with a 1,413 µS/cm standard</li> <li>▪ Dissolved oxygen: air calibration</li> </ul> <p>Calibration solutions were pre-made by Hanna Instruments and were within expiration dates. Calibration data indicated that field equipment was operating within suitable precision and accuracy ranges during field programs.</p>
Ion Balance	<p>To evaluate the quality of the analysis, the ion balance for each sample was calculated, i.e., the balance between sum of anion and cation equivalent charges. Usually, an ion balance of within (0±10)% is considered satisfactory. The calculated ion balances vary from 0.31% to 6.1% (see Tables 5A to 5E), i.e., the ion balance for all samples is within (0±10)%. This suggests that analytical errors are within acceptable limits and all major cations and anions were included in the analyses.</p>
Blind Duplicates	<p>A blind duplicate is a coded duplicate sample submitted to the primary laboratory for analysis as an individual sample without any indication to the laboratory that it has been duplicated. Blind duplicates allow comparison of parameters that are analysed using identical analytical techniques to ascertain the</p>



QA/QC Aspect	Evidence and Evaluation
	<p>method precision. Blind duplicate pairs were collected simultaneously, with each container filled with approximately 10% of the total sample volume at a time until both containers are filled.</p> <p>Eight blind duplicate samples were collected during the 2015/16 groundwater monitoring program which equates to a frequency of one duplicate to every nine samples collected.</p> <p>Relative percent difference (RPD) calculations for duplicate samples are shown in Table 6.</p> <p>Most duplicate results showed an acceptable relative percent difference (RPD) of less than 30% when compared to concentrations measured in the respective sample from the same monitoring well for all concentrations greater than five times the method detection limit (MDL).</p> <ul style="list-style-type: none"> <li>▪ Acceptance Criteria: RPD &lt; 30%</li> <li>▪ Groundwater Samples Analysed: 82</li> <li>▪ Blind Replicate Samples Analysed: 8</li> <li>▪ Blind Replicate Analyte Pairs: 503</li> <li>▪ Number of Analyte Pairs Exceeding Criteria: 22</li> <li>▪ Percentage of Analyte Pairs Exceeding Criteria: 4.4%</li> </ul> <p>Total metals and total phosphate RPDs were not calculated given the high turbidity of many samples potentially resulting in erroneous concentrations and high RPDs. This does not affect the validity of the results given that total metals and total phosphorus concentrations are generally not representative of mobile (in situ) concentrations in groundwater and are not compared against guideline values.</p> <p>As shown above and in Table 6, a number of duplicates fell outside the typically acceptable 30% RPD range. Of the elevated RPDs, a number of exceedances are noted where concentrations are within 10 times the laboratory detection limit (LDL). Tetra Tech EBA notes that while the RPD value can appear exaggerated where concentrations are close to the detection limit, there can be a comparatively low difference in concentrations between samples. Therefore, a reasonable level of confidence can still be obtained from results within 10 times the LDL when RPD values are over 30%.</p> <p>A number of duplicate pairs with concentrations above 10 times the LDL displayed RPD values in excess of the acceptable 30% range. Where these exceedances were observed, results were checked and confirmed by the laboratory.</p> <p>There is no firm understanding as to the reason for these discrepancies, with various parameters displaying exceedances across the course of the monitoring program. Sampling field sheets indicated that wells were generally purged to stabilization of physicochemical parameters measured in the field and field personnel collected duplicate samples using appropriate procedures (splitting sample between primary and duplicate samples to collect representative and homogeneous samples). Discrepancies may be due to a number of factors including the high turbidity/ sediment content noted in some samples (potentially resulting in variability in dissolved metals concentrations after filtering), the long transit time to the lab (potentially allowing sample chemistry to alter) or laboratory analytical error.</p> <p>Tetra Tech EBA notes that where these duplicates exceeded the 30% RPD range, they were generally within the variability of results displayed across the monitoring program and within the range displayed across the study area. <u>Where a duplicate pair exceeded the 30% RPD range, in all samples the maximum primary and duplicate concentrations were below the maximum site concentration and below all applicable water quality guideline values.</u></p> <p>Tetra Tech EBA consider that for the purpose of this hydrogeological assessment, primary and blind duplicate results and the dataset as a whole are considered acceptable to characterize groundwater chemistry across the study area.</p>
Trip Blanks	<p>Trip blanks are analyte-free reagent water that are sent from the laboratory to the field, and are later returned along with samples. Containers remain unopened in the field and in storage transit. Trip blanks are useful to determine contamination that might arise from sample containers, preservatives, handling, transport and storage conditions.</p>



QA/QC Aspect	Evidence and Evaluation
	<p>Three trip blanks, consisting of samples of laboratory supplied de-ionised water, were submitted for analysis during the May 2015, September 2015 and March 2016 monitoring programs. Samples were analyzed for the same parameters as groundwater samples. A fourth trip blank was submitted to the laboratory with the November samples on November 8, 2015 and accidentally placed on hold. Analysis was requested on 16 December 2015, however the laboratory advised us that the sample had been disposed of. All three trip blank samples showed trace concentrations of bicarbonate alkalinity. Trace concentrations of total aluminum and total iron were detected in May 2015, along with trace concentrations of lithium in September 2015 and manganese in March 2016. Orthophosphate was detected in the September 2015 and March 2015 samples. Ammonia was detected in the September 2015 sample. Where detected, concentrations in trip blanks were between 1 and 2.3 times the MDL. Sample containers remained closed while in the possession of Tetra Tech EBA and in sealed coolers under Chain of Custody when in transit. Tetra Tech EBA considers it is extremely unlikely that contamination of the trip blanks occurred in transit or storage on Site as contamination through screw caps or leaching through plastic bottles would only be considered possible by highly volatile compounds. We consider that it is far more likely that the parameters detected were either present in the reagent water prior to filling bottles, were contaminated in the laboratory during analysis preparation or are erroneous detections.</p> <p>Tetra Tech EBA understands that based on detections of these parameters in trip blank samples there is the potential that groundwater samples may be reported at erroneously high concentrations. However, as detections in blanks were reported at concentrations typically well below those detected in groundwater, at concentrations only just above the MDL and at concentrations between 8 and 250 times lower than the relevant guideline criteria, any impact to groundwater samples would have been minor and would not be considered to effect the overall conclusions and recommendations of this hydrogeological assessment report.</p>
Laboratory Internal QA/QC	Laboratory internal QA/QC is detailed within the laboratory reports (Appendix G). The laboratory showed acceptable testing frequency and results for method blanks, laboratory duplicates and matrix spikes.
Laboratory Detection Limit	Laboratory reports indicate that the MDL's were lower than the respective assessment criteria for all parameters.
Other	Tetra Tech EBA notes that dissolved metals concentrations (in particular lead) reported for WW15-01 in October 2015 are potentially erroneous given that several dissolved concentrations are higher than the total concentrations, as well as one result (lead) being substantially higher than the concentration reported from the same well in the previous monitoring round. The analytical laboratory was called and confirmed analytical results reported were correct. While the cause of the variance cannot be confirmed, it is considered possible that during filtration a break in the filter has potentially allowed sediment into the dissolved sample, resulting in elevated concentrations.
Validity of Data Set	The data quality review indicates no significant systematic errors in the data collection or analysis process for groundwater and therefore, the data set used as the basis for the groundwater assessment is considered valid and complete.

### 5.5.2.2 Discussion of Groundwater Chemistry

#### General Site Wide Groundwater Chemistry

In general, the chemical composition of groundwater depends on the local and upgradient aquifer lithologies. As groundwater flows through an aquifer it assumes and continuously evolves a characteristic chemical composition due to interaction with the aquifer matrix. As such a groundwater sample represents the local and upstream aquifer conditions, and its composition is a function of aquifer lithology, solution kinetics, water residence time, mixing, and groundwater flow patterns.

Given the extent of the site (over 5 km north to south), the various groundwater flow systems and recharge sources (east and west of Geona Creek) and the potential for differing chemistry in the vicinity of the ABM deposit, the study area was divided into five zones for the purpose of assessing and comparing groundwater chemistry. Each zone generally represents either an assumed separate flow system, where potential differences in groundwater quality may exist (i.e. ABM deposit location) or areas of future potential contaminant sources (e.g., Class A, B and C storage areas). Table T details the five areas and the extent of each area is shown in Figure 7.

**Table T: Zones for Groundwater Chemistry Interpretation**

Area	Number of Wells	Rationale and Notes
Zone 1	9 (4 overburden, 5 bedrock)	<ul style="list-style-type: none"> <li>▪ Spans east and west of Geona Creek</li> <li>▪ Includes the mill site, tailing management facility, water management pond and polishing pond</li> </ul>
Zone 2	9 (4 overburden, 5 bedrock)	<ul style="list-style-type: none"> <li>▪ East side of Geona Creek</li> <li>▪ Includes the Class C Storage Facility and Seepage Collection Pond, overburden stockpile.</li> </ul>
Zone 3	5 (1 overburden, 4 bedrock)	<ul style="list-style-type: none"> <li>▪ West side of Geona Creek</li> <li>▪ Includes the Class B Storage Facility and Seepage Collection Pond</li> </ul>
Zone 4a	10 (2 overburden, 8 bedrock)	<ul style="list-style-type: none"> <li>▪ West side of Geona Creek</li> <li>▪ Includes ABM deposit</li> </ul>
Zone 4b	6 (3 overburden, 3 bedrock)	<ul style="list-style-type: none"> <li>▪ East side of Geona Creek</li> <li>▪ Includes ABM deposit</li> </ul>

Groundwater analytical chemistry results from the 2015/16 monitoring program at KZK Property are provided in Tables 5A through 5E.

A summary of maximum, minimum and average results of key parameters from each of the five zones as well as the entire study area is provided in Table U. pH, total dissolved solids, dissolved hardness were selected as key parameters as they are generally representative of overall general water quality and can be used for broad scale comparison and assessment of water types and potential groundwater regimes. Sulphate was selected as a key parameter as concentrations are expected to be elevated in areas downgradient of where groundwater contacts the deposit (due to the oxidation of sulfide to sulfate).

Note that average values may be skewed by wells that were sampled multiple times during the 2015-16 program whereas other wells in the same zone may only have been sampled once.

**Table U: Key Analytical Results, Zone 1 to Zone 4b, 2015/16 Groundwater Monitoring Program**

Zone	Number of Samples <sup>1</sup>	Temperature (°C)	Field pH (units)	Total Dissolved Solids (mg/L)	Dissolved Hardness (mg/L)	Sulfate (mg/L)
Zone 1	17	0.0 - 3.3	5.68 - 7.71 (7.0)	176 - 1,960 (593)	136 - 2,108 (575)	1.0 - 52 (29)
Zone 2	19 - 24	0.0 - 1.7	6.06 - 8.1 (7.6)	136 - 266 (208)	78.9 - 212 (158)	10 - 42.2 (22)
Zone 3	12 - 13	0.1 - 2.4	6.59 - 8.5 (7.5)	206 - 370 (282)	181 - 296 (229)	33.3 - 138 (59)
Zone 4a	20 - 25	0.1 - 4.3	5.98 - 8.6 (7.3)	180 - 832 (353)	112 - 415 (207)	37.2 - 273 (102)
Zone 4b	12 - 14	0.1 - 4.3	7.13 - 7.79 (7.4)	258 - 772 (575)	204 - 683 (483)	44 - 222 (164)
Study Area	80 - 93	0 - 4.3	5.68 - 8.6 (7.4)	136 - 1,960 (379)	78.9 - 2,108 (396)	1.01 - 273 (68)

xx - xx maximum and minimum range from all wells (includes duplicates), 1995 & 2015/16 groundwater monitoring program  
 (in brackets) - average concentration from all wells (includes duplicates), 1995 & 2015/16 groundwater monitoring program

<sup>1</sup>Range provided where there is variability in the suite of analytes between 1995 and 2015/16 and due to field parameters not being reported on duplicates.

The following key points are noted in regards to general groundwater chemistry within the study area over the 2015/2016 groundwater monitoring program:

- Field pH values ranged from 5.68 to 8.6 units and averaged a slightly alkaline 7.4 in both overburden and bedrock aquifers across the whole study area.
- Groundwater has an average total dissolved solids (TDS) concentration of 379 mg/L across the study area. TDS averaged 406 mg/L in bedrock wells and 306 mg/L in overburden wells. Zone 1 and Zone 4b exhibited the highest average TDS concentrations, indicating groundwater is more mineralised in these zones. The highest TDS concentration (1,960 mg/L in Zone 1) was more than twice the highest TDS in any of the other four zones.
- Dissolved hardness concentrations are variable across the site, ranging from 78.9 to 2,108 mg/L. The maximum concentration reported in Zone1 was over three times higher than the next highest maximum concentration (in Zone 4b). Average and maximum concentrations were typically higher in bedrock wells than overburden wells in each zone and appear to increase in concentration with depth within the bedrock aquifer.
- Sulfate concentrations averaged 68 mg/L across the study area, with an average of 67 mg/L in overburden wells and 69 mg/L in bedrock wells. Sulphate concentrations were highest in Zones 4a and 4b and showed a general trend of increasing concentration with depth in these two zones.
- Groundwater temperatures ranged from 0.0 to 4.3°C.
- Many monitoring wells showed considerable variability in analytical results over the course of the monitoring program suggesting there may be a strong seasonal influence on groundwater chemistry. Ongoing groundwater monitoring scheduled in 2016/2017 will provide additional data to characterize seasonal changes in groundwater quality and quantity.

## Metals

A site wide summary of the range and average concentration of key metals potentially associated with a massive sulphide ore deposit is provided in Table V. Zinc, lead and copper were selected as key parameters as these metals may be elevated in areas hydraulically downgradient of where groundwater contacts the deposit. Arsenic, cadmium and iron were selected as key parameters as these metals have been detected at concentrations above guidelines in multiple wells across the site over the monitoring program.

Note that all results presented and discussion is in reference to dissolved metals. Total metal concentrations have not been discussed as these concentrations are often dependent on well completion, well development and sampling method and are typically less representative of in situ groundwater quality and mobile dissolved phase concentrations.

The following points are noted in relation to key metals concentrations across the site from the 1995 and 2015/16 groundwater monitoring programs:

- Zinc concentrations were considerably higher in Zones 4a and 4b than any of the other three zones as expected due to the ABM deposit.
- Lead concentrations were considerably higher at Zone 4a than any of the other zones as expected due to the ABM deposit.
- Copper concentrations were relatively similar across the study area, but slightly higher at the ABM deposit.
- Iron concentrations are considerably higher in Zones 1, 4a and 4b than the other two zones.
- Across the study area copper and iron concentrations were similar in both bedrock and overburden monitoring wells.
- Average arsenic concentrations ranged between 0.31 and 43 µg/L. The average and maximum concentrations in Zone 4a were approximately ten times higher than the next highest zone, Zone 4b.
- Average and maximum selenium concentrations were higher in Zones 1, 2 and 3 than concentrations reported in the deposit vicinity (Zones 4a and b).
- Cadmium concentrations were highest in Zone 4a, with the maximum concentration almost ten times higher than the next highest zone, Zone 4b.
- On average, lead concentrations were higher in overburden wells than bedrock wells (7.8 µg/L and 0.46 µg/L respectively).
- On average, zinc concentrations were higher in overburden wells than bedrock wells (841 µg/L and 136 µg/L respectively).

Further discussion of major ion chemistry and metals concentrations within individual zones is provided in the following sections.

**Table V: Key Dissolved Metals Results, 2015/16 Groundwater Monitoring Program**

Zone	Number of Samples	Zinc (µg/L)	Lead (µg/L)	Copper (µg/L)	Iron (µg/L)	Arsenic (µg/L)	Selenium (µg/L)	Cadmium (µg/L)
Zone 1	17	0.87 - 24.9 (9.7)	0.01 - 1.36 (0.21)	<0.05 - 3.09 (0.45)	2.2 - 36,600 (6,705)	0.66 - 11.7 (2.5)	<0.04 - 6.2 (1.3)	<0.005 - 1.57 (0.39)
Zone 2	24	0.39 - 10.6 (2.7)	<0.005 - 0.259 (0.045)	<0.05 - 2.02 (0.51)	<1 - 934 (200)	0.06 - 2.29 (0.82)	<0.04 - 2.49 (0.7)	<0.005 - 0.175 (0.031)
Zone 3	13	0.25 - 5.03 (1.6)	<0.005 - 0.141 (0.042)	0.062 - 0.613 (0.29)	<1 - 129 (39)	0.098 - 0.88 (0.31)	0.326 - 6.27 (2.1)	<0.005 - 0.13 (0.034)
Zone 4a	26	0.21 - 5,080 (951)	<0.005 - 122 <sup>1</sup> (5) <sup>1</sup>	<0.05 - 6.44 (0.56)	2.4 - 10,400 (2,800)	0.024 - 181 (43)	<0.04 - 0.804 (0.15)	<0.005 - 31.6 (2.6)
Zone 4b	14	0.5 - 845 (65)	<0.005 - 4.06 (0.86)	<0.05 - 3.7 (0.54)	114 - 7,620 (2464)	0.407 - 10.3 (4.9)	<0.04 - 1.35 (0.12)	<0.005 - 3.75 (0.29)
Study Area	94	0.21 - 5,080 (206)	<0.005 - 122 <sup>1</sup> (1.2) <sup>1</sup>	<0.05 - 6.44 (0.47)	<1 - 36,600 (2442)	0.024 - 181 (10.3)	<0.04 - 6.2 (0.87)	<0.005 - 31.6 (0.67)

< – less than MDL

XX - XX – minimum and maximum range from all wells, 1995 & 2015/2016 groundwater monitoring program

(in brackets) – average concentration from all wells (concentrations less than MDL were conservatively assumed to be equal to the MDL), 1995 & 2015/2016 groundwater monitoring program

<sup>1</sup> value of 122 µg/L is potentially erroneous. Average Zone 4a lead concentration is 0.55 µg/L and average site lead concentration is 0.28 µg/L when value of 122 µg/L not included in calculation.

### 5.5.2.3 Discussion of Groundwater Chemistry, Zone 1 to Zone 4b

The following sections provide a more detailed discussion of major ion chemistry and metals concentrations in each of the five zones.

Major ion chemistry is determined through a review of groundwater samples chemical composition, taking into account all major anions and cations exceeding 10 meq-%<sup>1</sup>. The water type or hydrochemical facies is determined by listing the ions with concentrations greater than 10 meq-% in decreasing order (cations are listed first). Figures 8a through 8e show trilinear Piper Plots illustrating the major ion chemistry and hydrochemical facies for all groundwater samples collected during the September 2015 (or closest corresponding date) groundwater monitoring event. The September event was selected for Piper plots because it was the most complete round of monitoring (most wells sampled) during the 2015/16 program.

<sup>1</sup> The unit meq-% represents the percentage of cations and anions calculated from their milliequivalents per litre (meq/L). The unit meq/L is the molar concentration multiplied by the charge of the ions.

## Zones 1 to 3 (North of ABM Deposit)

### Zone 1

- In general, groundwater in Zone 1 can be described as calcium-magnesium-bicarbonate-sulphate type water (see Figure 8a). While there are no clear differences in major ion chemistry between the overburden and bedrock aquifers, the following points are noted:
  - BH95G-2, a shallow bedrock monitoring well (19.8 m bgs) which is the furthest north in the monitoring network, has a slightly higher proportion of magnesium and lower proportion of calcium than the other eight wells in this zone.
  - MW15-09D and MW15-10D have a lower proportion of sulphate than the other monitoring wells.
- Zone 1 reported the highest site wide TDS concentration at bedrock monitoring well MW15-10D. MW15-10D is a 31.5 m deep well and consistently reported TDS results over two times higher than any other well on site. There is insufficient information to determine the mechanism behind the high TDS at this location, although it is considered likely to be associated with groundwater having a comparatively long residence time in the bedrock aquifer, allowing the dissolution of more mineral species along its flow path.
- The average pH in Zone 1 was 0.3 units lower than the next highest zone. Of the nine wells in this area, three wells (two shallow bedrock [ $<50$  m deep] and one overburden) reported slightly acidic water quality, with pH ranging from 6.17 to 5.68 units, which is over 1.2 units below the site wide pH average.
- In general, metals concentrations in the bedrock aquifer are approximately equal to or higher than metals concentrations in the overburden aquifer.
- Average nitrate concentrations are higher in the bedrock aquifer than the overburden aquifer.
- Gas was observed to emanate from MW15-10D. A gas sample was collected by Tetra Tech EBA using appropriate safety equipment including a portable gas detector and self-contained breathing apparatus, assuming the gas could potentially be hazardous. The results of the gas sample indicate that the gas contained mostly carbon dioxide (782,000 ppmV) and nitrogen (100,000 ppmV) with small amounts of methane (15.3 ppmV) and hydrogen sulfide below the detection limit ( $<2,500$   $\mu\text{g/L}$ ). The laboratory certificate is included in Appendix G. Based on the results above, there does not seem to be an immediate hazard associated with the chemical composition of the gas emanating from MW15-10. However, as a precautionary measure we recommend that any person accessing this monitoring well wear a portable gas detector. A second person should be present at the site and stand back while the other person opens the well cap and measures the gas concentrations using the portable gas detector. Well sampling should only proceed if the gas composition has been deemed safe based on the readings from the portable gas detector.

### Zone 2

- The dominating cations in the groundwater were found to be calcium and magnesium, although the samples obtained from monitoring wells MW15-03S and MW15-05D contained significant amounts of sodium and lesser amounts of calcium (see Figure 8b). The dominating anions within the groundwater were found to be bicarbonate and sulphate. In general, the major ion chemistry is relatively similar for the samples collected from both overburden and bedrock wells and do not show any clear differences between the two aquifers.
- Zinc, lead and iron concentrations were all below the site wide averages and well below the site wide maximum concentrations.

- In general, metals concentrations in the bedrock aquifer are higher than concentrations in the overburden aquifer.
- Average nitrate and nitrite concentrations are higher in the bedrock aquifer than the overburden aquifer.

### Zone 3

- Groundwater quality was only obtained from wells screened in the shallow (<50 m deep) bedrock aquifer as there was insufficient water in the single overburden well in this zone to obtain a sample in the September 2015 monitoring round and the well was dry in the subsequent November 2015 and March 2016 monitoring rounds.
- In general, the major ion chemistry is relatively similar for all samples collected with the dominating cations calcium and magnesium and the dominating anions bicarbonate and sulphate (see Figure 8c).
- Zinc, lead and iron concentrations were all below the site wide averages and well below the site wide maximum concentrations.

### Zone 4a and 4b (ABM Deposit)

Tetra Tech EBA understands that the proposed mine design will require the excavation of an open pit. During pit excavation and mine operation, overburden and bedrock will be dewatered (through dewatering wells, trenches and/or sumps) to enable excavation and keep the pit from flooding.

Under the site's existing water licence (Yukon Territory Water Board Type A Water Use Licence Number QZ97-026 (Exp. September 28, 2018), Section E – Effluent Quality Standards [the Licence]), 14 analytical parameters are required to be monitored and are required to meet effluent quality criteria at two points of compliance. While Tetra Tech EBA understands that the current Licence is likely to be superseded, an updated licence would be expected to contain similar requirements to meet effluent discharge criteria.

Given the large volumes of groundwater expected to require disposal during initial dewatering and ongoing operation of the mine, groundwater would be expected to be a key contributor of water to be discharged under the Licence and may require treatment prior to discharge to ensure that effluent meets the discharge requirements. As the open pit is excavated to depth and moves from overburden to shallow bedrock and then deep bedrock, there is a possibility that the water quality may vary and treatment requirements may differ.

For the purpose of assisting in understanding groundwater chemistry at various depths and to assist in future water management and treatment design options, Tables 5A to 5E provides statistical calculations (minimum, maximum, median, mean, standard deviation and 90th percentile) for groundwater in Zone 4a and Zone 4b in overburden, shallow bedrock (<50 m depth) and deep bedrock (>50 m depth). Tetra Tech EBA notes that these values may be skewed by wells that were sampled multiple times during the 2015/16 program whereas other wells in the same zone may only have been sampled once. Additional statistical analysis is recommended following the incorporation of 2016/17 field monitoring program data.

The following points are noted in regards to the general groundwater quality in the pit area:

- Dissolved metals and dissolved phosphorus concentrations are considered to be representative of dissolved phase and mobile groundwater quality in the pit area.
- Total metals and total phosphorus concentrations are considered to have been strongly influenced by the presence of suspended solids introduced during the sampling process that have resulted in concentrations higher than those actually present and mobile in groundwater. Properly designed, constructed and developed



dewatering wells should minimise suspended solids and associated elevated metals and phosphorus concentrations.

- If groundwater pumped from dewatering wells (or sumps) exhibits high sediment concentrations, total metals and phosphorus concentrations shown in Tables 5A to 5E may be more representative of groundwater quality pumped from the pit area during dewatering. However, suspended solids would be removed from the water as a first step in water treatment if required.

Further discussion of water quality in Zone 4a and Zone 4b is provided in the following sections:

### **Zone 4a**

- The dominating cations in the groundwater are calcium and magnesium and the dominating anions are either sulphate or bicarbonate (see Figure 8d). Both overburden wells in Zone 4a (BH95G-23 and WW15-01) recorded proportionally high sulphate and low bicarbonate, while bedrock wells reported a wide spread of sulphate and bicarbonate proportions. There does not appear to be a clear correlation between groundwater chemistry, aquifer type or sample depth.
- Average pH is slightly more alkaline moving from overburden (7.02 units) through to deep bedrock (7.49 units).
- Sulphate concentrations are higher in Zones 4a than the other four zones, which is considered due to oxidation of sulphide in the mineral ore body within these zones. Sulphate concentrations are variable with depth, with both the maximum and minimum concentrations reported in the deep bedrock aquifer.
- Lead concentrations are higher in Zone 4a than the other zones, most likely due to dissolution into groundwater that contacts the ore deposit. There is no clear correlation of concentration with depth, with the highest lead concentration reported at overburden well WW15-01 at the completion of the 24 hr pumping test. The concentration was over 50 times higher than the next highest concentration, reported from a deep (125 m bgs) bedrock well. Lead concentrations increase approximately one order of magnitude from the shallow bedrock to the deep bedrock aquifer.

Tetra Tech EBA notes that the dissolved lead concentration at WW15-01 in October 2015 (122 µg/L) is potentially erroneous given that the dissolved concentration is higher than the total lead concentration and the result is over 100 times higher than that reported at the same well in August 2015. It is considered possible that during filtration a break in the filter has potentially allowed sediment into the dissolved sample, resulting in the elevated result. If the result of 122 µg/L is discounted, the average lead concentration in the overburden aquifer is similar to that of the deep bedrock aquifer.

- Average zinc concentrations are higher in Zone 4a than the other zones, most likely due to its dissolution into groundwater during contact with the ore deposit. Average and maximum zinc concentrations are highest in the overburden aquifer, with concentrations in the deep bedrock slightly lower. Concentrations in the shallow bedrock are approximately over two orders of magnitude lower than those in the overburden and deep bedrock aquifer.
- In general, variances in groundwater quality within Zone 4a are likely due to individual well locations in relation to the mineralized zones within the ABM deposit and groundwater flow direction. Wells with high concentrations are located close to or downgradient of the main mineralized zones, while wells with lower concentrations are screened either above or up/ cross-gradient of the ore zones. The number of samples per well and the time of year they were sampled are also likely to affect the variances in observed water quality with variable recharge rates between seasons (greatly increased over fall and early summer) potentially effecting shallow groundwater quality and flow direction in both the overburden and shallow bedrock aquifers.



- While the shallow bedrock wells appear to display different chemistry to the overburden and deep bedrock aquifers, particularly in respect to metals concentrations, this may be a function of well location, with these wells located close to the northern extent of the mineralized zone. Groundwater in the shallow bedrock aquifer further to the south and closer to the centre of the ore deposit may exhibit groundwater chemistry comparable to the overburden and deep bedrock aquifers.
- Dissolved hardness and dissolved metals results reported from the 1995 monitoring program from BH95G-21 and BH95G-23, were compared against 2015/16 results. RPD calculations indicated many 2015/16 concentration were comparable to those reported in 1995, although a number of analytes showed considerable difference, with RPD's of over 60%. While some of this variability may be attributed to seasonal variation, it may also be a function of numerous other variables including; sample sampling, storage, preservation and analysis methods. Flowing boreholes over the past 20 years also may have altered groundwater conditions, resulting in some of the variation in groundwater chemistry observed.

## Zone 4b

- The dominating cations in the groundwater in Zone 4b were found to be calcium and magnesium although the sample obtained from monitoring well MW15-11S contained significant amounts of sodium (see Figure 8e). The dominating anions within the groundwater were found to be bicarbonate and sulphate. There does not appear to be a clear correlation between groundwater chemistry, aquifer type or sample depth.
- Average and median sulphate concentrations are comparable in the shallow and deep bedrock aquifers and slightly higher than concentrations in the overburden aquifer.
- Average and median TDS concentrations increase with depth, almost doubling between the overburden and deep bedrock aquifers. Higher TDS concentrations (i.e. more dissolved minerals) of samples from the deep bedrock is likely associated with longer groundwater residence time and increased mineralisation of groundwater along the flow path with increasing depth.
- Zinc and lead concentrations in Zone 4b are lower than those in Zone 4a, however are still noticeably higher than each of the other zones. Zinc concentrations are highest in the shallow bedrock aquifer, almost two orders of magnitude higher than in the overburden or deep bedrock aquifers. However, zinc concentrations display variance even within the shallow bedrock aquifer, with over two orders of magnitude difference between the minimum and maximum values in this aquifer alone.
- Average lead concentrations are comparable in the shallow and deep bedrock aquifer and slightly higher than the overburden aquifer.
- The maximum nitrate concentration was reported from the overburden aquifer, and was almost an order of magnitude higher than the maximum concentration in the shallow bedrock aquifer. While maximum nitrate concentrations in each aquifer decreased with depth, each aquifer also reported concentrations below the LDL, indicating variability within each aquifer depth interval.
- pH, electrical conductivity, total dissolved solids, dissolved hardness, alkalinity, sulphate, ammonia, nitrate, nitrite, phosphorus and dissolved metals results reported from the 1995 monitoring program from BH95G-29 were compared against 2015/16 analytical results. Inorganic analyte results from 1995 correlated well with 2015 results with only phosphorus showing an RPD outside of  $\pm 30\%$ . Dissolved metals results were more variable with five of seven results showing RPD's greater than 50%. While some of this variability may be attributed to seasonal variation, it may also be a function of numerous other variables including; sampling, storage, preservation and analysis methods. Flowing boreholes over the past 20 years also may have altered groundwater conditions, resulting in some of the variation in groundwater chemistry observed.

#### 5.5.2.4 Comparison with Applicable Regulatory Water Quality Guidelines

Groundwater quality results were compared with the following regulatory guidelines and standards:

- Yukon CSR Schedule 3, Generic Numerical Water Quality Standards for Aquatic Life (CSR-AW) (Yukon Environment Act, Contaminated Sites Regulation, 2002).
- Federal Interim Groundwater (FIG) Quality Guidelines for Commercial and Industrial Land Uses and Protection of Freshwater Aquatic Life (FIG) (Environment Canada, 2012).
- Canadian Council of Ministers of the Environment (CCME) Canadian Water Quality Guidelines for the Protection of Freshwater Aquatic Life (CCME-AW) (CCME, 1999).
- Yukon Territory Water Board Type A Water Use Licence Number QZ97-026 (Exp. September 28, 2018), Section E - Effluent Quality Standards (the Site Water Licence).

The Yukon CSR AW standards and FIG guidelines apply to dissolved metals rather than total metals. This is also in accordance with general industry practice of using dissolved rather than total metals to characterize groundwater quality. Total metal concentrations are often dependent on well completion, well development and sampling method and are typically less representative of in situ groundwater quality and mobile dissolved phase concentrations that discharge to surface. Dissolved metals were therefore used for comparison with the applicable regulatory water quality standards and guidelines. Similarly, for the reasons outlined above, only dissolved phosphorus results were compared against regulatory water quality standards and guidelines.

Results have also been compared against the Site Water Licence to provide an indication of which parameters exceed the licence maximum allowable discharge limits and may require treatment options to be implemented in order to meet licence requirements.

All exceedances of the aforementioned water quality standards and guidelines are shown in Tables 5A through 5E and maximum guideline exceedances from the 2015/16 monitoring program are detailed in Tables 7A through 7E. Tetra Tech EBA understands that the current Water Use Licence will expire during the permitting process and a new water licence will be applied for and that the parameter list and maximum allowable discharge limit may change from those shown in the attached tables.

The following key points are noted in regards to guideline exceedances:

- There are no obvious overall spatial trends or difference between aquifers with respect to exceedances of water quality guidelines.
- Groundwater collected from every well at KZK over the 2015/16 monitoring program reported at least one parameter that exceeded one or more FIG or CCME-AW guideline values.
- Field pH exceeded the lower range of the FIG and Site Water Licence in wells located in Zones 1, 2 and 4a indicating spatial variability in pH range across the site.
- Fluoride exceeded the FIG and CCME-AW guidelines in overburden and bedrock aquifers within Zone 1, 2, 4a and 4b. All fluoride results were below the CSR-AW guideline value.
- Sulphate concentrations exceeded the FIG in overburden and bedrock wells in Zones 3, 4a and 4b. All results were below the CSR-AW guideline value. There were proportionally more guideline exceedances in Zone 4b (6 of 7 wells exceeded) than Zone 4a (2 of 10 wells) and Zone 3 (1 of 4 wells). Higher sulphate concentrations in Zones 4a and 4b are considered due to contact of groundwater with the massive sulphide deposit, although

the single elevated concentration in Zone 3 (at MW15-01) indicates concentrations above guideline criteria are present outside of the area considered to be influenced by the ABM deposit.

- Ammonia exceeded the FIG and CCME-AW guideline criteria in a single well in Zone 4a (ART-4). ART-4 is believed to be a deep bedrock well (depth unknown) located at the northern extent of the proposed open pit.
- Cadmium exceedances of the FIG and CCME-AW guidelines were widespread across the site. The cadmium CSR guideline value was exceeded by one well in each of Zones 1 and 4b and two wells in Zone 4a. Exceedances of all guidelines were seen in both bedrock and overburden wells. There was a single exceedance of the Site Water Licence guideline, at WW15-01 (Zone 4a).
- Zinc exceeded the FIG guideline in at least one well in each of Zones 1, 2, 4a and 4b. Concentrations were substantially higher in Zones 4a and 4b where the Site Water Licence guideline was exceeded in multiple wells. There was no obvious correlation of exceedances with aquifer type. Higher concentrations in Zones 4a and 4b are considered due to the contact of groundwater with the zinc rich ABM deposit.
- Iron exceeded the FIG and CCME-AW guidelines in at least one well in each of Zones 1, 2, 4a and 4b.
- Chromium exceedances of the CCME-AW were only observed in two bedrock wells within Zone 1.
- Aluminum exceeded the FIG and CCME-AW in three wells in Zone 1 and one well in Zone 2. Exceedances were observed in both bedrock and overburden aquifers.
- Lead in one well WW15-01 (Zone 4a) exceeded the FIG, CCME-AW, CSR-AW and Site Water Licence guidelines. As discussed in previous sections, this result is potentially erroneous and more representative of the total lead concentration. When the lead result from the August 2015 sample round from WW15-01 is alternatively assessed, it falls below all guideline values.
- Copper in a single well in Zone 4a (BH95-22) exceeded the FIG and CCME-AW guideline values.
- Uranium exceeded the FIG and CCME-AW guideline values at a single well, BH95-131 in Zone 4b. This well is a deep bedrock well (approximately 126 m bgs) and is located close to the centre of the proposed open pit.
- Total suspended solids exceeded the Site Water Licence maximum allowable limit at least once in 32 of the 36 analysed wells. As previously discussed, elevated total suspended solids concentrations are considered to be a consequence of the sampling process rather than mobile concentrations in groundwater. Properly constructed and developed dewatering wells would be expected to at least partially mitigate elevated suspended solids concentrations.
- Selenium concentrations exceeded the FIG and CCME-AW guideline values in wells in Zones 1, 2, 3 and 4b. There were no exceedances in Zone 4a and only a single exceedance of both values in Zone 4b. Almost half the wells in Zones 1, 2 and 3 exceeded both guidelines. There were no clear trends in regards to exceedances in bedrock and overburden aquifers.
- Concentrations of arsenic exceeded the FIG and the CCME-AW in multiple wells within Zones 1, 4a and 4b. Concentrations were substantially higher in several wells in Zone 4a, where four of the ten wells sampled also exceeded the Site Water Licence maximum allowable limit guidelines.
- Phosphorus concentrations exceeded the CCME-AW guidelines for ultra-oligotrophic aquatic systems in wells in each of the five zones. Across the site, 30 of 37 wells sampled reported concentrations above the CCME-AW guideline. However, it should be noted that the phosphorus guideline is applied through a framework for the management of freshwater systems and does not apply to groundwater. The guideline value depends on

the trophic status of the aquatic system with the above referenced guideline for ultra-oligotrophic systems being the most stringent.

Tetra Tech EBA notes that while there are multiple exceedances of the applicable regulatory water quality guidelines, the concentrations of exceedances are considered to be representative of natural background conditions. Assessment against the guidelines presented above are for preliminary assessment and comparison purposes only at this baseline assessment stage. In due course and with sufficient data, site specific guideline values can be formulated that are representative of the actual groundwater quality across the study area.

## 6.0 CONCEPTUAL HYDROGEOLOGICAL MODEL

The conceptual hydrogeological model is intended to conceptually describe the existing local hydrogeological conditions in the area of the ABM deposit and conceptual open pits, storage areas, tailings management area, water management pond and polishing pond at KZK with respect to groundwater flow and groundwater quality. The conceptual model is based upon information gathered during the 1995 and 2015 hydrogeological field programs, along with other pertinent geological information available related to the KZK Project.

### 6.1 Hydrostratigraphy

The local hydrogeological system within the study area consists of a bedrock aquifer overlain across valley floors by an overburden aquifer. The overburden aquifer is inferred to be confined to semi-confined, at least in the area of the ABM deposit.

Based on the current level of subsurface information for the site, for the purpose of this baseline hydrogeology assessment, it is assumed that the bedrock aquifer consists of one aquifer. Even though this assumption is simplistic, it is supported by the fact that the bedrock aquifer consists of a similar lithology throughout the site. Hydraulic conductivities inferred from packer tests show a slight correlation with depth but do not suggest stratification of the aquifer based on a sudden change in hydraulic conductivity with depth, at least not within a depth of about 200 m bgs. Furthermore, interpolation of the observed groundwater elevations indicates a groundwater flow regime that agrees with anticipated groundwater flow directions based on the topography and therefore also supports the hypothesis of one hydraulically connected bedrock aquifer.

From first principles, groundwater flows from areas of higher piezometric elevations to lower piezometric elevations. Groundwater recharge occurs at higher elevations on mountain slopes where overburden is thin or absent ultimately discharging to the receiving water bodies at lower elevations in the valley (i.e., ponds, and Geona Creek). This flow pattern is confirmed by groundwater elevations in nested wells along the valley floor, with an upwards hydraulic gradient present from the bedrock aquifer to the overburden aquifer indicating discharge of groundwater to surface at the base of the valley.

#### 6.1.1 Overburden Aquifer

Overburden in the study area is primarily composed of till and glacial deposits ranging in thickness from a thin veneer on valley flanks, to more than 20 m near the centreline of the valley. Previous investigations have typically logged overburden deposits as an upper compact to dense brown sand with varying amounts of silt, gravel or cobble overlying a basal dense to very dense sand and gravel. An overburden aquifer over 10 m thick is present within the sediments along the valley floor. The thickness of the overburden deposits generally decreases with increasing elevation. Above about 1,500 m elevation, the surficial deposits consist of a layer of organic material less than 0.5 m thick, overlying colluvium. The latter originates from frost loosening of bedrock.

In the region of the ABM deposit, groundwater in the basal sand and gravel unit is believed to be confined to semi-confined by the overlying compact to dense sand. This was evidenced during the drilling of WW15-01 where the upper compact to dense sand layer was logged as damp, then saturated conditions were encountered immediately upon intercepting the underlying sand and gravel layer. At the completion of drilling and installation of the screen in the sand and gravel unit (see well log in Appendix B2), the water level rose approximately 6 m above the top of the sand and gravel and above the top of the inferred confining dense sand layer (Appendix B2), indicating a confining layer is present. The inference of a confining overburden unit is supported by the rapid response in the observation well during the pumping test at WW15-01, a reaction generally indicative of a confined aquifer.

Recharge to the overburden aquifer is expected to be through discharge from the underlying bedrock aquifer and infiltration of precipitation and snowmelt through surficial soils on valley flanks. Recharge through surface water infiltration may be limited due to the expected upwards hydraulic gradient in the overburden aquifer across much of the valley floor. At higher elevations where overburden thins, perched water may sit on top of the bedrock contact and migrate through higher permeability overburden in the direction of the surface dip. Towards the centre of the valley, groundwater is expected to move through the upper compact to dense sand layer and discharge to Geona Creek and low lying surface water bodies that line the valley floor.

Based on single-well response tests, Golder estimated the hydraulic conductivity of the overburden material ranges from about  $1 \times 10^{-6}$  m/s to about  $1 \times 10^{-5}$  m/s. However, Golder noted that most of these tests were conducted in material with a “significant fine-grained component” (likely the upper dense sand unit) and the bulk hydraulic conductivity of the overburden (including relatively “clean” sands and gravels in the basal unit) is likely higher, more likely in the range of  $1 \times 10^{-5}$  m/s to  $1 \times 10^{-4}$  m/s.

To better estimate the bulk hydraulic conductivity of the basal sand and gravel unit, Tetra Tech EBA conducted a long term (12 hr) pumping test at WW15-01 during the 2015 hydrogeological investigation. This test indicated that the hydraulic conductivity of the sand and gravel unit in the vicinity of the deposit to be approximately  $1.1 \times 10^{-4}$  m/s, which generally concurs with the hypothesis that the basal sand and gravel unit has a higher hydraulic conductivity.

Based on data collected from an observation well (BH95G-23) during the pumping test, the overburden aquifer has a storativity value of  $5.7 \times 10^{-4}$ , which is in line with typical literature values for storativity values in confined aquifers (e.g., Fetter, 2001). Tetra Tech EBA notes that during the pumping test conducted at WW15-01, water levels in BH95G-23 were observed to respond almost instantaneously to the pumping of WW15-01 and decreased a similar magnitude as in the pumping well (Figure E1). This response indicates both wells are screened in the same confined aquifer and that there is a direct hydraulic connection between the two wells. In areas where the overburden aquifer is unconfined or semi-confined, i.e., where the upper dense sand unit contains less fine sediments or where this unit is absent, the storativity of the overburden aquifer would be expected to be higher and more similar to the specific yield which can be estimated to be in the range of about 0.15-0.25 for a sand and gravel aquifer (e.g., Freeze and Cherry, 1979).

### 6.1.2 Bedrock Aquifer

The primary bedrock aquifer in the vicinity of the mineralized zones mainly consists of schistose felsic volcanics intersected with thick felsic tuff and sill/flow complexes that host the ore deposit.

Groundwater flow in bedrock aquifers predominantly occurs in secondary pore space (fractures and fault zones) as primary porosity is usually very small, or essentially non-existent as in the case of volcanic and metamorphic rocks like those encountered at KZK. Bedrock aquifers therefore typically act like confined aquifers. In general, groundwater flow in fractured rocks is complex and can vary greatly in direction and rate, depending on the local hydrogeological and structural geological conditions. Transmissivity values can change over several orders of magnitude within the same rock mass over short distances (scale of metres), and groundwater flow may be largely controlled by a few conductive fractures or other rock mass discontinuities.

Recharge to the bedrock aquifer will occur primarily through infiltration of precipitation and snow melt on valley peaks and flanks, where bedrock outcrops or overburden is thin. Within the study area, discharge occurs to the overlying overburden along the valley floor, and eventually to Geona Creek and/or its tributaries.

Results of packer tests conducted by Golder (1995) and Tetra Tech EBA (2015) vary over several orders of magnitude, ranging from between  $1 \times 10^{-6}$  m/s to  $1 \times 10^{-5}$  m/s in upper weathered and more fractured bedrock to  $1 \times 10^{-8}$  m/s to  $1 \times 10^{-7}$  m/s in deeper and relatively massive bedrock. Packer test results are only representative for



the short discrete test intervals and the immediate vicinity of the wellbore. Single features like fractures, faults, or shear zones can significantly affect and dominate the hydraulic conductivity of the test interval, which explains the variability of inferred hydraulic conductivities observed on site.

To better gauge the bulk hydraulic conductivity in the vicinity of the ABM deposit, a single long-term (24 hr) pumping test was conducted at bedrock well WW15-02 during the 2015 hydrogeological investigation program. WW15-02 is a 38.10 m deep open hole well, targeted to intercept the upper and more fractured bedrock zone. Testing at this location indicated the bedrock has a hydraulic conductivity of about  $2 \times 10^{-6}$  m/s. The geometric mean of  $5 \times 10^{-7}$  m/s for all packer tests and hydraulic response tests conducted in shallow bedrock (<50 m deep) agrees reasonably well with the results of the pumping test and provides a reasonable average hydraulic conductivity for the bedrock aquifer at KZK to depths of about 50 m bgs (see also Figure B).

Golder (1996) reported the volcanic rock assemblages which contain the ore zone as generally competent, and strong to very strong while the ore materials are massive and very strong, with little or no structure. The hydraulic conductivity of these rocks would be expected to be at the lower end of the primary bedrock unit (in the order of  $1 \times 10^{-8}$  or lower).

Several northeast to southwest trending faults are mapped as intersecting the deposit area, including the East Fault, Northwest Fault and Fault Creek Fault. Grain size analyses of fault gouge associated with these fault zones indicate that the gouge is comprised primarily of sand and gravel-sized material with a minor fine grained fraction (Golder, 1996). As the aforementioned three major faults within the area of the ABM deposit were only discovered and delineated during the 2015 exploration program, packer tests have not targeted these specific fault zones. However, based on the geological description of the gouge material, the fault zones would be expected to have a higher hydraulic conductivity than the adjacent bedrock (potentially in the order of 2 or more orders of magnitude) and may provide preferential groundwater flow paths.

## 6.2 Groundwater Flow Regime

The groundwater flow regime in the study area can generally be inferred from observed piezometric elevations as groundwater typically flows from areas with higher piezometric elevations to areas with lower piezometric elevations. Figures 9 and 10 (attached) show the inferred piezometric elevation contours for both the overburden and bedrock aquifers based on the September 2015 monitoring event. Based on the mountainous terrain that dominates the study area, it can be assumed that the groundwater flow is mainly controlled by the area's topographic features. As shown in these figures, groundwater flow mimics topography with groundwater flow from the topographically high mountain tops and slopes on either side of the valley toward discharge zones on the valley floors. At the base of the valley, the water table is at or very near the ground surface, while beneath the mountains it may be greater than 200 m below ground surface.

Recharge to the bedrock aquifer in the mountains would be expected to migrate into deep local flow paths, moving towards the valley through fractures and faults prior to discharging to the overburden aquifer. Groundwater then moves through the overburden aquifer prior to discharging to surface water features on the valley floor. On valley flanks, the water table is generally located within the competent bedrock. However, during periods of snow melt, it is expected that a perched or temporary water table develops within the fractured bedrock and overlying overburden.

Figure 11 shows a hydrogeological cross section through the ABM deposit and approximately perpendicular to the Geona valley axis. Given that the study area with the proposed mine infrastructure is restricted to the Geona valley and that groundwater flow is generally from the west and east valley walls toward Geona Creek, the cross section in Figure 11 would also be representative for other locations within the study area.

The flow regime is generally supported by hydraulic gradient data collected from nested monitoring wells and VWP across the study area. Table W presents data from nine nested wells located across the study area and Figure D shows piezometric elevations from two VWP, located in the vicinity of the ABM deposit.

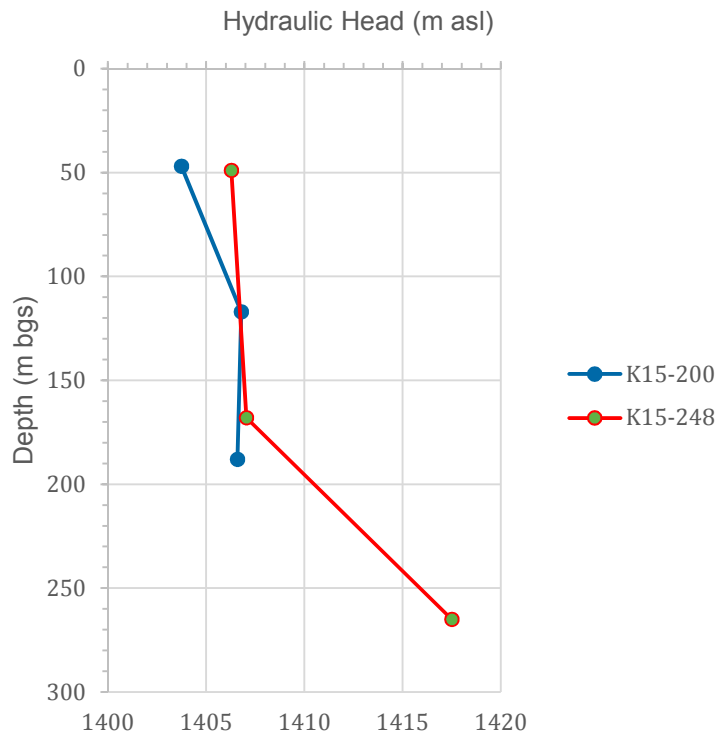
**Table W: Vertical Hydraulic Gradients at Nested Well Locations (September 2015)**

Monitoring Well Location	Groundwater Elevation, September 22/23, 2015 (m asl)		Vertical Hydraulic Gradient	Hydraulic Gradient Direction
	Shallow/Overburden	Deep/Bedrock		
MW15-03	1461.85	1463.41	-0.209	Upwards
MW15-04	1444.85	1444.87	-0.001	Upwards
MW15-07	1359.38	1360.86 <sup>1</sup>	-0.075	Upwards
MW15-08	1333.51 <sup>1</sup>	1332.78	0.032	Downwards
MW15-09	1319.56	1319.75	-0.008	Upwards
MW15-10 <sup>2</sup>	1318.86	1318.89 <sup>1</sup>	-0.001	Upwards
MW15-11 <sup>3</sup>	1385.01	1387.07	-0.092	Upwards
BH95G-25	1385.54	1382.52	0.325	Downwards
BH95G-33	1384.18	1384.65	-0.075	Upwards

<sup>1</sup> Well flowing over casing on date of gauging. Groundwater elevation is assumed to be the top of the casing.

<sup>2</sup> No data available on Sept. 22/23, 2015, data from September 4, 2015.

<sup>3</sup> No data available on Sept. 22/23, 2015, data from November 7, 2015.



**Figure D: Piezometric elevations (hydraulic heads) inferred from pore pressure measurements using VWPs at K15-200 and K15-248 (September 23, 2015)**



The data in Table W and Figure D shows a general upwards hydraulic gradient from deeper bedrock towards shallow overburden throughout the lower valley area. This data, along with the observation of multiple flowing boreholes across the site (in the range of 4 L/min up to 45 L/min) demonstrates the topographically controlled flow regime (driving head from higher elevations), with the discharge of groundwater from the bedrock aquifer to the overburden aquifer then to surface along the valley floor. The compact to dense sand layer noted to overlie the basal sand and gravel layer may act as a confining layer, limiting discharge where present or concentrating discharge in areas where the confining layer is thinner or absent (i.e. incised creeks, deep water bodies).

Tetra Tech EBA notes that downward hydraulic gradients are present at MW15-08 and BH95G-25. MW15-08S was flowing when monitored in August and September, 2015 (and frozen when visited in November 2015 and March 2016). While the reason for reversed gradient at these locations is unclear, it may be associated with localised confined/semi-confined overburden aquifers on the valley slopes, sourced from surface water infiltration or seepage from the bedrock aquifer at higher elevations up the slopes. Overall, areas along the lower valley where a downward hydraulic gradient is present would be considered to be limited and isolated, with the bulk movement of groundwater towards and discharging to surface on the valley floor.

Fault zones that have been observed to have permeable gouge material (sand and gravel), may offer preferential paths for groundwater flow. This is particularly noted for the Fault Creek Fault which extends several km to the southwest of the deposit area. As noted by Golder (1996) the water table is potentially deeper beneath the eastern valley flank than the western flank (although it is difficult to confirm given the limited number of wells at higher elevations), which may be due to the presence of permafrost on west-facing slopes. The permafrost would act as a confining or semi-confining layer depending on the spatial extent and thickness, thereby limiting recharge to the aquifer in this area which causes the groundwater table to be located at greater depth when compared to the east facing slopes where permafrost is believed to be mostly absent.

Table X presents approximate horizontal hydraulic gradients of the overburden and bedrock across the site based on the August/September groundwater elevation data.

**Table X: Groundwater Horizontal Hydraulic Gradients and Velocity**

Zone	Zone Features	Hydraulic Gradient (m/m)		Groundwater Velocity (m/day) <sup>1</sup>	
		Overburden	Bedrock	Overburden	Bedrock
Zone 1 (1)	Class A Storage Facility, Water Management Ponds	0.16	0.16	8 to 38	14 to 35
Zone 1 (2)	Mill and Polishing Pond	0.20	0.12	10 to 47	10 to 26
Zone 2 (1)	Overburden stockpile	0.21	0.25	11 to 50	22 to 55
Zone 2 (2)	Class C Storage Facility	0.31	0.27	16 to 74	23 to 59
Zone 3	Class B Storage Facility	0.12	0.15	6 to 29	13 to 33
Zone 4a	Open Pit	0.12	0.19	6 to 28	16 to 41
Zone 4b	Open Pit	0.29	0.06	15 to 69	5 to 13

<sup>1</sup> Porosity assumed to be 20% in overburden and 1% in bedrock.

The inferred horizontal hydraulic gradient based on groundwater elevations measured in August/September 2015 ranges from approximately 0.12 to 0.31 m/m in overburden and 0.06 to 0.27 m/m in the bedrock aquifer, measured in the direction of groundwater flow toward Geona Creek. Gradients are generally reflective of topography, being comparatively steeper in areas of steeper topography.

Tetra Tech EBA notes that the calculated horizontal hydraulic gradients are estimates based on extrapolation of inferred groundwater elevation contours in some areas where there is a sparse data set. This is particularly evident in area 4b where a hydraulic gradient of 0.06 m/m was calculated. This gradient was determined based data from a bedrock monitoring well located close to the valley floor (BH95-131) and a single inferred groundwater elevation contour (Figure 10). To the east of BH95-131 the surficial topography increases sharply and it would be expected that the groundwater elevation and hence gradient would reflect this increase. Tetra Tech EBA considers the hydraulic gradient through the east side of Zone 4b would likely be similar to the gradient in Zone 2, in the region of 0.2 to 0.3 m/m.

The average horizontal linear groundwater flow velocity in each zone can be estimated using a modification of Darcy's Law:

$$v = K \cdot i \cdot n^{-1}$$

where  $v$  is the groundwater flow velocity (m/s),  $K$  is the hydraulic conductivity of the aquifer (m/s),  $i$  is the hydraulic gradient (m/m), and  $n$  is the effective porosity of the aquifer material (-).

Using the maximum and minimum bulk hydraulic conductivities of the overburden and bedrock aquifers (determined from the 2016 packer tests, hydraulic response tests and pumping tests) and assuming an overburden porosity of 20% and a shallow fractured bedrock equivalent porosity of 1% (e.g., Freeze and Cherry, 1979), the maximum and minimum overburden and bedrock linear groundwater flow velocities were calculated. Estimated flow velocities are detailed in Table X.

As detailed in Table X, calculated groundwater velocities in the overburden range from between 8 and 74 m/day. Lower velocities would be expected in the upper dense sand unit, which has been estimated to have a hydraulic conductivity one to two orders of magnitude lower than the underlying basal sand and gravel unit. Groundwater velocity in the bedrock aquifer ranges from 5 to 59 m/day. Lower velocities would be expected in the deep bedrock, where lower hydraulic conductivities are seen.

It should be noted that local groundwater flow velocities can be much larger or smaller based on the local aquifer hydraulic conductivity and hydraulic gradient. For example, permeable faults can form preferential flow paths for groundwater with significantly higher flow velocities than the estimate above.

### 6.3 Permafrost

The permafrost (where present) acts as a confining or semi-confining layer depending on the spatial extent and thickness, thereby limiting recharge to the aquifer in this area which causes the groundwater table to be located at greater depth when compared to the east facing slopes where permafrost is believed to be mostly absent.

The KZK Project is located in an area with discontinuous permafrost. Cominco (1996) noted that permafrost is present on north and west facing slopes, especially above 1,400 m elevation, although permafrost had been observed as low as 1,250 m elevation. Geotechnical site investigations in the 1990s encountered permafrost in the northern portion of the proposed Class C storage facility and in some areas, especially the east valley slopes, along the Geona Creek valley. Permafrost was found to be mostly absent on the western valley walls as well as in the area of the proposed open pit, except for some localized ice lenses. Where permafrost is present it is believed to be warm permafrost with ground temperatures just below 0°C and therefore susceptible to disturbance.

Permafrost was not observed by Tetra Tech EBA during any of the 2015/16 monitoring program work, although it is noted that it was not in the scope of work to assess permafrost and drilling methods overseen by Tetra Tech EBA were not conducive to observing permafrost. All four ground temperature observation wells installed by Knight

Piesold as part of the preliminary geotechnical site investigations (see Sections 4.6 and 5.4) did not encounter any permafrost.

## 6.4 Groundwater – Surface Water Interaction

Groundwater flow at KZK is generally controlled by topography and groundwater divides are assumed by Tetra Tech EBA to coincide with surface water divides. Groundwater is being recharged at higher elevations on the mountain slopes and generally flows down-valley mimicking the local topography. The groundwater eventually discharges to the receiving streams along the valley bottoms, mainly Geona Creek. Groundwater originating from the area of the proposed Class C storage facility likely discharges to the tributary of Geona Creek in the valley where the storage facility is located and/or to Geona Creek directly.

Geona Creek is the main groundwater discharge feature within the study area encompassing the KZK project with most facilities at lower elevation being located in discharge areas indicated by a vertical upward hydraulic gradient. The amount of baseflow, i.e., groundwater seepage into the creeks, depends on the hydraulic gradient and hydraulic conductivity of the shallow aquifer in the vicinity of the receiving stream. In general, the fraction of baseflow in the creek will be much larger in the winter when there is little or no surface runoff or shallow subsurface runoff (also referred to as interflow). The (late) winter creek discharge usually provides a good estimate of the baseflow as it amounts to nearly 100% of the total discharge observed during this time of the year.

## 7.0 SUITABILITY OF MONITORING WELL NETWORK

At the direction of BMC, the groundwater monitoring network was designed based on Cominco's (1996) mine design. The network was designed to fill data gaps in the historical monitoring well network and data set with the objective to assess baseline conditions across the site, with wells located generally hydraulically up and down gradient of, or near potential sources of groundwater impact (e.g. Class A, B, and C storage facilities, mill site). Monitoring wells were installed by Tetra Tech EBA during the 2015 field program in addition to historic monitoring wells that were upgraded and re-developed.

Following the installation of the network in 2015, the mine design has been amended, with locations of the Class A, B, and C storage facilities, as well as the mill moved and the open pit extended. Subsequently, in several locations where groundwater monitoring wells had previously been located upgradient of potential impact sources these wells are now within the source footprint and other potential impact sources have no up/down gradient monitoring locations. Tetra Tech EBA understands that additional monitoring wells have been installed by others during the summer 2016 field program. However, these additional monitoring wells will be reported under separate cover and have not been included in this report.

In light of the amended mine design, the following sections present a review and discussion of the adequacy of the groundwater monitoring network in relation to the current mine design (as of September 20, 2016) and the networks ability to adequately characterise baseline groundwater conditions.

### **Class A Storage Facility**

The area of the Class A Storage Facility has one nested groundwater monitoring well (MW15-07S and MW15-07D) located hydraulically downgradient of the southern edge of the proposed location. Tetra Tech EBA understands that two additional monitoring wells were installed in 2016, one upgradient of the Class A storage facility and one downgradient of the facility and associated seepage collection pond.

### **Mill Site**

The proposed mill site has been relocated to the south between the Class A and B storage facilities. There are currently no monitoring wells immediately up- or downgradient of this new proposed mill location. However, monitoring wells MW15-01 and the new upgradient monitoring well of the Class A storage facility provide data on the general upgradient area of the mill site. Monitoring well MW15-07 is located near the downgradient area of the mill and likely representative of the general groundwater conditions downgradient of the new mill location.

### **Class B Storage Facility**

The Class B storage facility area has two groundwater monitoring wells that are considered to be downgradient of the footprint of the Class B storage area, BH95G-32 and nested well pair BH95G-33S and BH95G-33D. There are two wells within the proposed footprint of the area (MW15-01 and MW15-02) and no upgradient monitoring locations.

Given the proximity of MW15-01 to the western extent of the Class B storage facility footprint and the fact that the site is undeveloped and groundwater is presently un-impacted by mining operations it can be considered to be representative of current upgradient baseline conditions and suitable to characterise baseline conditions within this area. Tetra Tech EBA notes that following the commencement of mine operations and deposition of waste rock in this area, this well may not be suitable for the assessment of background conditions.

Tetra Tech EBA understands that an additional monitoring well was installed downgradient of the seepage collection pond downgradient of the Class B storage facility during the 2016 field program.

## **Class C Storage Facility**

The Class C storage facility area has at least one well that is considered to be downgradient of the area footprint (BH95G-31) and two wells that are potentially downgradient (BH95G-30 and MW15-06). Two nested wells are located within the proposed footprint of the area (MW15-03S/ MW15-03D and MW15-04S/ MW15-04D). There are no wells upgradient of this area.

However, while nested well pair MW15-03S/ MW15-03D is located within the storage area footprint, Tetra Tech EBA consider that as the site is undeveloped and groundwater is presently un-impacted, groundwater conditions at this location would be generally representative of upgradient groundwater conditions and can be used to characterise baseline conditions within this area. Tetra Tech EBA notes that following the commencement of mine operations and deposition of waste rock in this area, this well will have to be decommissioned and will no longer be available for ongoing monitoring.

## **Overburden Stockpile**

There are no groundwater monitoring wells directly up or down gradient of the overburden stockpile. However, nested monitoring well pair MW15-05S/ MW15-05D, located on the southern extent of the areas footprint, is located cross gradient of the stockpile footprint and can be considered in a suitable location to characterise present upgradient groundwater conditions. Tetra Tech EBA understands that an additional monitoring well was installed downgradient of the overburden stockpile and the associated seepage collection pond during the 2016 field program.

## **ABM Open Pit**

The monitoring network within the proposed open pit is intended to assess overburden and bedrock baseline groundwater conditions in the footprint of the excavation area. There are considered to be sufficient wells within the northern pit area extent to adequately characterise baseline conditions. To the south where the proposed pit extent has been expanded to encompass the Krakatoa zone, Tetra Tech EBA understands that an additional monitoring well has been installed during the summer 2016 field program to further characterise conditions in the southern most section of the pit area.

There is a single well (BH95G-29) located to the south of the proposed open pit extent. This well could be used as a general offsite/upgradient monitoring well to assess baseline conditions in the upper valley outside of the general operational mine area.

Based on Tetra Tech EBA's understanding of existing groundwater conditions (see discussion in Section 6), the current groundwater monitoring network, in conjunction with additional monitoring wells installed during the summer 2016 field program, provides reasonable coverage in order to characterise baseline groundwater conditions.

## 8.0 SUMMARY AND CONCLUSIONS

Based on the results of the monitoring well drilling and completion, and the baseline hydrogeological assessment presented in this report, Tetra Tech EBA arrived at the following conclusions:

- A monitoring well network was successfully installed at KZK consisting of 11 new monitoring wells (eight of which are nested with shallow overburden and deeper bedrock piezometers) in addition to 14 historic monitoring wells that were re-developed and upgraded with standpipe extensions and protective casings.
- All monitoring wells were completed with 32 mm (1.25") diameter PVC standpipes.
- In addition to the monitoring wells, two observations wells were installed with VWP's to monitor pore pressures at three different depths in each of the observation wells. The VWP observations wells were installed within the ABM deposit and proposed open pit. K15-200 is located west of Geona Creek whereas K15-248 is located on the east side of Geona Creek.
- Ground temperatures and permafrost conditions were assessed using subsurface temperature data from the VWP's and four ground temperature observation wells installed by Knight Piesold.
- Permafrost appears to be discontinuous and mostly restricted to north and west facing slopes at elevations above 1,400 m asl. No permafrost was encountered in any of the monitoring wells or ground temperature observation wells.
- The local groundwater regime consists of a bedrock aquifer overlain across valley floors by an overburden aquifer. The overburden aquifer is inferred to be confined to semi-confined, at least in the area of the ABM deposit.
- The overburden aquifer consists of till, glaciofluvial, and alluvial deposits with a coarse basal sand and gravel unit overlain by silty sand and gravel till. The overburden aquifer is typically between about 10 to 20 m thick along the valley bottom and thins out with increasing elevations.
- The primary bedrock aquifer in the vicinity of the ABM deposit mainly consists of schistose felsic volcanics intersected with thick felsic tuff and sill/flow complexes that host the ore deposit.
- The groundwater flow regime at the site is controlled by the steep terrain with groundwater flow from areas at higher elevations on the mountain slopes toward the valley bottoms with the groundwater flow generally mimicking the local topography and eventually discharging to Geona Creek.
- Hydraulic conductivities of the overburden aquifer were inferred from hydraulic response tests across the study area and one pumping test conducted in the area of the ABM deposit. The inferred hydraulic conductivities ranged from about  $1 \times 10^{-6}$  m/s to about  $1 \times 10^{-4}$  m/s with the highest values measured in the area of the ABM deposit (i.e., WW15-01 and MW15-11S).
- Hydraulic conductivities of the bedrock aquifer were inferred from packer tests conducted in select exploration drill holes in the area of the ABM deposit as well as select monitoring wells. In addition, hydraulic response tests and one pumping test in shallow bedrock were conducted. Inferred hydraulic conductivities ranged over several orders of magnitude from about  $3 \times 10^{-9}$  m/s to about  $4 \times 10^{-6}$  m/s. Hydraulic conductivity in bedrock is inferred to be largely controlled by fracture density and permeability. In general, the bedrock hydraulic conductivity tends to decrease with depth with the higher values found in shallow, weathered bedrock less than about 50 m deep, and smaller values ( $< 1 \times 10^{-7}$  m/s) in deeper, more competent bedrock at depth of more than about 50 m.

- Groundwater samples were collected from monitoring wells across the site during May, August/September, and November 2015 as well as March 2016. Seasonal groundwater monitoring is currently ongoing to further characterize baseline groundwater quality and seasonality.
- Groundwater quality was found to be variable across the site with individual areas discussed in detail in Section 5.5.
- Most groundwater samples showed a near neutral or slightly basic pH (between 7 and 8), with few samples, primarily in the northern part of the study area (Zone 1) showing slightly acidic pH values of less than 7.
- Groundwater samples had an average total dissolved solids concentration of 379 mg/L across the study area, suggesting moderately mineralized groundwater, with some samples from the northern part of the study area (Zone 1) and from the area of the ABM deposit (Zone 4) having significantly higher TDS concentrations.
- Hardness concentrations are variable across the site, ranging from about 80 to 2,100 mg/L. Maximum concentrations reported in Zones 1 and 2 were over two times higher than maximum concentrations in each of the other three zones. Average and maximum concentrations were typically higher in bedrock wells than overburden wells in each zone.
- Sulfate concentrations averaged 68 mg/L across the study area, with an average of 67 mg/L in overburden wells and 69 mg/L in bedrock wells. Sulphate concentrations were highest in Zones 4a and 4b and showed a general trend of increasing concentration with depth in the two zones.
- Various dissolved metals were found to exceed the FIG and CCME-AW water quality guidelines as well as the Water Use Licence (QZ97-026) Effluent Quality Criteria. Observed dissolved metals exceedances primarily include arsenic, cadmium, iron, lead, selenium, and zinc.
- Many monitoring wells showed considerable variability in analytical results over the course of the monitoring program suggesting there may be a strong seasonal influence on groundwater chemistry. Ongoing groundwater monitoring scheduled in 2016/2017 will provide additional data to characterize seasonal changes in groundwater quality and quantity.




## 9.0 CLOSURE

We trust this report meets your present requirements. If you have any questions or comments, please contact the undersigned.

Respectfully submitted,  
Tetra Tech EBA Inc.

  
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**Table 1: Summary of Groundwater Monitoring Well Completion Details**

Well ID	Eastings	Northings	Date Drilled	Aquifer Monitored	Stick Up	Well Depth	Screen Interval		Sand Pack		Bentonite Seal		Well Status as of March 2016	Comments
	UTM Nad83, Zone 9	mag			mbtopvc	From	To	From	To	From	To			
						mbg		mbg		mbg				
MW15-01	414472	6816559	August 11, 2015	Bedrock	1.29	20.03	10.0	18.8	9.3	21.0	0.5	9.3	Functional	Datalogger
MW15-02	414808	6816270	August 12, 2015	Bedrock	1.26	32.97	23.0	31.7	21.5	32.0	0.0	21.5	Freeze protection packer	Artesian
MW15-03S	416317	6816052	August 17, 2015	Overburden	0.99	8.42	4.1	7.1	3.2	7.7	0.0	3.2	Functional	-
MW15-03D	416317	6816052	August 17, 2015	Bedrock	0.99	16.94	10.1	16.0	9.3	16.6	7.7	9.3	Functional	-
MW15-04S	415786	6816156	August 15-16, 2015	Overburden	1.04	15.10	11.2	14.1	10.2	15.6	0.0	15.6	Functional	Datalogger
MW15-04D	415786	6816156	August 15-16, 2015	Bedrock	1.05	32.30	27.1	32.9	25.5	32.6	15.6	25.5	Functional	Datalogger
MW15-05S	415852	6816872	August 14, 2015	Overburden	1.07	8.09	4.6	7.6	5.2	10.3	10.3	20.8	Functional	-
MW15-05D	415852	6816872	August 14, 2015	Bedrock	0.00	28.56	22.4	29.8	20.8	30.0	0.2	5.2	Functional	-
MW15-06	415460	6816722	August 14, 2015	Overburden	0.98	10.02	6.5	9.4	6.0	9.7	0.0	6.0	Freeze protection packer	-
MW15-07S	414922	6817784	August 13, 2015	Overburden	0.90	11.01	8.1	11.0	6.7	12.1	0.0	6.8	Functional	Datalogger
MW15-07D	414922	6817784	August 13, 2015	Bedrock	0.91	33.14	26.3	32.1	25.3	32.0	11.9	25.3	Freeze protection packer	Artesian
MW15-08S	414904	6818518	August 12, 2015	Overburden	1.09	12.66	8.7	11.6	7.7	11.6	0.0	7.7	Freeze protection packer	Artesian
MW15-08D	414904	6818518	August 12, 2015	Bedrock	1.06	36.89	29.8	35.6	29.5	35.6	12.6	28.6	Frozen	-
MW15-09S	414709	6819177	August 10, 2015	Overburden	0.59	18.98	11.4	17.3	10.9	18.3	0.0	10.9	Frozen	-
MW15-09D	414709	6819177	August 10, 2015	Bedrock	0.57	41.32	35.1	40.9	33.8	40.9	18.3	33.8	Freeze protection packer	Artesian but not flowing
MW15-10S	414794	6819203	August 11, 2015	Overburden	0.88	10.45	6.6	9.6	5.9	10.7	0.0	5.9	Frozen	Artesian but not flowing
MW15-10D	414794	6819203	August 11, 2015	Bedrock	0.88	32.35	25.7	31.5	24.1	31.5	10.7	24.1	Functional	Artesian
MW15-11S	415079	6815119	November 6-7, 2015	Overburden	1.09	8.14	4.2	7.1	3.3	7.5	0.0	3.3	Functional	-
MW15-11D	415079	6815119	November 6-7, 2015	Bedrock	1.10	36.36	20.6	35.2	19.0	35.5	7.0	19.0	Frozen	Artesian
BH95G-2	414341	6819836	May 17, 1995	Bedrock	0.43	19.47	15.2	19.8	13.8	19.8	0.0	13.8	Functional	Datalogger
BH95G-21	414802	6815641	August 9, 1995	Bedrock	1.12	10.06	6.1	9.1	5.2	10.1	0.0	5.2	Functional	-
BH95G-22	414928	6815729	August 9, 1995	Bedrock	0.95	6.56	2.8	5.8	2.6	5.8	0.0	2.6	Functional	Datalogger
BH95G-23	414906	6815276	August 10, 1995	Overburden	1.21	13.56	9.8	12.8	8.9	12.8	1.2	8.9	Frozen	-
BH95G-24	415037	6815258	August 11, 1995	Bedrock	0.71	9.12	6.4	9.4	5.6	9.8	0.0	5.6	Frozen	-
BH95G-25D	415074	6815522	August 12, 1995	Bedrock	1.08	21.08	17.8	20.8	17.4	20.8	13.4	17.4	Functional	-
BH95G-25S	415073	6815522	August 12, 1995	Overburden	1.08	12.34	8.5	11.5	6.4	13.4	1.1	6.4	Functional	-
BH95G-29	415197	6814543	August 17-18, 1995	Overburden	1.07	16.51	15.6	18.6	14.3	19.2	0.8	14.3	Frozen	-
BH95G-30	415437	6816766	August 19-21, 1995	Bedrock	0.10	19.20	16.2	19.2	14.0	19.2	0.0	14.0	Frozen	Blocked at 8.66m, recovers when purged
BH95G-31	415199	6816129	August 21, 1995	Bedrock	1.02	8.70	7.0	10.0	2.5	10.1	0.0	2.5	Frozen	-
BH95G-32	415008	6816134	August 22-23, 1995	Bedrock	1.22	15.83	12.2	15.2	7.2	16.2	0.0	7.2	Functional	-
BH95G-33D	415130	6816745	August 24, 1995	Bedrock	1.17	12.92	9.1	12.1	8.0	13.1	5.8	8.0	Functional	Datalogger
BH95G-33S	415130	6816745	August 24, 1995	Overburden	1.16	6.44	2.8	5.8	1.2	6.0	0.0	1.2	Functional	-
BH95-129	414601	6815499	May 12, 1995	Bedrock	1.05	150.90	154.5	160.0	154.0	160.0	114.0	154.0	Functional	-
BH95-131	415182	6815377	May 13, 1995	Bedrock	1.07	128.00	123.5	128.0	119.0	128.0	80.0	119.0	Functional	Datalogger + Barologger
BH95-146	414898	6815504	May 21, 1995	Bedrock	1.04	137.73	134.1	138.7	189.0	194.5	140.0	189.0	Frozen	Artesian

**Notes:**

"Functional" means that representative groundwater elevation or sample can be obtained from the well.

'mag' - meters above ground

'mbtopvc' - meters below top of PVC casing

'mbg' - meters below ground

Table 2: Summary of Groundwater Elevations

Well ID	UTM Coordinates, NAD83 Zone 9V		Ground Elevation m asl	Top of Casing Elevation m asl	Pipe Stick-Up m ag	May 2015 Monitoring			Aug/Sept 2015 Monitoring			September 22-23, 2015		November 2015 Monitoring			March 2016 Monitoring		
	Easting	Northing				Date	Water Level mbtopvc	GW Elevation m asl	Date	Water Level mbtopvc	GW Elevation m asl	Water Level mbtopvc	GW Elevation m asl	Date	Water Level mbtopvc	GW Elevation m asl	Date	Water Level mbtopvc	GW Elevation m asl
MW15-01	414472	6816559	1487.34	1488.54	1.20				1-Sep	9.31	1479.23	11.42	1477.12	1-Nov	12.88	1475.66	14-Mar	13.41	1475.13
MW15-02	414808	6816270	1429.80	1431.19	1.39				1-Sep	0.00	1431.19	Flowing	1431.19	-	-	-	-	-	-
MW15-03S	416317	6816052	1465.22	1466.19	0.96				4-Sep	4.81	1461.38	4.34	1461.85	2-Nov	5.42	1460.77	13-Mar	7.31	1458.88
MW15-03D	416317	6816052	1465.22	1466.18	0.96				4-Sep	3.09	1463.09	2.77	1463.41	2-Nov	3.27	1462.91	13-Mar	4.01	1462.17
MW15-04S	415786	6816156	1451.04	1452.06	1.01				4-Sep	7.84	1444.22	7.21	1444.85	31-Oct	7.89	1444.17	13-Mar	10.45	1441.61
MW15-04D	415786	6816156	1451.04	1452.07	1.02				4-Sep	7.79	1444.28	7.20	1444.87	31-Oct	7.88	1444.19	13-Mar	10.29	1441.78
MW15-05S	415852	6816872	1463.77	1464.88	1.11				7-Sep	Dry	-	Dry	-	2-Nov	Dry	-	13-Mar	Dry	-
MW15-05D	415852	6816872	1463.77	1464.88	1.11				7-Sep	11.38	1453.50	11.72	1453.16	2-Nov	12.23	1452.65	13-Mar	12.83	1452.05
MW15-06	415460	6816722	1387.48	1388.56	1.08				7-Sep	0.39	1388.17	Flowing	1388.56	-	-	-	-	-	-
MW15-07S	414922	6817784	1359.98	1360.90	0.92				6-Sep	1.55	1359.35	1.52	1359.38	5-Nov	1.63	1359.27	15-Mar	2.42	1358.48
MW15-07D	414922	6817784	1359.98	1360.86	0.88				6-Sep	Flowing	1360.86	Flowing	1360.86	-	-	-	-	-	-
MW15-08S	414904	6818518	1332.49	1333.51	1.02				2-Sep	Flowing	1333.51	Flowing	1333.51	-	-	-	-	-	-
MW15-08D	414904	6818518	1332.49	1333.42	0.93				3-Sep	1.48	1331.94	0.64	1332.78	3-Nov	1.90	1331.52	16-Mar	Frozen @ 0.44	1332.98
MW15-09S	414709	6819177	1319.16	1319.66	0.50				5-Sep	0.37	1319.29	0.10	1319.56	4-Nov	Frozen @ 0.43	1319.23	16-Mar	Frozen @ 0.43	1319.23
MW15-09D	414709	6819177	1319.16	1319.75	0.59				5-Sep	0.02	1319.73	Flowing	1319.75	-	-	-	-	-	-
MW15-10S	414794	6819203	1318.01	1318.92	0.90				4-Sep	0.06	1318.86	-	-	4-Nov	Frozen @ 0.63	1318.29	17-Mar	Frozen @ 0.04	1318.88
MW15-10D	414794	6819203	1318.01	1318.89	0.88				4-Sep	Flowing	1318.89	-	-	4-Nov	Flowing	1318.89	17-Mar	0.00	1318.89
MW15-11S	415079	6815119	1386.01	1387.14	1.13									7-Nov	2.13	1385.01	14-Mar	3.03	1387.14
MW15-11D	415079	6815119	1386.01	1387.07	1.06									7-Nov	Flowing/frozen?	1387.07	14-Mar	Frozen @ 0.29	1386.78
BH95G-2	414341	6819836	1348.59	1349.77	1.18	13-May	16.97	1332.05	22-Sep	4.89	1344.88	4.89	1344.88	5-Nov	7.22	1342.55	16-Mar	16.41	1333.36
BH95G-9	414535	6821022	1339.64	1340.00	0.36	13-May	11.01	1328.99	-	-	-	-	-	-	-	-	-	-	-
BH95G-21	414802	6815641	1402.38	1403.47	1.09	12-May	3.39	1399.05	6-Aug	3.23	1400.24	2.11	1401.36	30-Oct	2.48	1400.99	14-Mar	Frozen @ 3.29	1400.18
BH95G-22	414928	6815729	1384.61	1385.52	0.91	12-May	3.79	1381.01	7-Aug	2.73	1382.79	2.30	1383.22	1-Nov	2.97	1382.55	14-Mar	4.45	1381.07
BH95G-23	414906	6815276	1386.07	1387.18	1.11	-	-	-	9-Aug	1.21	1385.97	0.83	1386.35	31-Oct	Frozen @ 1.255	1385.93	14-Mar	Frozen @ 0.30	1386.88
BH95G-24	415037	6815258	1384.32	1385.30	0.98	-	-	-	9-Aug	0.34	1384.96	Flowing	1385.30	31-Oct	Frozen @ 0.44	1384.86	14-Mar	Frozen @ 0.44	1384.86
BH95G-25S	415073	6815522	1385.84	1386.92	1.08	10-May	3.04	1383.00	6-Aug	2.31	1384.61	1.38	1385.54	1-Nov	2.79	1384.13	14-Mar	4.06	1382.86
BH95G-25D	415074	6815522	1385.84	1386.90	1.06	-	-	-	6-Aug	4.74	1382.16	4.38	1382.52	1-Nov	5.05	1381.85	14-Mar	5.62	1381.28
BH95G-29	415197	6814543	1391.37	1392.56	1.18	-	-	-	9-Aug	0.28	1392.28	Flowing	1392.56	31-Oct	Frozen @ 0.73	1391.83	14-Mar	Frozen @ 0.73	1391.83
BH95G-30	415437	6816766	1385.78	1386.88	1.10	9-May	Frozen @ 0.25	1385.63	6-Sep	Flowing	1386.88	Frozen @ 0.61	1386.27	2-Nov	Frozen @ 0.77	1386.11	13-Mar	Frozen @ 0.71	1386.17
BH95G-31	415199	6816129	1390.67	1391.74	1.06	-	-	-	22-Sep	1.09	1390.65	1.09	1390.65	5-Nov	1.42	1390.32	15-Mar	Frozen @ 1.53	1390.21
BH95G-32	415008	6816134	1386.24	1387.46	1.22	13-May	5.16	1381.31	22-Sep	4.95	1382.51	4.95	1382.51	5-Nov	5.34	1382.12	15-Mar	6.22	1381.24
BH95G-33S	415130	6816745	1389.31	1390.48	1.17	-	-	-	22-Sep	6.30	1384.18	6.30	1384.18	3-Nov	Dry	-	15-Mar	Dry	-
BH95G-33D	415130	6816745	1389.31	1390.48	1.16	13-May	6.16	1383.35	22-Sep	5.83	1384.65	5.83	1384.65	3-Nov	6.20	1384.28	15-Mar	7.00	1383.48
BH95G-35	414570	6817696		1422.36	1422.36	13-May	3.96	2840.76	-	-	#VALUE!	-	#VALUE!	-	-	#VALUE!	-	-	#VALUE!
BH95-129	414601	6815499	1443.64	1444.66	1.03	-	-	-	17-Aug	4.70	1439.96	5.63	1439.03	4-Nov	9.90	1434.76	14-Mar	13.81	1430.85
BH95-131	415182	6815377	1416.17	1417.29	1.13	9-May	32.59	1383.77	19-Aug	30.76	1385.51	31.22	1386.07	31-Oct	31.88	1385.41	14-Mar	33.09	1384.20
BH95-146	414898	6815504	1389.16	1390.23	1.07	11-May	Flowing	1389.30	10-Aug	Flowing	1390.23	Flowing	1390.23	2-Nov	Frozen @ -0.02	1390.25	14-Mar	Frozen @ -0.02	1390.25
WW15-01	414893	6815295	1389.87	1390.57	0.70				-	-	-	-	-	4-Oct	3.96	1386.61	-	-	-
WW15-02	414839	6815767	1395.46	1396.30	0.84				21-Sep	0.06	1396.16	-	-	4-Oct	Flowing	1396.30	-	-	-
ART - 3 (3)	414799	6815481	1399.80	1400.00	0.20	12-May	Flowing	1400.00	11-Aug	Flowing	1400.00	Flowing	1400.00	Wells decommissioned			Wells decommissioned		
ART - 3 (1)	414799	6815483	1399.62	1400.00	0.38	12-May	Flowing	1400.00	11-Aug	Flowing	1400.00	Flowing	1400.00	Wells decommissioned			Wells decommissioned		
ART - 4	414901	6815749	1381.87	1382.50	0.63	12-May	Flowing	1382.50	-	-	-	-	-	-	-	-	-	-	-

"-": No measurements - well not included in monitoring as well was not accessible, well frozen or for other reasons constraining ability to measure.  
 Level of water frozen within standpipe  
 'm asl' - meters above sea level  
 'm ag' - meters above ground  
 'mbtopvc' - meters below top of PVC casing

**Table 3A: Summary of Hydraulic Test Results Conducted in Monitoring Well Boreholes**

Well ID	Screen Section		Inferred K	Packer Test Interval		Inferred K	Lithology Description
	From	To	Slug Testing	From	To	Packer Testing	
	m bgs		m/s	m bgs		m/s	
MW 15-01	10	18.8	1.2E-06	12.5	20.0	1.0E-06	Mafic intrusions, Carbonaceous Mudstone Schist
MW 15-02	23	31.7	-	12.5	32.0	1.9E-07	Carbonaceous Mudstone Schist
MW 15-03S	4.1	7.1	8.5E-06	-	-	-	Overburden (sand, gravel and cobbles) overlaying Carbonaceous Mudstone Schist
MW 15-03D	10.1	16	1.9E-06	-	-	-	Layers of Tuff Schist, Mafic Tuff Schist, Rhyolite Tuff Dominant Mudstone Schist and Carbonaceous Mudstone Schist
MW 15-04	-	-	-	16.4	26.9	4.2E-07	
MW 15-04S	11.2	14.1	1.1E-05	-	-	-	Overburden overlying Tuff Schist
MW 15-04D	27.1	32.9	9.2E-07	-	-	-	Tuff Schist
MW 15-05S	4.6	7.6	-	-	-	-	Overburden
MW 15-05D	22.4	29.8	1.3E-06	22.5	30.0	6.9E-08	Carbonaceous Mudstone Schist
MW 15-06	6.5	9.4	1.5E-06	-	-	-	Overburden (loose sand)
MW 15-07S	8.1	11	4.5E-06	-	-	-	Overburden (sand and gravel)
MW 15-07D	26.3	32.1	-	16.5	33.0	1.9E-07	Mafic Intrusions
MW 15-08S	8.7	11.6	-	-	-	-	Overburden (sand and gravel)
MW 15-08D	29.8	35.6	1.3E-07	19.5	36.0	4.3E-07	Mafic Tuff Schist
MW 15-09S	11.4	17.3	1.6E-06	-	-	-	Overburden (sand and gravel)
MW 15-09D	35.1	40.9	-	34.5	39.0	1.0E-05	Mafic Volcanic Schist
MW 15-10S	6.6	9.6	2.0E-06	-	-	-	Overburden
MW 15-10D	25.7	31.5	-	28.5	33.0	4.8E-06	Mafic Volcanic Schist with layers of Carbonaceous Mudstone Schist
MW 15-11S	4.15	7.05	3.6E-05	-	-	-	Overburden
MW 15-11D	20.6	35.2	-	-	-	-	Tuff Schist, Rhyolite Schist and Mafic Intrusions

Notes:

Poor data quality - provided for qualitative purpose only

**Table 3B: Summary of Packer Test Results Conducted in Exploration Boreholes**

Hole ID	Dip	Test Number	Test Interval		Depth		Inferred Hydraulic Conductivity K	Lithology Description
			From	to	From	To	Geometric Mean	
	Degree		m ah	m bgs	m/s			
K15-204	-60	1	21.5	35.0	18.6	30.3	<1E-09	Rhyolite Schist with Carbonaceous Content
		2	72.5	95.0	62.8	82.3	1.5E-08	Rhyolite Schist with Carbonaceous Content and Tuff Schist
		3	123.5	149.0	107.0	129.0	1.1E-08	Rhyolite Schist, Tuff Schist and Mafic Intrusion
K15-206	-65	1	13.5	24.0	12.2	21.8	6.4E-08	Tuff Schist
		2	52.5	57.0	47.6	51.7	4.0E-06	Tuff Schist
		3	94.5	114.0	85.6	103.3	3.0E-09	Rhyolite Schist and Tuff Schist
		4	211.5	237.0	191.7	214.8	3.2E-07	Rhyolite Schist and Tuff Schist
K15-200	-70	1	9.0	19.5	8.5	18.3	9.4E-07	Rhyolite Schist and Tuff Schist
		2	64.5	75.0	60.6	70.5	8.1E-07	Tuff Schist
		3	103.5	106.5	97.3	101.5	4.2E-08	Carbonaceous Mudstone Schist
		4	127.5	138.0	119.8	129.7	2.1E-08	Rhyolite Schist
		5B	198.0	211.5	187.5	200.2	9.5E-09	Rhyolite Schist and Tuff Schist
K15-202	-60	1	21.5	32	18.6	27.7	1.2E-06	Rhyolite Schist and Tuff Schist
		2	57.5	71	49.8	61.5	9.8E-07	Mafic Intrusion
K15-242	-65	1	27.5	38.0	24.9	33.5	9.2E-07	Tuff Schist and Mafic Intrusion
		2	69.5	86.0	63.9	78.8	6.7E-09	Rhyolite Schist with Carbonaceous Content and Carbonaceous Mudstone Schist
		3	117.5	125.0	106.5	113.3	6.5E-09	Rhyolite Schist with Mafic Intrusion
		4	132.5	161.0	120.1	145.9	9.3E-08	Mafic Intrusion and Rhyolite Schist
K15-248	-75	1	46.5	52.5	44.9	50.7	8.0E-09	Carbonaceous Mudstone Schist overlaying Tuff Schist
		2	169.5	175.5	163.7	169.5	2.0E-08	Tuff Schist and Mafic Intrusion
		3	226.5	240.0	218.8	231.8	5.5E-09	Tuff Schist
		4	244.5	279.0	236.2	269.5	7.3E-09	Rhyolite Schist
K15-265	-55	1	70.5	90.0	57.8	73.7	5.6E-08	Tuff Schist and Mafic Intrusion
		2	133.5	153.0	109.4	125.3	4.3E-08	Tuff Schist
		3	190.5	201.0	156.0	164.6	3.7E-07	Massive sulfides and Rhyolite Schist
		4	271.5	285.0	222.4	233.5	3.8E-09	Tuff Schist
K15-330	90	1	31.35	34.45	31.35	34.45	8E-06	Sedimentary Schist
		2	34.35	38.95	34.35	38.95	1E-05	Sedimentary Schist, Mafic Tuff Schist, Sedimentary Mudstone Schist
		3	37.35	41.95	37.35	41.95	1E-06	Mafic Tuff Schist, Sedimentary Mudstone Schist
		4	41.85	46.45	41.85	46.45	7E-06	Mafic Tuff Schist, Sedimentary Mudstone Schist
		5	41.85	50.95	41.85	50.95	4E-06	Mafic Tuff Schist, Sedimentary Mudstone Schist
K15-331	90	1	18.25	23	18.25	23	1E-06	Mafic Tuff Schist, Sedimentary Mudstone Schist
		2	24.25	32	24.25	32	4E-07	Mafic Tuff Schist, Sedimentary Mudstone Schist
K15-333	90	1	9.25	17	9.25	17	3E-07	Sedimentary Mudstone Schist
		2	18.25	26	18.25	26	1E-07	Mafic Tuff Schist
		3	27.25	35	27.25	35	6E-07	Mafic Tuff Schist
		4	36.25	44	36.25	44	9E-07	Mafic Tuff Schist
		5	45.25	53	45.25	53	7E-07	Mafic Tuff Schist
		6	54.25	62	54.25	62	6E-07	Mafic Tuff Schist
		7	63.25	71.35	63.25	71.35	8E-07	Mafic Tuff Schist
K15-334	90	1	18.9	23.5	18.9	23.5	2E-07	Mafic Intrusion
		2	18.9	26.5	18.9	26.5	2E-06	Mafic Intrusion
		3	18.9	28.3	18.9	28.3	5E-06	Mafic Intrusion
		5	29.4	41.5	29.4	41.5	2E-05	Mafic Intrusion, Sedimentary Mudstone Schist
		6	33.9	41.5	33.9	41.5	4E-05	Sedimentary Mudstone Schist
		7	41.4	50.5	41.4	50.5	1E-05	Sedimentary Mudstone Schist
		1	6.58	11.33	6.58	11.33	4E-07	Sedimentary Mudstone Schist
K15-335	90	2	12.58	20.33	12.58	20.33	1E-07	Sedimentary Mudstone Schist, Mafic Tuff Schist
		4	18.58	32.33	18.58	32.33	2E-06	Sedimentary Mudstone Schist, Mafic Tuff Schist
		1	21.9	25	21.9	25	3E-05	Mafic Ash Tuff Schist
K15-336	90	2	24.9	28	24.9	28	7E-06	Mafic Ash Tuff Schist
		3	27.9	34	27.9	34	2E-05	Mafic Ash Tuff Schist, Sedimentary Mudstone Schist
		4	35.4	40	35.4	40	8E-06	Sedimentary Mudstone Schist, Mafic Ash Tuff Schist
		5	39.9	46	39.9	46	7E-07	Sedimentary Mudstone Schist, Mafic Ash Tuff Schist
		6	45.9	50.5	45.9	50.5	7E-07	Sedimentary Mudstone Schist

**Notes:**

Poor data quality - provided for qualitative purpose only

Packer tests conducted by Knight Piesold

**Table 4A: Monitoring Wells Packer Test Data Quality Analysis**

Well ID	Dip	Test Interval		Diagnostic Plot Analysis (see Figure 5)	Data Quality		
	Degree	From	to		Good	Moderate	Poor
		m bg					
MW15-01	-90	12.5	20.0	Laminar flow	X		
MW15-02		12.5	32.0	Some dilation, and possibly some clogging during decreasing pressures			X
MW15-05D		22.5	30.0	Some enhancement		X	
MW15-07D		16.5	33.0	Possibly some dilation and clogging during decreasing pressures		X	
MW15-08D		19.5	36.0	Laminar flow, possibly some clogging during decreasing pressures	X		
MW15-09D		34.5	39.0	Turbulent flow due to higher conductivity, artesian well		X	
MW15-10D		28.5	33.0	Laminar flow, possibly some dilation	X		

**Notes:**

Poor data quality - provided for qualitative purpose only



**Table 4B: Exploration Boreholes Packer Test Data Quality Analysis**

Hole ID	Dip Degree	Test Number	Test Interval		Diagnostic Plot Analysis (see Figure 5)	Data Quality		
			From m	to ah		Good	Moderate	Poor
K15-204	-60	1	21.5	35.0	No flow, conductivity lower than method limit		X	
		2	72.5	95.0	Clogging			X
		3	123.5	149.0	Laminar flow, possibly some dilation	X		
K15-206	-65	1	13.5	24.0	Laminar flow	X		
		2	52.5	57.0	Limited data		X	
		3	94.5	114.0	Laminar flow, very little flow, lower limit of method	X		
		4	211.5	237.0	Laminar flow	X		
K15-200	-70	1	9.0	19.5	Limited data		X	
		2	64.5	75.0	Laminar flow, possibly minor clogging	X		
		3	103.5	106.5	Some clogging			X
		4	127.5	138.0	Possibly some dilation, and clogging during decreasing pressures			X
		5B	198.0	211.5	Dilation		X	
K15-202	-60	1	21.5	32.0	Turbulent flow due to higher conductivity, artesian well		X	
		2	57.5	71.0	Turbulent flow due to higher conductivity, artesian well		X	
K15-242	-65	1	27.5	38.0	Laminar flow	X		
		2	69.5	86.0	Laminar flow, very little flow, lower limit of method	X		
		3	117.5	125.0	Very little flow, lower limit of method, possibly some clogging			X
		4	132.5	161.0	Laminar flow	X		
K15-248	-75	1	46.5	52.5	Very little flow, lower limit of method, possibly some dilation			X
		2	169.5	175.5	Laminar flow, step 3 shows low flow		X	
		3	226.5	240.0	Laminar flow, step 1 shows high flow		X	
		4	244.5	279.0	Laminar flow	X		
K15-265	-55	1	70.5	90.0	Laminar flow	X		
		2	133.5	153.0	Laminar flow, possibly minor clogging	X		
		3	190.5	201.0	Laminar flow	X		
		4	271.5	285.0	Laminar flow, very little flow, lower limit of method	X		
K15-330	90	1	31.35	34.45	Dilation		X	
		2	34.35	38.95	Laminar flow		X	
		3	37.35	41.95	Laminar flow	X		
		4	41.85	46.45	Dilation			X
		5	41.85	50.95	Wash-out			X
K15-331	90	1	18.25	23	Void Filling		X	
		2	24.25	32	Laminar flow	X		
K15-333	90	1	9.25	17	Laminar flow	X		
		2	18.25	26	Laminar flow	X		
		3	27.25	35	Laminar flow	X		
		4	36.25	44	Laminar flow	X		
		5	45.25	53	Void Filling		X	
		6	54.25	62	Void Filling		X	
		7	63.25	71.35	Void Filling		X	
K15-334	90	1	18.9	23.5	Void Filling		X	
		2	18.9	26.5	Laminar flow			X
		3	18.9	28.3	Laminar flow			X
		5	29.4	41.5	Wash-out			X
		6	33.9	41.5	Dilation			X
		7	41.4	50.5	Laminar flow			X
		K15-335	90	1	6.58	11.33	Laminar flow	X
2	12.58			20.33	Laminar flow	X		
4	18.58			32.33	Laminar flow	X		
K15-336	90	1	21.9	25	Turbulent flow			X
		2	24.9	28	Laminar flow			X
		3	27.9	34	Laminar flow	X		
		4	35.4	40	Laminar flow			X
		5	39.9	46	Void Filling			X
		6	45.9	50.5	Laminar flow	X		

**Notes:**

Poor data quality - provided for qualitative purpose only  
 Packer tests conducted by Knight Piesold



Table 5A: Groundwater Analytical Results, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Management Pond)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-2				MW15-07S		
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 17.5				Overburden 9.55					
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	MW15-07S	MW15-07S	MW15-07S
								13-May-2015	22-Sep-2015	5-Nov-2015	16-Mar-2016	6-Sep-2015	5-Nov-2015	15-Mar-2016
<b>Field</b>														
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.25	7.53	7.71	7.54	7.23	7.68	7.62
Field Electric Conductivity	µS/cm		-	-	-	-	-	258.2	585.7	516	570	425.6	360	400
Field Temperature	°C		-	-	-	-	-	2.7	-1.9	-0.1	0.63	-0.9	0	0.42
Field Dissolved Oxygen	mg/L		-	-	-	-	-	5.92	5.33	3.7	3.9	0.48	1.5	3
Field Redox	mV		-	-	-	-	-	-	-	-	400	-	-	-17
<b>Physical Parameters</b>														
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	8.12	8.32	8.18	8.18	7.9	8.1	8.01
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	<500	<500	4310	<500	3660	2990	<500
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	263	518	564	554	385	393	389
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	176000	316000	310000	358000	238000	250000	226000
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	-	54300	162000	1230000	3840000	6590000	2940000
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	226	306	289	381	480	453	419
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	136	305	325	297	205	191	192
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	128000	247000	260000	258000	168000	173000	177000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	2540	<500	<500	<500	<500	<500
Bicarbonate	µg/L	500	-	-	-	-	-	157000	295000	317000	315000	205000	211000	216000
Carbonate	µg/L	500	-	-	-	-	-	<500	3050	<500	<500	<500	<500	<500
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500
Chloride	mg/L	0.5	-	120	120	120	-	1.2	0.96	0.79	0.63	0.84	0.94	<0.50
Fluoride	µg/L	10	-	120	120	120	3000	40	59	57	47	300	300	280
Sulphate	mg/L	0.5	-	100	100	-	1000	7.43	45.2	51.1	52.1	32.6	33.2	32.5
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	16	7.3	6.2	34	6.9	<1.0	14
Turbidity	NTU	0.1	-	-	-	-	-	1530	2.27	55.3	-	1430	1600	-
Anions Total	meq/L		-	-	-	-	-	2.9	-	6.3	-	4.1	4.2	-
Cations Total	meq/L		-	-	-	-	-	2.7	-	6.5	-	4.3	4	-
Ionic Balance	N/A	0.01	-	-	-	-	-	0.96	1	1	0.95	1.1	0.96	0.96
<b>Nutrients</b>														
Ammonia	µg/L	5	2500	4840-231,000 <sup>5</sup>	4840-231,000 <sup>5</sup>	4840-231,000 <sup>5</sup>	3700-18,500 <sup>6</sup>	51	9.7	51	43	62	53	66
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	<1000	<20	29	198	132	113	126
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	1360	387	407	441	<2.0	4.8	<2.0
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200-400 <sup>7</sup>	<2.0	<2.0	2	3.4	<2.0	<2.0	<2.0
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	1360	387	409	444	<2.0	4.8	<2.0
Nitrogen (Total)	µg/L	20	-	-	-	-	-	<1000	327	438	643	132	118	126
Phosphorus, total	µg/L	2	-	-	-	-	-	8660	31.4	442	1220	2500	1030	1970

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH hrange of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.68 to 7.71
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.8 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 200 mg/L to 2120 mg/L for total metals, and 136 mg/L to 2180 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026

Table 5A: Groundwater Analytical Results, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Man)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	MW15-07D	MW15-08S	MW15-08D		MW15-09S	MW15-09D	MW15-10S	MW15-10D		
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 29.2		Overburden 10.15	Bedrock 32.7		Overburden 14.35	Bedrock 38	Overburden 8.1	Bedrock 28.6				
				Yukon CSR - AW (Freshwater) <sup>3</sup>	MW15-07D		MW15-08S	MW15D-08D	MW15-08D	MW15-09S	MW15-09D	MW15-10S	MW15-10D	MW15-10D	MW15-10D		
				Fine	Coarse		6-Sep-2015	2-Sep-2015	3-Sep-2015	3-Nov-2015	5-Sep-2015	5-Sep-2015	4-Sep-2015	4-Sep-2015	4-Nov-2015	17-Mar-2016	
<b>Field</b>																	
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.5	7.67	7.22	7.28	7.37	5.68	6.17	6.03	5.9	6.02
Field Electric Conductivity	µS/cm		-	-	-	-	-	449	394.9	618	548	441.9	834	812	3186	2693	3127
Field Temperature	°C		-	-	-	-	-	0.5	1.1	3.3	-2.3	-0.3	0.6	-0.1	1	-2.7	2
Field Dissolved Oxygen	mg/L		-	-	-	-	-	3	10.58	6.1	5.27	0.4	4.23	3.96	2.12	3.27	3
Field Redox	mV		-	-	-	-	-	-	-	-	-	-	-	-	-	-	126
<b>Physical Parameters</b>																	
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	8.03	8.26	7.96	8.05	8.12	6.3	6.73	6.79	6.77	5.00
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	4790	<500	5630	5270	4940	299000	125000	359000	395000	352000
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	415	372	540	539	413	813	853	3000	2850	2970
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	250000	228000	342000	338000	238000	478000	486000	1950000	1940000	1960000
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	1800	<1000	43400	242000	102000	284000	1200000	367000	302000	428000
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	213	200	350	361	202	396	757	1810	2120	1760
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	215	211	310	269	221	402	378	2180	2020	1910
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	191000	175000	250000	245000	204000	421000	418000	1810000	1840000	323000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Bicarbonate	µg/L	500	-	-	-	-	-	233000	213000	305000	299000	249000	513000	510000	2210000	2240000	394000
Carbonate	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Chloride	mg/L	0.5	-	120	120	120	-	<0.50	0.87	1.3	0.96	1.1	1.1	2.5	3.4	3.8	2.8
Fluoride	µg/L	10	-	120	120	120	3000	340	93	610	540	250	730	190	1300	1300	1300
Sulphate	mg/L	0.5	-	100	100	100	1000	27.3	23.9	43.9	45	20.9	15.3	47.8	12	1.01	5.19
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	2.9	<1.0	4.5	3.8	1.5	3	2.1	9.2	8.1	2.9
Turbidity	NTU	0.1	-	-	-	-	-	5.32	<0.10	52.6	149	33.9	135	3750	186	188	-
Anions Total	meq/L		-	-	-	-	-	4.4	-	-	5.9	4.6	8.8	9.4	37	37	-
Cations Total	meq/L		-	-	-	-	-	4.6	-	-	6	5	8.9	9	47	43	-
Ionic Balance	N/A	0.01	-	-	-	-	-	1	1.1	1.1	1	0.96	1	0.95	1.3	1.2	6.1
<b>Nutrients</b>																	
Ammonia	µg/L	5	2500	4840-231,000 <sup>5</sup>	4840-231,000 <sup>5</sup>	4840-231,000 <sup>5</sup>	3700-18,500 <sup>6</sup>	43	11	130	120	94	100	670	300	240	280
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	49	58	161	550	110	136	4740	348	269	274
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	<2.0	215	<2.0	4.7	36	2.1	43.5	7.5	5.1	2
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200-400 <sup>7</sup>	<2.0	<2.0	<2.0	<2.0	6	<2.0	7.6	<2.0	<2.0	<2.0
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	<2.0	215	<2.0	4.7	42	2.1	51.1	7.5	5.1	2
Nitrogen (Total)	µg/L	20	-	-	-	-	-	49	273	161	555	152	138	4790	356	274	276
Phosphorus, total	µg/L	2	-	-	-	-	-	2.4	2.6	79.5	4.8	41.1	1160	13400	483	253	252

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
  - <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
  - <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3. Generic Numerical Water Standards for Aquatic Life (AW)
  - <sup>4</sup> Maximum increase of 25 mg/L from background levels
  - <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH hrange of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
  - <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.68 to 7.71
  - <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.8 mg/L
  - <sup>8</sup> Guideline applied is for ultra-oligotrophic
  - <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 200 mg/L to 2120 mg/L for total metals, and 136 mg/L to 2180 mg/L for dissolved metals
  - <sup>10</sup> Guideline is for Chromium VI
  - "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026

Table 5A: Groundwater Analytical Results, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Man)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	Statistical Analysis											
				Aquifer & Approx. Sample Depth (mbg)	Overburden					Bedrock									
					Yukon CSR - AW (Freshwater) <sup>3</sup>		MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	
<b>Field</b>																			
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	6.17	7.68	7.50	7.29	0.58	7.68	5.68	7.71	7.25	6.88	1.88	7.54
Field Electric Conductivity	µS/cm		-	-	-	-	-	360.00	812.00	412.80	472.40	168.72	626.95	258.20	3186.00	585.70	1216.81	1161.10	3127.00
Field Temperature	°C		-	-	-	-	-	-0.90	1.10	-0.05	0.04	0.68	0.76	-2.70	3.30	0.60	0.34	1.89	2.70
Field Dissolved Oxygen	mg/L		-	-	-	-	-	0.40	10.58	2.25	3.32	3.82	7.27	2.12	6.10	3.90	4.17	1.57	5.92
Field Redox	mV		-	-	-	-	-	-17.00	-17.00	-	-	-	-	126.00	400.00	263.00	263.00	204.13	-
<b>Physical Parameters</b>																			
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	6.73	8.26	8.06	7.85	0.56	8.19	5.00	8.32	8.03	7.43	2.14	8.18
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	-	-	-	-	<500	<500	-	-	-	-
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	<500	125000	3325	22932	50034	64970	<500	395000	5270	129682	172873	359000
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	372	853	391	468	189	633	263	3000	554	1184	1135	2970
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	226000	486000	238000	277667	102422	368000	176000	1960000	342000	765273	761563	1950000
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	<1000	12000000	3390000	4245500	4531712	9295000	1800	1230000	263000	311450	347915	508200
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	200	757	436	419	207	619	213	2120	361	747	743	1810
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	191	378	208	233	72	300	136	2180	310	761	816	2020
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	168000	418000	176000	219167	98227	311000	128000	1840000	258000	543000	628184	1810000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	<500	-	-	-	-	<500	2540	500	685	619	500
Bicarbonate	µg/L	500	-	-	-	-	-	205000	510000	214500	267333	119891	379500	157000	2240000	315000	661636	765987	2210000
Carbonate	µg/L	500	-	-	-	-	-	<500	<500	-	-	-	-	<500	3050	500	732	763	500
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	-	-	-	-	<500	500	-	-	-	-
Chloride	mg/L	0.5	-	120	120	120	-	<0.5	2.50	0.91	1.13	0.70	1.80	<0.5	3.80	1.10	1.59	1.13	3.40
Fluoride	µg/L	10	-	120	120	120	3000	93	300	265	236	81	300	40	1300	540	575	527	1300
Sulphate	mg/L	0.5	-	100	100	100	1000	20.9	47.8	32.6	31.8	9.4	40.5	1.0	52.1	27.3	27.8	20.7	51.1
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	<1	14	2	4	5	10	2.9	34	6.2	8.9	9.1	16.0
Turbidity	NTU	0.1	-	-	-	-	-	<0.1	3750	1430	1363	1532	2890	2.3	1530	135	256	463	456
Anions Total	meq/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cations Total	meq/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ionic Balance	N/A	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Nutrients</b>																			
Ammonia	µg/L	5	2500	4840-231,000 <sup>5</sup>	4840-231,000 <sup>5</sup>	4840-231,000 <sup>5</sup>	3700-18,500 <sup>6</sup>	11	670	64	159	252	382	10	300	100	124	105	280
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	58	4740	120	880	1891	2436	<20	1000	198	276	285	550
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	<2	215	20	51	83	129	<2	1360	5	238	403	441
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200-400 <sup>7</sup>	<2	7.60	2.00	3.60	2.53	6.80	<2	3.40	2.00	2.13	0.54	2.00
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	<2	215	23	53	82	133	<2	1360	5	239	403	444
Nitrogen (Total)	µg/L	20	-	-	-	-	-	118	4790	142	932	1891	2532	49	1000	327	383	280	643
Phosphorus, total	µg/L	2	-	-	-	-	-	3	13400	1500	3157	5117	7950	2.4	8660	253	1144	2434	1220

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
  - <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
  - <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3. Generic Numerical Water Standards for Aquatic Life (AW)
  - <sup>4</sup> Maximum increase of 25 mg/L from background levels
  - <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
  - <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.68 to 7.71
  - <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.8 mg/L
  - <sup>8</sup> Guideline applied is for ultra-oligotrophic
  - <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 200 mg/L to 2120 mg/L for total metals, and 136 mg/L to 2180 mg/L for dissolved metals
  - <sup>10</sup> Guideline is for Chromium VI
  - \*- No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026

Table 5A: Groundwater Analytical Results, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Management Pond)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-2				MW15-07S		
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 17.5				Overburden 9.55					
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	MW15-07S	MW15-07S	MW15-07S
							13-May-2015	22-Sep-2015	5-Nov-2015	16-Mar-2016	6-Sep-2015	5-Nov-2015	15-Mar-2016	
<b>Carbon</b>														
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	-	-	-	1770	-	-	2450
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	-	9140	600	<500	-	<500	<500	-
<b>Dissolved Metals</b>														
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	9.11	1.61	24.4	1.49	3.02	23.9	1.94
Antimony	µg/L	0.02	-	2000	2000	-	200	0.098	0.021	<0.020	<0.020	<0.020	0.023	<0.020
Arsenic	µg/L	0.02	50	5	5	5	50	0.163	0.155	0.085	0.066	2.64	5.07	2.5
Barium	µg/L	0.02	-	500	500	-	10,000	31.5	25.8	24.7	28.3	35.5	34.1	33
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth	µg/L	0.005	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron	µg/L	10	-	5000	5000	1500	50,000	<10	<10	<10	<10	<10	<10	<10
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	1.23	1.45	1.57	1.56	<0.0050	0.015	<0.0050
Calcium	µg/L	50	-	-	-	-	-	34700	71400	80000	70500	64500	59900	60700
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Cobalt	µg/L	0.005	-	-	-	-	9	0.0257	0.009	0.009	0.008	0.128	0.517	0.177
Copper	µg/L	0.05	15	3.1-4.0 <sup>9</sup>	3.1-4.0 <sup>9</sup>	3.1-4.0 <sup>9</sup>	60-90 <sup>9</sup>	3.09	0.236	0.368	0.567	0.107	0.219	0.093
Iron	µg/L	1	-	300	300	300	-	17.7	2.2	2.6	24.4	357	307	592
Lead	µg/L	0.005	26	4.7-7.0 <sup>9</sup>	4.7-7.0 <sup>9</sup>	4.7-7.0 <sup>9</sup>	60-160 <sup>9</sup>	0.0554	0.018	0.061	0.034	0.016	0.057	0.01
Lithium	µg/L	0.5	-	-	-	-	-	0.95	1.45	1.54	1.55	7.35	6.24	7.2
Magnesium	µg/L	50	-	-	-	-	-	11800	30700	30400	29300	10800	9960	9870
Manganese	µg/L	0.05	-	-	-	-	-	1.93	0.258	0.446	0.475	172	155	161
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Molybdenum	µg/L	0.05	-	73	73	73	10,000	0.339	2.14	1.94	1.89	0.407	0.837	0.339
Nickel	µg/L	0.02	-	120-150 <sup>9</sup>	120-150 <sup>9</sup>	120-150 <sup>9</sup>	1100-1500 <sup>9</sup>	1.02	0.409	0.439	0.491	0.29	1.25	0.631
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	16.4	7.4	9.7	7	5.8	6.9	3.1
Potassium	µg/L	50	-	-	-	-	-	425	428	445	445	1470	1390	1460
Selenium	µg/L	0.04	15	1	1	1	10	1.36	5.05	6.23	4.85	<0.040	<0.040	<0.040
Silicon	µg/L	50	-	-	-	-	-	2940	2230	2230	2210	6640	6460	6890
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	0.0113	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	µg/L	50	-	-	-	-	-	377	696	726	738	4050	3560	3410
Strontium	µg/L	0.05	-	-	-	-	-	103	227	247	239	272	264	277
Sulphur	µg/L	3000	-	-	-	-	-	<3000	15300	17200	17600	13000	11800	11100
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	0.0077	0.004	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Tin	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Titanium	µg/L	0.5	-	100	100	-	1000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	µg/L	0.002	-	15	15	15	3000	0.254	3.22	3.16	2.93	1.68	2	1.49
Vanadium	µg/L	0.2	-	-	-	-	-	<0.20	0.2	<0.20	<0.20	<0.20	<0.20	<0.20
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	20.5	22.9	24.5	24.9	4.38	1.07	1.28
Zirconium	µg/L	0.1	-	-	-	-	-	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.68 to 7.71
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.8 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 200 mg/L to 2120 mg/L for total metals, and 136 mg/L to 2180 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
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- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026

Table 5A: Groundwater Analytical Results, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Man)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	MW15-07D	MW15-08S	MW15-08D		MW15-09S	MW15-09D	MW15-10S	MW15-10D		
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 29.2		Overburden 10.15	Bedrock 32.7		Overburden 14.35	Bedrock 38	Overburden 8.1	Bedrock 28.6				
				Yukon CSR - AW (Freshwater) <sup>3</sup>	MW15-07D		MW15-08S	MW15D-08D	MW15-08D	MW15-09S	MW15-09D	MW15-10S	MW15-10D	MW15-10D	MW15-10D		
					6-Sep-2015		2-Sep-2015	3-Sep-2015	3-Nov-2015	5-Sep-2015	5-Sep-2015	4-Sep-2015	4-Sep-2015	4-Nov-2015	17-Mar-2016		
<b>Carbon</b>																	
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	-	-	-	-	-	-	-	-	-	2120
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	<500	760	530	930	<500	<500	3900	<500	<500	-	-
<b>Dissolved Metals</b>																	
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	12.4	2.01	3.56	3.61	1.8	<b>170</b>	<b>8.18</b>	<b>438</b>	<b>298</b>	<b>243</b>
Antimony	µg/L	0.02	-	2000	2000	-	<u>200</u>	<0.020	<0.020	0.073	0.135	0.207	0.303	0.055	0.077	0.064	0.042
Arsenic	µg/L	0.02	<b>50</b>	5	5	<b>5</b>	<u>50</u>	0.245	0.357	2.62	4.96	0.537	<b>8.48</b>	<b>11.7</b>	1.67	1.09	0.782
Barium	µg/L	0.02	-	500	500	-	<u>10,000</u>	40.2	63.1	34.4	46.3	181	90	126	442	415	415
Beryllium	µg/L	0.01	-	5.3	5.3	-	<u>53</u>	<0.010	<0.010	<0.010	<0.010	<0.010	0.111	0.041	1.19	1.05	1.03
Bismuth	µg/L	0.005	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.012	<0.0050
Boron	µg/L	10	-	5000	5000	<b>1500</b>	<u>50,000</u>	<10	<10	<10	<10	17	<10	11	<10	11	15
Cadmium	µg/L	0.005	<b>7</b>	0.017	0.017	<b>0.09</b>	<u>0.5-0.6<sup>9</sup></u>	<0.0050	0.059	0.018	0.032	0.046	0.008	<b>0.19</b>	<b>0.148</b>	<b>0.172</b>	<b>0.135</b>
Calcium	µg/L	50	-	-	-	-	-	62500	74500	84800	76500	69600	133000	132000	725000	673000	641000
Chromium	µg/L	0.1	-	8.9	8.9	<b>1<sup>10</sup></b>	<u>10<sup>10</sup></u>	<0.10	<0.10	<0.10	<0.10	<0.10	<b>3.04</b>	0.27	<b>5.39</b>	<b>1.55</b>	<b>1.13</b>
Cobalt	µg/L	0.005	-	-	-	-	<u>9</u>	0.031	0.649	0.295	0.709	0.966	0.389	2.86	1.27	0.833	0.503
Copper	µg/L	0.05	<b>15</b>	3.1-4.0 <sup>9</sup>	3.1-4.0 <sup>9</sup>	<b>3.1-4.0<sup>9</sup></b>	<u>60-90<sup>9</sup></u>	0.089	0.706	<0.05	0.087	0.106	0.416	0.182	0.262	0.993	0.151
Iron	µg/L	1	-	300	300	<b>300</b>	-	<b>498</b>	4.3	<b>655</b>	<b>563</b>	<b>1310</b>	<b>12300</b>	<b>4250</b>	<b>36600</b>	<b>30000</b>	<b>26500</b>
Lead	µg/L	0.005	<b>26</b>	4.7-7.0 <sup>9</sup>	4.7-7.0 <sup>9</sup>	<b>4.7-7.0<sup>9</sup></b>	<u>60-160<sup>9</sup></u>	0.081	0.012	0.012	0.019	0.011	0.121	0.153	1.36	1.23	0.346
Lithium	µg/L	0.5	-	-	-	-	-	12.9	2.06	39.3	28.2	3.81	33.9	6.5	249	237	235
Magnesium	µg/L	50	-	-	-	-	-	14400	5970	23800	18900	11400	17100	11600	90800	83400	75800
Manganese	µg/L	0.05	-	-	-	-	-	61.4	18	181	191	493	805	484	5410	5090	4690
Mercury	µg/L	0.002	-	0.016	0.016	<b>0.026</b>	<u>1</u>	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Molybdenum	µg/L	0.05	-	73	73	<b>73</b>	<u>10,000</u>	0.058	2.57	0.433	6.64	8.11	9.25	1.58	1.32	0.45	0.488
Nickel	µg/L	0.02	-	120-150 <sup>9</sup>	120-150 <sup>9</sup>	<b>120-150<sup>9</sup></b>	<u>1100-1500<sup>9</sup></u>	0.036	4.89	1.28	3.27	0.604	0.659	3.1	2.33	1.45	0.994
Phosphorus	µg/L	2	-	-	-	<b>4<sup>8</sup></b>	-	<b>5.3</b>	3.3	<b>5</b>	3.7	<b>8.7</b>	<b>8.4</b>	<b>16.8</b>	<b>15.1</b>	3.9	<b>12</b>
Potassium	µg/L	50	-	-	-	-	-	1630	1470	4540	3910	1890	4260	3120	10200	9830	8710
Selenium	µg/L	0.04	<b>15</b>	1	1	<b>1</b>	<u>10</u>	<0.040	<b>1.48</b>	<0.040	0.272	0.721	0.062	<b>1.72</b>	0.066	0.043	<0.040
Silicon	µg/L	50	-	-	-	-	-	7860	3570	12200	9900	4020	10300	5310	39900	41800	36500
Silver	µg/L	0.005	-	0.1	0.1	<b>0.25</b>	<u>15<sup>9</sup></u>	<0.0050	0.012	0.006	<0.0050	<0.0050	<0.0050	<0.0050	0.008	0.012	0.01
Sodium	µg/L	50	-	-	-	-	-	4410	1210	5690	11800	6030	5030	25900	25000	23600	25100
Strontium	µg/L	0.05	-	-	-	-	-	325	229	385	317	262	488	668	2780	2800	2740
Sulphur	µg/L	3000	-	-	-	-	-	9900	9000	15200	15900	8300	7600	16800	3600	4000	4600
Thallium	µg/L	0.002	-	0.8	0.8	<b>0.8</b>	<u>3</u>	<0.0020	0.004	0.003	0.002	<0.0020	<0.0020	0.002	0.015	0.003	0.003
Tin	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.23	<0.20
Titanium	µg/L	0.5	-	100	100	-	<u>1000</u>	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	0.57	2.09	0.76	1.11
Uranium	µg/L	0.002	-	15	15	<b>15</b>	<u>3000</u>	1.16	2.21	1.03	1.43	2.09	3.65	4.33	0.649	0.562	0.984
Vanadium	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	0.45	<0.20	<0.20	0.64	1.55
Zinc	µg/L	0.1	<b>110</b>	10	10	<b>30</b>	<u>900-2400<sup>9</sup></u>	0.87	4.12	1.61	3.09	1.38	5.68	7.44	<b>10.5</b>	<b>21.7</b>	<b>9.57</b>
Zirconium	µg/L	0.1	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.11	1.58	2.09	1.55

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
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- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
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Table 5A: Groundwater Analytical Results, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Man)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	Statistical Analysis											
				Aquifer & Approx. Sample Depth (mbg)	Overburden					Bedrock									
					Yukon CSR - AW (Freshwater) <sup>3</sup>		MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	
<b>Carbon</b>																			
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	2450	2450	2450	2450	#DIV/0!	2450	1770	2120	1945	1945	1136	2085
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	-	500	3900	500	1232	1496	2644	500	9140	500	1522	2739	2572
<b>Dissolved Metals</b>																			
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	1.8	24	3	7	9	16	1.5	<b>438</b>	12	110	150	<b>298</b>
Antimony	µg/L	0.02	-	2000	2000	-	200	<0.02	0.21	0.02	0.06	0.07	0.13	<0.02	0.30	0.06	0.08	0.25	0.14
Arsenic	µg/L	0.02	<b>50</b>	5	5	5	50	0.36	<b>11.7</b>	2.6	3.8	4.2	<b>8.4</b>	0.1	<b>8.5</b>	0.8	1.8	2.5	4.96
Barium	µg/L	0.02	-	500	500	-	<u>10,000</u>	33	181	49	79	61	154	25	442	40	145	177	415
Beryllium	µg/L	0.01	-	5.3	5.3	-	<u>53</u>	<0.01	0.041	0.01	0.02	0.01	0.03	<0.01	1.190	0.01	0.31	0.51	1.05
Bismuth	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	-	-	-	-	0.005	0.012	0.01	0.01	0.26	0.01
Boron	µg/L	10	-	5000	5000	1500	<u>50,000</u>	<10	17.00	10.00	11.33	2.80	14.00	<10	15.00	10.00	10.55	3.13	11.00
Cadmium	µg/L	0.005	<b>7</b>	0.017	0.017	<b>0.09</b>	<u>0.5-0.6<sup>9</sup></u>	<0.005	<b>0.19</b>	0.03	0.05	0.07	<b>0.12</b>	<0.005	<b>1.57</b>	<b>0.15</b>	<b>0.58</b>	0.68	<b>1.56</b>
Calcium	µg/L	50	-	-	-	-	-	59900	132000	67050	76867	27569	103250	34700	725000	80000	241127	278874	673000
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	<u>10<sup>10</sup></u>	<0.1	0.27	0.10	0.13	0.07	0.19	<0.1	5.39	0.10	1.07	1.63	3.04
Cobalt	µg/L	0.005	-	-	-	-	<u>9</u>	0.13	2.86	0.58	0.88	1.02	1.91	0.008	1.27	0.30	0.37	0.43	0.83
Copper	µg/L	0.05	<b>15</b>	3.1-4.0 <sup>9</sup>	3.1-4.0 <sup>9</sup>	<b>3.1-4.0<sup>9</sup></b>	<u>60-90<sup>9</sup></u>	0.093	0.71	0.14	0.24	0.24	0.46	<0.05	3.09	0.26	0.57	0.84	0.99
Iron	µg/L	1	-	300	300	<b>300</b>	-	4.30	<b>4250.00</b>	<b>474.50</b>	<b>1136.72</b>	1587.33	<b>2780.00</b>	2.20	<b>36600.00</b>	<b>563.00</b>	<b>9742.08</b>	13938.46	<b>30000.00</b>
Lead	µg/L	0.005	<b>26</b>	4.7-7.0 <sup>9</sup>	4.7-7.0 <sup>9</sup>	<b>4.7-7.0<sup>9</sup></b>	<u>60-160<sup>9</sup></u>	0.010	0.15	0.01	0.04	0.06	0.11	0.012	1.36	0.06	0.30	0.51	1.23
Lithium	µg/L	0.5	-	-	-	-	-	2.1	7.4	6.4	5.5	2.1	7.3	0.95	249.0	28.2	76.4	103.6	237.0
Magnesium	µg/L	50	-	-	-	-	-	5970	11600	10380	9933	2068	11500	11800	90800	29300	38764	30275	83400
Manganese	µg/L	0.05	-	-	-	-	-	18	493	167	247	195	489	0.26	5410	181	1494	2244	5090
Mercury	µg/L	0.002	-	0.016	0.016	<b>0.026</b>	<u>1</u>	<0.002	<0.002	-	-	-	-	<0.002	<0.002	-	-	-	-
Molybdenum	µg/L	0.05	-	73	73	<b>73</b>	<u>10,000</u>	0.34	8.1	1.2	2.3	3.0	5.3	0.058	9.3	1.3	2.3	2.8	6.6
Nickel	µg/L	0.02	-	120-150 <sup>9</sup>	120-150 <sup>9</sup>	<b>120-150<sup>9</sup></b>	<u>1100-1500<sup>9</sup></u>	0.29	4.9	0.9	1.8	1.8	4.0	0.036	3.3	1.0	1.1	0.9	2.3
Phosphorus	µg/L	2	-	-	-	<b>4<sup>8</sup></b>	-	3	17	6	7	5	13	3.7	16	7	9	5	15
Potassium	µg/L	50	-	-	-	-	-	1390	3120	1470	1800	671	2505	425	10200	3910	4075	3891	9830
Selenium	µg/L	0.04	<b>15</b>	1	1	1	<u>10</u>	<0.04	<b>1.7</b>	0.4	0.7	0.8	<b>1.6</b>	<0.04	<b>6.2</b>	0.1	<b>1.6</b>	2.3	<b>5.1</b>
Silicon	µg/L	50	-	-	-	-	-	3570	6890	5885	5482	1421	6765	2210	41800	9900	15279	15828	39900
Silver	µg/L	0.005	-	0.1	0.1	<b>0.25</b>	<u>15<sup>9</sup></u>	<0.005	0.012	0.005	0.006	0.003	0.009	<0.005	0.012	0.005	0.007	0.258	0.011
Sodium	µg/L	50	-	-	-	-	-	1210	25900	3805	7360	9212	15965	377	25100	5030	9379	10194	25000
Strontium	µg/L	0.05	-	-	-	-	-	229	668	268	329	167	473	103	2800	325	968	1144	2780
Sulphur	µg/L	3000	-	-	-	-	-	8300	16800	11450	11667	3063	14900	3000	17600	9900	10355	6448	17200
Thallium	µg/L	0.002	-	0.8	0.8	<b>0.8</b>	<u>3</u>	<0.002	0.004	0.002	0.002	0.001	0.003	<0.002	0.015	0.003	0.004	0.259	0.008
Tin	µg/L	0.2	-	-	-	-	-	<0.2	0.2	-	-	-	-	<0.2	0.23	0.20	0.20	0.20	0.20
Titanium	µg/L	0.5	-	100	100	-	<u>1000</u>	<0.5	0.57	0.50	0.51	0.03	0.54	<0.5	2.09	0.50	0.72	0.47	1.11
Uranium	µg/L	0.002	-	15	15	<b>15</b>	<u>3000</u>	1.5	4.3	2.0	2.3	1.0	3.3	0.25	3.7	1.2	1.7	1.2	3.2
Vanadium	µg/L	0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	-	<0.2	1.55	0.20	0.39	0.42	0.64
Zinc	µg/L	0.1	<b>110</b>	10	10	<b>30</b>	<u>900-2400<sup>9</sup></u>	1.1	7.4	2.8	3.3	2.5	5.9	0.9	<b>24.9</b>	<b>10.5</b>	<b>13.3</b>	10.0	<b>24.5</b>
Zirconium	µg/L	0.1	-	-	-	-	-	<0.1	0.11	0.10	0.10	0.00	0.11	<0.1	2.09	0.10	0.55	0.75	1.58

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.68 to 7.71
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.8 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 200 mg/L to 2120 mg/L for total metals, and 136 mg/L to 2180 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded** - Greater than Federal Interim Guideline
- BOLD** - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED** - Greater than current Site Water Licence QZ97-026

Table 5A: Groundwater Analytical Results, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Management Pond)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-2				MW15-07S		
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 17.5				Overburden 9.55					
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95-2	BH95G-2	BH95G-2	BH95G-2	BH95G-2	MW15-07S	MW15-07S	MW15-07S
				Fine	Coarse		13-May-2015	22-Sep-2015	5-Nov-2015	16-Mar-2016	6-Sep-2015	5-Nov-2015	15-Mar-2016	
<b>Total Metals</b>														
Aluminum	µg/L	0.5	-	5,100 <sup>6</sup>	5,100 <sup>6</sup>	5,100 <sup>6</sup>	-	12700	40.5	167	3930	26800	5140	10800
Antimony	µg/L	0.02	-	2000	2000	-	200	1.4	0.205	0.052	0.502	0.102	0.052	<0.050
Arsenic	µg/L	0.02	50	5	5	5	50	45.1	0.274	0.767	12.5	29.4	9.36	12.1
Barium	µg/L	0.02	-	500	500	-	10,000	307	27	33.1	100	416	308	264
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	0.647	<0.010	0.021	0.263	1.65	0.95	0.733
Bismuth	µg/L	0.005	-	-	-	-	-	0.48	0.006	0.008	0.11	0.483	0.093	0.035
Boron	µg/L	10	-	5000	5000	1500	50,000	<50	<10	<10	<50	<50	<10	<50
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.6 <sup>9</sup>	25.5	1.71	2.75	11.3	0.624	0.51	0.486
Calcium	µg/L	50	-	-	-	-	-	54500	71200	67400	87000	144000	154000	133000
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	34.9	<0.10	0.67	12.4	118	28.4	52.8
Cobalt	µg/L	0.005	-	-	-	-	9	39.4	0.17	0.768	11.7	44.6	12.3	27.4
Copper	µg/L	0.05	15	4.0 <sup>9</sup>	4.0 <sup>9</sup>	4.0 <sup>9</sup>	90 <sup>9</sup>	330	1.24	7.81	120	239	168	139
Iron	µg/L	1	-	300	300	300	-	59900	95	898	18500	71500	26200	30900
Lead	µg/L	0.005	26	7.0 <sup>9</sup>	7.0 <sup>9</sup>	7.0 <sup>9</sup>	110-160 <sup>9</sup>	169	0.946	10.6	58.8	29.8	24.8	19.1
Lithium	µg/L	0.5	-	-	-	-	-	11	1.26	1.51	5.69	26.5	11.4	16.6
Magnesium	µg/L	50	-	-	-	-	-	21700	31100	29400	39700	29300	16800	21100
Manganese	µg/L	0.05	-	-	-	-	-	894	3.08	30.5	251	1790	1720	1330
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	0.0024	<0.0020	<0.0020	0.0025	<0.0020	<0.0020	<0.0020
Molybdenum	µg/L	0.05	-	73	73	73	10,000	24.6	2.25	1.8	5.5	2.1	1.61	0.396
Nickel	µg/L	0.02	-	150 <sup>9</sup>	150 <sup>9</sup>	150 <sup>9</sup>	1500 <sup>9</sup>	201	0.922	2.26	68.6	119	26.4	63
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	5610	25.8	245	1420	2360	3090	2200
Potassium	µg/L	50	-	-	-	-	-	3290	462	466	1430	5080	3250	3420
Selenium	µg/L	0.04	15	1	1	1	10	5.03	5.48	5.3	5.95	2.13	0.15	0.432
Silicon	µg/L	50	-	-	-	-	-	21500	2300	2350	8200	37200	12500	20500
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	4.6	0.028	0.189	0.521	3.19	0.646	0.771
Sodium	µg/L	50	-	-	-	-	-	500	719	689	870	3860	3530	3960
Strontium	µg/L	0.05	-	-	-	-	-	212	234	250	269	452	487	433
Sulphur	µg/L	3000	-	-	-	-	-	<15,000	15500	17300	22000	<15,000	11000	<15,000
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	0.307	0.013	0.007	0.081	0.306	0.098	0.098
Tin	µg/L	0.2	-	-	-	-	-	2.23	<0.20	<0.20	1.58	0.86	<0.20	<0.20
Titanium	µg/L	0.5	-	100	100	-	1000	284	1.54	5.09	86.6	193	159	60
Uranium	µg/L	0.002	-	15	15	15	3000	4.82	3.2	3.2	4.38	6.95	9.86	5.95
Vanadium	µg/L	0.2	-	-	-	-	-	97	0.59	0.85	21.5	101	26.1	42.5
Zinc	µg/L	0.1	110	10	10	30	1650-2400 <sup>9</sup>	2200	36.6	68.1	1090	223	76.5	116
Zirconium	µg/L	0.1	-	-	-	-	-	22.3	<0.10	0.2	4.89	10.3	6.7	0.7
Laboratory Work Order Number								B540423	B584163	B5A0147	B621096	B577997	B5A0147	B621096

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.68 to 7.71
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.8 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 200 mg/L to 2120 mg/L for total metals, and 136 mg/L to 2180 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD** - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED** - Greater than current Site Water Licence QZ97-026

Table 5A: Groundwater Analytical Results, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Man)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	MW15-07D	MW15-08S	MW15-08D		MW15-09S	MW15-09D	MW15-10S	MW15-10D			
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 29.2		Overburden 10.15	Bedrock 32.7		Overburden 14.35	Bedrock 38	Overburden 8.1	Bedrock 28.6					
				Yukon CSR - AW (Freshwater) <sup>3</sup>	MW15-07D		MW15-08S	MW15D-08D	MW15-08D	MW15-09S	MW15-09D	MW15-10S	MW15-10D	MW15-10D	MW15-10D			
Part E - Effluent Quality Standards	Fine	Coarse																
							6-Sep-2015	2-Sep-2015	3-Sep-2015	3-Nov-2015	5-Sep-2015	5-Sep-2015	4-Sep-2015	4-Sep-2015	4-Nov-2015	17-Mar-2016		
<b>Total Metals</b>																		
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	6.77	25	3170	7170	862	6830	80400	6970	4130	3010	
Antimony	µg/L	0.02	-	2000	2000	-	200	<0.020	<0.020	0.092	0.178	0.258	0.356	0.38	0.163	0.083	0.058	
Arsenic	µg/L	0.02	50	5	5	5	50	0.255	0.356	6.9	12.4	1.73	9.88	50.8	4.51	3.02	2.48	
Barium	µg/L	0.02	-	500	500	-	10,000	37	62.2	44.1	75.8	186	228	1800	458	469	423	
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	<0.010	<0.010	0.117	0.269	0.064	0.247	6.4	1.09	1.25	1.11	
Bismuth	µg/L	0.005	-	-	-	-	-	<0.0050	<0.0050	0.012	0.105	0.027	<0.020	3.05	1.21	0.741	0.22	
Boron	µg/L	10	-	5000	5000	1500	50,000	<10	<10	<10	<50	<50	<50	<250	<50	<50	<50	
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.6 <sup>9</sup>	<0.0050	0.059	0.096	0.212	0.129	0.357	6.15	2.57	1.31	4.3	
Calcium	µg/L	50	-	-	-	-	-	62900	69900	96100	97300	63700	126000	204000	599000	699000	587000	
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.10	<0.10	13.8	30.5	4.7	31.6	215	21.5	16.8	13.4	
Cobalt	µg/L	0.005	-	-	-	-	9	0.023	0.619	3.16	5.8	1.79	5.28	115	7.45	4.88	4.12	
Copper	µg/L	0.05	15	4.0 <sup>9</sup>	4.0 <sup>9</sup>	4.0 <sup>9</sup>	90 <sup>9</sup>	<0.050	0.701	2.72	6.2	5.43	16.9	415	26	14.5	17.1	
Iron	µg/L	1	-	300	300	300	-	461	51.2	7050	11000	2920	27900	170000	38500	39200	28200	
Lead	µg/L	0.005	26	7.0 <sup>9</sup>	7.0 <sup>9</sup>	7.0 <sup>9</sup>	110-160 <sup>9</sup>	0.021	0.017	1.24	6.57	2.6	4.52	270	65.7	33.8	29.6	
Lithium	µg/L	0.5	-	-	-	-	-	12	1.94	41	42.1	4.31	42.6	77.3	207	266	216	
Magnesium	µg/L	50	-	-	-	-	-	13500	6100	26600	28600	10400	19900	60300	75100	90700	70400	
Manganese	µg/L	0.05	-	-	-	-	-	58	17.9	323	430	421	981	5040	4680	5380	4320	
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Molybdenum	µg/L	0.05	-	73	73	73	10,000	0.081	2.6	0.644	5.46	7.18	17.1	4.36	3.93	3.48	2.57	
Nickel	µg/L	0.02	-	150 <sup>9</sup>	150 <sup>9</sup>	150 <sup>9</sup>	1500 <sup>9</sup>	0.031	4.72	7.62	19.5	2.86	3.78	254	12	7.77	5.69	
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	3.8	3	88	157	68	719	5910	429	233	241	
Potassium	µg/L	50	-	-	-	-	-	1530	1420	4910	4990	1920	5510	16000	9780	10900	8430	
Selenium	µg/L	0.04	15	1	1	1	10	<0.040	1.56	<0.040	0.421	0.721	0.986	2.97	0.97	0.367	0.218	
Silicon	µg/L	50	-	-	-	-	-	8360	3640	16900	23400	5190	17900	68900	41800	49200	36800	
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	<0.0050	<0.0050	0.625	0.543	0.292	2.04	7.64	1.73	0.677	0.657	
Sodium	µg/L	50	-	-	-	-	-	4200	1160	5870	10700	4730	4970	22500	21600	24200	24000	
Strontium	µg/L	0.05	-	-	-	-	-	321	217	407	411	237	501	960	2360	2810	2500	
Sulphur	µg/L	3000	-	-	-	-	-	9900	8600	15400	17000	<15,000	<15,000	<75,000	<15,000	<15,000	<15,000	
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	<0.0020	0.004	0.018	0.035	0.016	0.049	1.52	0.107	0.034	0.036	
Tin	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	0.33	0.52	<0.20	0.82	1.4	0.36	<0.20	<0.20	
Titanium	µg/L	0.5	-	100	100	-	1000	<0.50	1.52	90.3	198	36	309	646	277	214	119	
Uranium	µg/L	0.002	-	15	15	15	3000	1.08	2.2	1.41	3.01	2.43	4.95	21.9	0.813	0.682	1.8	
Vanadium	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	16.4	30.5	3.23	28.1	262	20.7	12.7	9.5	
Zinc	µg/L	0.1	110	10	10	30	1650-2400 <sup>9</sup>	0.98	4.06	9.51	23.1	9.6	45.8	917	42.6	33.5	19.2	
Zirconium	µg/L	0.1	-	-	-	-	-	<0.10	<0.10	1.34	2.23	0.69	1.46	5.18	3.9	2.78	0.73	
Laboratory Work Order Number								B577997	B577626	B577626	B599724	B577997	B577997	B577997	B577997	B599724	B621096	

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.68 to 7.71
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.8 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 200 mg/L to 2120 mg/L for total metals, and 136 mg/L to 2180 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD** - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED** - Greater than current Site Water Licence QZ97-026





Table 5B: Groundwater Analytical Results, Zone 2 (Class C Storage Facility and Overburden Stockpile)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-30	BH95G-31				MW15-03S			MW15-03D			
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 17.7		Bedrock 8.5				Overburden 5.6			Bedrock 13.05					
				Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95G-30		BH95G-31	BH95G-31	BH95G-31	BH95G-31	MW15-03S	MW15-03S	MW15-03S	MW15-03D	MW15-03D	DUP02	MW15-03D	DUP01	
					6-Sep-2015		1995	22-Sep-2015	5-Nov-2015	4-Sep-2015	2-Nov-2015	13-Mar-2016	4-Sep-2015	2-Nov-2015		13-Mar-2016			
<b>Field</b>																			
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.57	-	8.1	7.95	7.65	8.02	6.06	7.52	7.64	-	7.32	-
Field Electric Conductivity	µS/cm		-	-	-	-	-	402.2	-	307.3	265	313.9	211	266	403	375	-	394	-
Field Temperature	°C		-	-	-	-	-	-0.6	-	-0.2	1.2	0.5	0.8	1.02	0	1.1	-	1.41	-
Field Dissolved Oxygen	mg/L		-	-	-	-	-	10.94	-	11.24	8	5.48	2.9	6.7	0.52	1.3	-	3	-
Field Redox	mV		-	-	-	-	-	-	-	-	-	-	-	66	-	-	-	-73	-
<b>Physical Parameters</b>																			
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	8.17	-	8.17	8.16	7.98	8.24	8.03	8.04	8.29	8.29	8.02	8.19
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	<500	-	<500	720	2240	1280	<500	7270	4260	3610	<500	<500
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	386	-	286	289	300	269	265	388	395	402	394	391
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	216000	-	174000	172000	210000	190000	168000	226000	240000	260000	230000	246000
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	970000	-	5060000	713000	262000	821000	2340000	8300	3500	3400	61700	15200
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	196	-	432	152	152	159	378	196	199	207	199	199
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	203	143	142	162	129	135	145	207	210	208	201	198
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	180000	-	126000	127000	114000	129000	125000	179000	188000	187000	194000	195000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Bicarbonate	µg/L	500	-	-	-	-	-	220000	-	154000	155000	139000	157000	152000	219000	229000	228000	237000	238000
Carbonate	µg/L	500	-	-	-	-	-	<500	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Hydroxide	µg/L	500	-	-	-	-	-	<500	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Chloride	mg/L	0.5	-	120	120	120	-	0.87	-	0.54	0.6	1.7	0.99	0.59	1.7	1.1	1.6	<0.50	0.58
Fluoride	µg/L	10	-	120	120	120	3000	140	-	100	100	120	69	99	170	150	150	150	150
Sulphate	mg/L	0.5	-	100	100	-	1000	22.4	-	20	20.4	33.3	11.6	14.6	25.3	24	23.9	21.3	21.3
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	3.4	-	4.5	6.2	2	4.1	8.6	1.3	1.8	2.1	4.9	4.2
Turbidity	NTU	0.1	-	-	-	-	-	38.4	-	2450	323	172	275	-	4.69	3.59	3.18	-	-
Anions Total	meq/L		-	-	-	-	-	4.1	-	-	3	3	2.9	-	4.2	4.3	4.3	-	-
Cations Total	meq/L		-	-	-	-	-	4.2	-	-	3.4	3.3	2.9	-	4.4	4.4	4.4	-	-
Ionic Balance	N/A	0.01	-	-	-	-	-	1	-	1	1.1	1.1	1	1.1	1.1	1	1	0.98	0.96
<b>Nutrients</b>																			
Ammonia	µg/L	5	2500	2330-231,000 <sup>5</sup>	2330-231,000 <sup>5</sup>	2330-231,000 <sup>5</sup>	3700-18,500 <sup>6</sup>	47	-	220	200	42	27	48	300	160	150	88	110
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	244	-	431	160	111	73	316	972	225	202	150	138
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	279	-	192	199	45.4	72.3	58	2.2	2.7	<2.0	<2.0	<2.0
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200-400 <sup>7</sup>	13	-	7.5	3.2	6.7	<2.0	9.3	<2.0	<2.0	<2.0	<2.0	<2.0
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	292	-	199	202	52.1	72.3	67.3	2.2	2.7	<2.0	<2.0	<2.0
Nitrogen (Total)	µg/L	20	-	-	-	-	-	535	-	630	362	163	145	384	975	228	202	150	138
Phosphorus, total	µg/L	2	-	-	-	-	-	228	-	4670	1090	397	2150	3710	7.2	9.2	5.8	12.3	16.4

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 147 mg/L to 2530 mg/L for total metals, and 78.9 mg/L to 212 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026

Table 5B: Groundwater Analytical Results, Zone 2 (Class C Storage Facility and Overburden Stockpile)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID Aquifer & Approx. Sample Depth (mbg) Yukon CSR - AW (Freshwater) <sup>3</sup>	MW15-04S				MW15-04D			MW15-05D			MW15-06	
				Fine	Coarse			Overburden 12.65				Bedrock 30			Bedrock 26.1			Overburden 7.95	
								MW15-04S	DUP03	MW15-04S	MW15-04S	MW15-04D	MW15-04D	DUP01	MW15-04D	MW15-05D	MW15-05D	MW15-05D	MW15-06
								4-Sep-2015	31-Oct-2015	13-Mar-2016	4-Sep-2015	31-Oct-2015	13-Mar-2016	7-Sep-2015	2-Nov-2015	13-Mar-2016	7-Sep-2015		
<b>Field</b>																			
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.78	-	7.84	7.86	7.7	7.92	-	7.74	7.56	7.66	7.57	7.36
Field Electric Conductivity	µS/cm		-	-	-	-	-	251	-	242.5	235	307.3	396	-	291	468.6	344	380	413.4
Field Temperature	°C		-	-	-	-	-	0.3	-	-0.8	1.38	0.9	-0.7	-	1.73	-0.7	0.1	0.12	-1
Field Dissolved Oxygen	mg/L		-	-	-	-	-	8.72	-	-	10.6	2.1	280	-	3.3	7.89	5.7	8.3	8.86
Field Redox	mV		-	-	-	-	-	-	-	-	62	-	-	-	-33	-	-	67	-
<b>Physical Parameters</b>																			
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	8.12	7.66	8.22	7.99	7.96	8.23	8.23	8.05	8.19	8.14	7.55	8.07
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	840	2350	880	<500	1860	1830	1270	<500	<500	3250	<500	<500
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	239	242	242	239	291	344	354	292	437	397	384	366
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	136000	152000	170000	160000	168000	266000	264000	182000	250000	262000	222000	220000
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	2590000	4350000	1620000	3500000	5030000	5570000	5180000	2530000	1970000	1560000	4970000	1340000
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	313	285	802	308	646	2530	1460	147	338	247	222	196
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	127	119	121	119	147	78.9	89	143	154	206	193	212
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	117000	114000	116000	117000	132000	140000	139000	137000	183000	160000	185000	171000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Bicarbonate	µg/L	500	-	-	-	-	-	142000	139000	142000	143000	161000	171000	169000	167000	223000	195000	225000	209000
Carbonate	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500	<500
Chloride	mg/L	0.5	-	120	120	120	-	0.96	0.82	0.68	<0.50	0.97	2.6	3.2	<0.50	1.8	<0.50	<0.50	0.8
Fluoride	µg/L	10	-	120	120	120	3000	100	100	82	78	230	240	250	200	180	120	110	110
Sulphate	mg/L	0.5	-	100	100	100	1000	10.1	10.7	10.3	10	19.9	34.8	36.8	18.8	42.2	32.8	29.2	21.8
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	3.4	2.3	3.5	13	2.3	2.9	1.8	4.7	1.4	2.3	3.7	3.5
Turbidity	NTU	0.1	-	-	-	-	-	2070	2220	1310	-	3820	2890	2710	-	904	72.2	-	42.6
Anions Total	meq/L		-	-	-	-	-	2.6	2.5	2.6	-	3.1	3.6	3.6	-	4.6	3.9	-	3.9
Cations Total	meq/L		-	-	-	-	-	2.7	2.5	2.5	-	3.2	4	4.2	-	4.7	4.3	-	4.3
Ionic Balance	N/A	0.01	-	-	-	-	-	1	0.99	0.98	0.98	1	1.1	1.1	0.96	1	1.1	0.93	1.1
<b>Nutrients</b>																			
Ammonia	µg/L	5	2500	2330-231,000 <sup>5</sup>	2330-231,000 <sup>5</sup>	2330-231,000 <sup>5</sup>	3700-18,500 <sup>6</sup>	88	37	47	90	110	47	65	48	36	<5	26	31
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	209	183	75	275	180	142	170	46	173	23	88	71
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	155	158	204	202	<2.0	3.6	5	6.1	122	207	217	313
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200-400 <sup>7</sup>	<2.0	5.4	<2.0	7.2	2.7	2.2	<2.0	<2.0	16.1	3	2	7.2
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	155	163	204	209	4.5	5.8	5	6.1	138	210	219	320
Nitrogen (Total)	µg/L	20	-	-	-	-	-	364	346	279	484	184	148	175	53	311	233	307	391
Phosphorus, total	µg/L	2	-	-	-	-	-	2310	3.3	2500	2660	8240	9090	9580	162	274	43.1	139	67.2

**Notes:**  
<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use  
<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)  
<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)  
<sup>4</sup> Maximum increase of 25 mg/L from background levels  
<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C  
<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10  
<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L  
<sup>8</sup> Guideline applied is for ultra-oligotrophic  
<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 147 mg/L to 2530 mg/L for total metals, and 78.9 mg/L to 212 mg/L for dissolved metals  
<sup>10</sup> Guideline is for Chromium VI  
 "-" No applicable standard or not analyzed  
**Shaded** - Greater than Federal Interim Guideline  
**BOLD** - Greater than CCME AW Guideline  
Underlined - Greater than Yukon CSR Guideline  
**RED** - Greater than current Site Water Licence QZ97-026

Table 5B: Groundwater Analytical Results, Zone 2 (Class C Storage Facility and Overburden Stockpile)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID Aquifer & Approx. Sample Depth (mbg) Yukon CSR - AW (Freshwater) <sup>3</sup>	Statistical Analysis											
				Fine	Coarse			Overburden						Bedrock					
								MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE
<b>Field</b>																			
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	6.06	8.02	7.78	7.51	0.67	7.924	7.32	8.1	7.65	7.69	0.21	7.94
Field Electric Conductivity	µS/cm		-	-	-	-	-	211	413.4	251	276.11	68.40	353.7	265	468.6	377.5	361.12	58.84	402.84
Field Temperature	°C		-	-	-	-	-	-1	1.38	0.5	0.31	0.90	1.164	-0.7	1.73	0.11	0.36	0.87	1.37
Field Dissolved Oxygen	mg/L		-	-	-	-	-	2.9	10.6	7.71	7.21	2.77	9.73	0.52	280	6.795	28.52	79.28	11.18
Field Redox	mV		-	-	-	-	-	62	66	64	64.00	2.83	65.6	-73	67	-33	-13.00	72.11	66.58
<b>Physical Parameters</b>																			
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.98	8.24	8.07	8.09	0.11	8.228	7.55	8.29	8.165	8.10	0.19	8.27
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	-	-	-	-	<500	<500	-	-	-	-
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	<500	2240	840	962.86	631.97	1664	<500	7270	610	1878.57	2043.10	4000.00
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	239	366	265	274.29	46.04	326.4	286	437	387	362.57	51.52	400.00
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	136000	220000	170000	179142.86	29367.94	214000	168000	266000	228000	222428.57	35188.97	261200.00
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	134000	3500000	1620000	1609571.43	1270413.30	2954000	3400	5570000	375000	1450792.86	2114634.99	5048000.00
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	152	802	308	329.71	225.37	547.6	147	2530	203	422.14	621.27	606.64
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	119	212	129	141.14	32.45	171.8	78.9	210	195.5	175.21	38.58	207.60
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	114000	171000	117000	127000.00	20141.17	145800	126000	195000	179500	165214.29	26870.57	191600.00
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	<500	-	-	-	-	<500	<500	-	-	-	-
Bicarbonate	µg/L	500	-	-	-	-	-	139000	209000	143000	154857.14	24721.30	177800	154000	238000	219500	201571.43	32740.74	233800.00
Carbonate	µg/L	500	-	-	-	-	-	<500	<500	-	-	-	-	<500	<500	-	-	-	-
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	-	-	-	-	<500	<500	-	-	-	-
Chloride	mg/L	0.5	-	120	120	120	-	<0.5	1.7	0.8	0.89	0.40	1.274	<0.5	2.6	0.735	1.03	0.66	1.76
Fluoride	µg/L	10	-	120	120	120	3000	69	120.0	99	94.00	18.34	114	100	240	150	156.43	44.13	218.00
Sulphate	mg/L	0.5	-	100	100	100	1000	10	33.3	11.6	15.96	8.73	26.4	18.8	42.2	23.15	25.45	6.88	34.00
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	2	13	3.5	5.44	3.93	10.36	1.3	6.2	3.15	3.26	1.49	5.68
Turbidity	NTU	0.1	-	-	-	-	-	42.6	2070	275	773.92	882.22	1766	3.18	3820	197.6	1050.91	1446.50	2890.00
Anions Total	meq/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Cations Total	meq/L		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
Ionic Balance	N/A	0.01	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Nutrients</b>																			
Ammonia	µg/L	5	2500	2330-231,000 <sup>5</sup>	2330-231,000 <sup>5</sup>	2330-231,000 <sup>5</sup>	3700-18,500 <sup>6</sup>	27	90	47	53.29	25.61	88.8	<5	300	99	110.50	86.03	212.00
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	71	316	111	161.43	104.13	291.4	23	972	166.5	226.71	235.66	375.16
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	45.4	313	155	149.96	98.03	247.6	<2	279	4.85	88.47	107.28	235.36
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200-400 <sup>7</sup>	<2	9.3	6.7	5.20	3.10	8.04	<2	16.1	2.1	4.41	4.57	11.02
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	52.1	320	155	154.24	98.03	253.4	<2	292	5.95	91.95	110.43	239.64
Nitrogen (Total)	µg/L	20	-	-	-	-	-	145	484	364	315.71	125.70	428.2	53	975	230.5	318.29	245.68	592.00
Phosphorus, total	µg/L	2	-	-	-	-	-	67.2	3710	2310	1970.60	1292.77	3080	5.8	9090	150.5	1713.36	3193.74	6812.00

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 147 mg/L to 2530 mg/L for total metals, and 78.9 mg/L to 212 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026

Table 5B: Groundwater Analytical Results, Zone 2 (Class C Storage Facility and Overburden Stockpile)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-30	BH95G-31				MW15-03S			MW15-03D				
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 17.7		Bedrock 8.5				Overburden 5.6			Bedrock 13.05						
				Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95G-30		BH95G-31	BH95G-31	BH95G-31	BH95G-31	MW15-03S	MW15-03S	MW15-03S	MW15-03D	MW15-03D	DUP02	MW15-03D	DUP01		
					6-Sep-2015		1995	22-Sep-2015	5-Nov-2015	4-Sep-2015	2-Nov-2015	13-Mar-2016	4-Sep-2015	2-Nov-2015		13-Mar-2016				
<b>Carbon</b>																				
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	-	-	-	-	-	-	3070	-	-	-	1960	2540	
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	850	-	2400	<500	3400	1400	-	2000	1170	910	-	-	-	
<b>Dissolved Metals</b>																				
Aluminum	µg/L	0.5	-	5, 100 <sup>5</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	12.9	15	3.75	85.2	3.24	26.6	11.4	7.92	14.4	7.81	2.76	2.5	
Antimony	µg/L	0.02	-	2000	2000	-	200	0.02	-	0.059	0.108	0.046	0.04	0.05	3.46	1.93	1.74	0.228	0.221	
Arsenic	µg/L	0.02	50	5	5	5	50	0.062	0.06	0.124	0.137	0.158	0.207	0.255	2.08	2.29	2.27	1.82	1.83	
Barium	µg/L	0.02	-	500	500	-	10,000	74.5	97	127	146	46.2	45.9	52.4	49.1	50.1	46	47.1	48	
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	0.022	<0.010	<0.010	<0.010	<0.010	
Bismuth	µg/L	0.005	-	-	-	-	-	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Boron	µg/L	10	-	5000	5000	1500	50,000	<10	-	<10	<10	<10	<10	<10	<10	<10	<10	<10	<10	
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.3-0.6 <sup>9</sup>	0.095	0.02	0.02	0.023	0.022	0.033	0.022	0.01	<0.0050	<0.0050	<0.0050	<0.0050	
Calcium	µg/L	50	-	-	-	-	-	69700	-	52200	59800	42900	45600	49900	56400	57600	56500	54800	53400	
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	0.1	11	<0.10	0.23	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Cobalt	µg/L	0.005	-	-	-	-	9	0.056	0.4	0.027	0.162	0.536	0.606	0.37	0.308	0.134	0.128	0.09	0.089	
Copper	µg/L	0.05	15	2.4 <sup>9</sup>	2.4 <sup>9</sup>	2.4 <sup>9</sup>	40-90 <sup>9</sup>	0.623	0.7	0.453	1.32	0.344	0.38	2.02	0.206	0.091	0.094	<0.050	0.052	
Iron	µg/L	1	-	300	300	300	-	14.9	54	<1.0	87.5	47.4	112	47.2	355	806	779	911	934	
Lead	µg/L	0.005	26	2.4-7.0 <sup>9</sup>	2.4-7.0 <sup>9</sup>	2.4-7.0 <sup>9</sup>	50-110 <sup>9</sup>	0.044	<0.1	0.016	0.259	0.007	0.058	0.055	0.044	0.014	0.047	<0.0050	<0.0050	
Lithium	µg/L	0.5	-	-	-	-	-	1.93	-	1	1.02	1.93	0.87	1.22	6.75	6.7	5.88	6.54	6.1	
Magnesium	µg/L	50	-	-	-	-	-	6940	-	2920	3130	5240	5100	4850	16200	16200	16400	15600	15800	
Manganese	µg/L	0.05	-	-	-	-	-	8.36	10	0.728	1.21	161	135	107	71.7	73.8	73.3	66.2	66.7	
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	0.0054	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Molybdenum	µg/L	0.05	-	73	73	73	10,000	2.16	0.5	1.78	-	10.4	7.46	8.89	4.7	3.72	3.25	3.96	3.92	
Nickel	µg/L	0.02	-	80-150 <sup>9</sup>	80-150 <sup>9</sup>	80-150 <sup>9</sup>	650-1500 <sup>9</sup>	0.471	8	0.403	0.597	2.15	2.1	1.66	1.02	0.455	0.476	0.248	0.255	
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	8.4	-	2.8	9	3.4	10.5	7.2	4.9	4.1	4.4	7.6	5.7	
Potassium	µg/L	50	-	-	-	-	-	1910	-	2880	3150	1500	1320	1410	2870	2680	2690	2640	2700	
Selenium	µg/L	0.04	15	1	1	1	10	2.11	<0.05	1.36	1.66	0.209	0.189	0.297	0.256	<0.040	<0.040	<0.040	<0.040	
Silicon	µg/L	50	-	-	-	-	-	3330	-	2790	2970	2950	2810	2510	3920	4130	4020	4910	4830	
Silver	µg/L	0.005	-	0.1	0.1	0.25	0.5, 15 <sup>9</sup>	<0.0050	<0.01	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Sodium	µg/L	50	-	-	-	-	-	1440	-	1020	1090	16100	2610	2230	2890	2710	2700	2720	2740	
Strontium	µg/L	0.05	-	-	-	-	-	238	-	176	197	145	139	163	252	244	243	269	266	
Sulphur	µg/L	3000	-	-	-	-	-	8100	-	6800	7300	12500	3800	4900	10000	8200	8200	7900	7700	
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	<0.0020	-	0.006	0.002	0.006	0.008	0.002	0.007	<0.0020	<0.0020	<0.0020	<0.0020	
Tin	µg/L	0.2	-	-	-	-	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Titanium	µg/L	0.5	-	100	100	-	1000	0.54	-	<0.50	3.57	<0.50	1.16	0.57	0.57	0.62	<0.50	<0.50	<0.50	
Uranium	µg/L	0.002	-	15	15	15	3000	2.59	-	1.05	1.2	0.783	0.884	0.854	2.05	3.02	2.7	1.84	1.83	
Vanadium	µg/L	0.2	-	-	-	-	-	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Zinc	µg/L	0.1	110	10	10	30	75-1650 <sup>9</sup>	7.59	3	0.85	2.6	1.58	0.9	10.6	2.38	0.48	0.39	0.84	0.57	
Zirconium	µg/L	0.1	-	-	-	-	-	<0.10	-	<0.10	<0.10	<0.10	<0.10	<0.10	0.23	0.43	0.42	1.01	0.95	

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
  - <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
  - <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
  - <sup>4</sup> Maximum increase of 25 mg/L from background levels
  - <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C
  - <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10
  - <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L
  - <sup>8</sup> Guideline applied is for ultra-oligotrophic
  - <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 147 mg/L to 2530 mg/L for total metals, and 78.9 mg/L to 212 mg/L for dissolved metals
  - <sup>10</sup> Guideline is for Chromium VI
  - "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline  
**BOLD** - Greater than CCME AW Guideline  
Underlined - Greater than Yukon CSR Guideline  
**RED** - Greater than current Site Water Licence QZ97-026



Table 5B: Groundwater Analytical Results, Zone 2 (Class C Storage Facility and Overburden Stockpile)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID		MW15-04S				MW15-04D				MW15-05D			MW15-06
				Fine	Coarse		Aquifer & Approx. Sample Depth (mbg)	Yukon CSR - AW (Freshwater) <sup>3</sup>	Overburden 12.65				Bedrock 30				Bedrock 26.1			Overburden 7.95
									MW15-04S	DUP03	MW15-04S	MW15-04S	MW15-04D	MW15-04D	DUP01	MW15-04D	MW15-05D	MW15-05D	MW15-05D	MW15-06
									4-Sep-2015	31-Oct-2015	13-Mar-2016	4-Sep-2015	31-Oct-2015	13-Mar-2016	7-Sep-2015	2-Nov-2015	13-Mar-2016	7-Sep-2015		
<b>Carbon</b>																				
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	-	-	-	1500	-	-	-	<500	-	-	3130	-	
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	-	960	1200	820	-	1400	1910	1660	-	3300	<500	-	640	
<b>Dissolved Metals</b>																				
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	4.55	4.48	5.65	3.65	3.48	2.99	7.15	3.69	5.46	6.15	2.11	1.95	
Antimony	µg/L	0.02	-	2000	2000	-	200	0.021	<0.020	0.025	<0.020	0.023	0.033	0.026	<0.020	0.023	0.022	<0.020	<0.020	
Arsenic	µg/L	0.02	50	5	5	5	50	0.25	0.252	0.27	0.206	1.84	1.74	1.82	1.63	0.19	0.11	0.065	0.06	
Barium	µg/L	0.02	-	500	500	-	10,000	69.5	70.8	73.7	76.8	64.6	22.7	22.1	53.5	22.4	40.8	43.4	68.6	
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Bismuth	µg/L	0.005	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Boron	µg/L	10	-	5000	5000	1500	50,000	<10	<10	<10	<10	23	23	22	<10	<10	<10	<10	<10	
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.3-0.6 <sup>9</sup>	0.015	0.015	0.014	0.011	0.04	0.028	0.028	<0.0050	0.027	0.057	0.065	0.175	
Calcium	µg/L	50	-	-	-	-	-	44600	41300	42200	42100	49200	28300	27600	49100	52400	70300	66400	74600	
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	0.13	0.14	0.16	0.2	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	
Cobalt	µg/L	0.005	-	-	-	-	9	0.194	0.203	0.114	0.032	0.699	0.343	0.353	0.193	0.148	0.18	0.081	0.034	
Copper	µg/L	0.05	15	2-4 <sup>9</sup>	2-4 <sup>9</sup>	2-4 <sup>9</sup>	40-90 <sup>9</sup>	0.693	0.669	1.17	0.5	0.376	0.885	0.23	<0.050	0.611	0.396	0.154	0.386	
Iron	µg/L	1	-	300	300	300	-	1.1	2.1	5.1	6.2	62.5	71.6	70.8	258	5.4	10.6	6.7	2.3	
Lead	µg/L	0.005	26	2.4-7.0 <sup>9</sup>	2.4-7.0 <sup>9</sup>	2.4-7.0 <sup>9</sup>	50-110 <sup>9</sup>	<0.0050	<0.0050	0.01	0.005	0.035	0.096	0.032	0.009	0.084	0.095	0.097	0.011	
Lithium	µg/L	0.5	-	-	-	-	-	0.79	0.81	<0.50	0.7	1.28	2.93	2.91	1.11	4.46	1.21	1.69	1.52	
Magnesium	µg/L	50	-	-	-	-	-	3810	3860	3660	3500	5770	3050	3040	5010	5510	7490	6630	6230	
Manganese	µg/L	0.05	-	-	-	-	-	38.3	39.6	25.5	9.02	201	102	103	212	16.3	21.7	13.5	1.22	
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	0.0028	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Molybdenum	µg/L	0.05	-	73	73	73	10,000	3.29	3.3	2.06	1.55	4.32	5.19	5.78	2.45	1.81	0.983	0.912	3.29	
Nickel	µg/L	0.02	-	80-150 <sup>9</sup>	80-150 <sup>9</sup>	80-150 <sup>9</sup>	650-1500 <sup>9</sup>	3.53	3.98	2.19	0.456	2.04	1.07	0.849	0.18	0.494	0.487	0.215	1.24	
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	4.2	4.1	<2.0	4.3	4.6	9.4	7.5	10.1	5.5	<2.0	4.9	5.6	
Potassium	µg/L	50	-	-	-	-	-	1740	1790	1480	1390	2720	2690	2640	2400	2240	1710	1650	1870	
Selenium	µg/L	0.04	15	1	1	1	10	0.741	0.741	0.773	0.755	<0.040	0.089	0.088	<0.040	1.62	1.77	1.49	2.49	
Silicon	µg/L	50	-	-	-	-	-	3080	2950	2790	3270	2730	2570	2500	2900	2680	2260	2620	3220	
Silver	µg/L	0.005	-	0.1	0.1	0.25	0.5, 15 <sup>9</sup>	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Sodium	µg/L	50	-	-	-	-	-	1830	1900	2020	2160	3140	55800	55000	1620	36200	3670	2900	1340	
Strontium	µg/L	0.05	-	-	-	-	-	173	171	159	165	206	203	206	208	300	274	298	216	
Sulphur	µg/L	3000	-	-	-	-	-	3500	<3000	3500	4000	7400	17300	17300	6800	14800	10800	9900	7900	
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	0.002	0.002	0.002	<0.0020	0.005	0.004	0.003	<0.0020	0.003	0.002	<0.0020	0.003	
Tin	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Titanium	µg/L	0.5	-	100	100	-	1000	<0.50	<0.50	<0.50	<0.50	<0.50	0.65	<0.50	<0.50	0.68	<0.50	<0.50	<0.50	
Uranium	µg/L	0.002	-	15	15	15	3000	0.739	0.735	0.762	0.591	1.06	3.91	3.78	0.749	4.15	2.62	1.86	2.84	
Vanadium	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Zinc	µg/L	0.1	110	10	10	30	75-1650 <sup>9</sup>	1.47	1.44	2.55	1.63	0.73	9.56	0.64	0.89	2.58	3.46	4.04	4.03	
Zirconium	µg/L	0.1	-	-	-	-	-	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.19	<0.10	<0.10	<0.10	<0.10	<0.10	

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
  - <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
  - <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
  - <sup>4</sup> Maximum increase of 25 mg/L from background levels
  - <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C
  - <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10
  - <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L
  - <sup>8</sup> Guideline applied is for ultra-oligotrophic
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- Underlined - Greater than Yukon CSR Guideline
- RED** - Greater than current Site Water Licence QZ97-026

Table 5B: Groundwater Analytical Results, Zone 2 (Class C Storage Facility and Overburden Stockpile)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	Statistical Analysis											
				Aquifer & Approx. Sample Depth (mbg)	Overburden					Bedrock									
					Yukon CSR - AW (Freshwater) <sup>3</sup>		MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	
<b>Carbon</b>																			
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	1500	3070	2285	2285.00	1110.16	2913	<500	3130	2250	2032.50	1127.81	3043.20
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	-	640	3400	960	1444.00	1128.93	2600	<500	3300	1285	1494.00	904.14	2600.00
<b>Dissolved Metals</b>																			
Aluminum	µg/L	0.5	-	5, 100 <sup>5</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	1.95	26.6	4.55	8.15	8.69	17.48	2.11	85.2	4.605	11.51	21.55	16.25
Antimony	µg/L	0.02	-	2000	2000	-	200	<0.02	0.05	0.025	0.03	0.01	0.0476	<0.02	3.46	0.046	0.56	1.05	1.85
Arsenic	µg/L	0.02	50	5	5	5	50	0.06	0.27	0.207	0.20	0.07	0.261	0.062	2.29	1.685	1.16	0.95	2.19
Barium	µg/L	0.02	-	500	500	-	10,000	45.9	76.8	68.6	61.87	13.27	74.94	22.4	146	48.55	59.66	35.44	106.18
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	<0.01	<0.01	-	-	-	-	<0.01	0.022	0.01	0.01	0.00	0.01
Bismuth	µg/L	0.005	-	-	-	-	-	<0.005	<0.005	-	-	-	-	<0.005	<0.005	-	-	-	-
Boron	µg/L	10	-	5000	5000	1500	50,000	<10	<10	-	-	-	-	<10	23	10	11.86	4.72	17.80
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.3-0.6 <sup>9</sup>	0.011	0.175	0.022	0.04	0.06	0.0898	<0.005	0.095	0.0215	0.03	0.03	0.08
Calcium	µg/L	50	-	-	-	-	-	42100	74600	44600	48842.86	11676.02	59780	28300	70300	55600	55435.71	10414.61	68380.00
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.1	0.2	0.1	0.13	0.04	0.176	<0.1	0.23	0.1	0.11	0.03	0.15
Cobalt	µg/L	0.005	-	-	-	-	9	0.032	0.606	0.194	0.27	0.24	0.564	0.027	0.699	0.141	0.19	0.17	0.48
Copper	µg/L	0.05	15	2-4 <sup>9</sup>	2-4 <sup>9</sup>	2-4 <sup>9</sup>	40-90 <sup>9</sup>	0.344	2.02	0.5	0.78	0.62	1.51	<0.05	1.32	0.291	0.38	0.38	1.15
Iron	µg/L	1	-	300	300	300	-	1.1	112	6.2	31.61	41.01	73.24	<1	934	79.55	307.37	376.80	869.00
Lead	µg/L	0.005	26	2.4-7.0 <sup>9</sup>	2.4-7.0 <sup>9</sup>	2.4-7.0 <sup>9</sup>	50-110 <sup>9</sup>	<0.005	0.058	0.01	0.02	0.02	0.0562	<0.005	0.259	0.044	0.06	0.07	0.10
Lithium	µg/L	0.5	-	-	-	-	-	<0.5	1.93	0.87	1.08	0.51	1.684	1	6.75	2.43	3.47	2.45	6.64
Magnesium	µg/L	50	-	-	-	-	-	3500	6230	4850	4627.14	1007.60	5636	2920	16400	6785	9046.43	5586.45	16200.00
Manganese	µg/L	0.05	-	-	-	-	-	1.22	161	38.3	68.15	64.92	145.4	0.728	212	66.45	66.32	67.91	178.76
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.002	0.0028	0.002	0.0021	0.0003	0.00232	<0.002	0.0054	0.002	0.002	0.001	0.002
Molybdenum	µg/L	0.05	-	73	73	73	10,000	1.55	10.4	3.29	5.28	3.56	9.494	0.912	5.19	3.25	3.01	1.42	5.04
Nickel	µg/L	0.02	-	80-150 <sup>9</sup>	80-150 <sup>9</sup>	80-150 <sup>9</sup>	650-1500 <sup>9</sup>	0.456	3.53	2.1	1.90	0.95	2.726	0.18	2.04	0.4735	0.60	0.49	1.65
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	<2	10.5	4.3	5.31	2.81	8.52	<2	10.1	5.2	5.96	2.52	9.24
Potassium	µg/L	50	-	-	-	-	-	1320	1870	1480	1530.00	200.50	1792	1650	3150	2685	2495.00	454.75	2876.00
Selenium	µg/L	0.04	15	1	1	1	10	0.189	2.49	0.741	0.78	0.80	1.4598	<0.04	2.11	0.1725	0.76	0.84	1.73
Silicon	µg/L	50	-	-	-	-	-	2510	3270	2950	2947.14	268.00	3240	2260	4910	2935	3332.86	869.38	4550.00
Silver	µg/L	0.005	-	0.1	0.1	0.25	0.5, 15 <sup>9</sup>	<0.005	<0.005	-	-	-	-	<0.005	0.005	0.005	0.01	0.00	0.01
Sodium	µg/L	50	-	-	-	-	-	1340	16100	2160	4041.43	5331.56	8006	1020	55800	2730	8617.14	16316.73	24922.40
Strontium	µg/L	0.05	-	-	-	-	-	139	216	163	165.71	25.09	190.2	176	300	243.5	241.00	38.52	288.40
Sulphur	µg/L	3000	-	-	-	-	-	3500	12500	4000	5728.57	3363.88	9740	6800	17300	8150	9371.43	3110.39	13200.00
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	<0.002	0.008	0.002	0.004	0.002	0.0068	<0.002	0.007	0.002	0.003	0.002	0.006
Tin	µg/L	0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	-	<0.2	0.2	0.2	0.20	0.00	0.20
Titanium	µg/L	0.5	-	100	100	-	1000	<0.5	1.16	0.5	0.60	0.25	0.806	<0.5	3.57	0.5	0.76	0.81	0.76
Uranium	µg/L	0.002	-	15	15	15	3000	0.591	2.84	0.783	1.06	0.79	1.6664	0.749	4.15	1.955	2.19	1.04	3.55
Vanadium	µg/L	0.2	-	-	-	-	-	<0.2	<0.2	-	-	-	-	<0.2	0.2	0.2	0.20	0.00	0.20
Zinc	µg/L	0.1	110	10	10	30	75-1650 <sup>9</sup>	0.9	10.6	1.63	3.25	3.40	6.658	0.39	9.56	1.635	2.64	2.80	7.22
Zirconium	µg/L	0.1	-	-	-	-	-	<0.1	<0.1	-	-	-	-	<0.1	1.01	0.1	0.28	0.32	0.74

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 147 mg/L to 2530 mg/L for total metals, and 78.9 mg/L to 212 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD** - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026

Table 5B: Groundwater Analytical Results, Zone 2 (Class C Storage Facility and Overburden Stockpile)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-30				MW15-03S			MW15-03D				
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 17.7		Bedrock 8.5				Overburden 5.6			Bedrock 13.05					
							Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95G-30	BH95G-31	BH95G-31	BH95G-31	MW15-03S	MW15-03S	MW15-03S	MW15-03D	MW15-03D	DUP02	MW15-03D	DUP01
								6-Sep-2015	1995	22-Sep-2015	5-Nov-2015	4-Sep-2015	2-Nov-2015	13-Mar-2016	4-Sep-2015	2-Nov-2015	13-Mar-2016		
<b>Total Metals</b>																			
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	984	-	62000	1890	3150	4130	42400	34.9	13.8	14.1	28.5	28.5
Antimony	µg/L	0.02	-	2000	2000	-	200	0.081	-	0.668	0.063	0.156	0.174	0.752	3.25	1.81	1.9	0.265	0.267
Arsenic	µg/L	0.02	50	5	5	5	50	0.647	-	126	6.27	4.25	6.16	55.3	1.95	2.44	2.23	1.81	1.83
Barium	µg/L	0.02	-	500	500	-	10,000	91.1	-	2250	275	90.2	106	597	46.5	49.4	49.6	47.9	49
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	0.093	-	1.78	0.136	0.186	0.234	1.68	<0.010	<0.010	<0.010	0.011	<0.010
Bismuth	µg/L	0.005	-	-	-	-	-	0.034	-	2.89	0.27	0.074	0.103	0.936	<0.0050	<0.0050	<0.0050	<0.020	<0.020
Boron	µg/L	10	-	5000	5000	1500	50,000	<50	-	<50	<10	<50	<50	<50	<10	<10	<10	<50	<50
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	0.23	-	6.44	0.699	0.145	0.275	2.5	0.012	<0.0050	<0.0050	0.009	0.006
Calcium	µg/L	50	-	-	-	-	-	64300	-	103000	54800	50700	49700	91200	54200	53600	56400	54400	54300
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	1.43	-	197	4.54	14.3	28.1	254	0.15	<0.10	0.12	1.56	<0.50
Cobalt	µg/L	0.005	-	-	-	-	9	1.71	-	244	16.4	3.94	5.88	65.5	0.292	0.18	0.193	0.165	0.145
Copper	µg/L	0.05	15	3.2-4.0 <sup>9</sup>	3.2-4.0 <sup>9</sup>	3.2-4.0 <sup>9</sup>	60-90 <sup>9</sup>	7.83	-	1420	104	19.2	33.5	353	0.497	0.143	0.162	0.7	1.12
Iron	µg/L	1	-	300	300	300	-	1320	-	228000	13800	10400	12400	134000	433	856	846	1140	1040
Lead	µg/L	0.005	26	5.2-7.0 <sup>9</sup>	5.2-7.0 <sup>9</sup>	5.2-7.0 <sup>9</sup>	60-160 <sup>9</sup>	3.93	-	561	80.9	6.47	11.8	125	0.121	0.054	0.053	0.229	0.303
Lithium	µg/L	0.5	-	-	-	-	-	2.3	-	45.3	1.91	4.64	5.69	42.6	6.23	5.81	6.39	5.91	6.42
Magnesium	µg/L	50	-	-	-	-	-	8660	-	42600	3740	6140	8470	36500	14600	15800	16200	15400	15400
Manganese	µg/L	0.05	-	-	-	-	-	56.4	-	3250	327	281	309	2270	69.7	80.9	81.5	67.8	67.7
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Molybdenum	µg/L	0.05	-	73	73	73	10,000	2.16	-	5.69	1.29	11.5	7.23	21	4.39	3.21	3.33	4.12	3.84
Nickel	µg/L	0.02	-	128-150 <sup>9</sup>	128-150 <sup>9</sup>	128-150 <sup>9</sup>	1100-1500 <sup>9</sup>	3.13	-	469	24.6	21.4	19.1	184	0.974	0.546	0.673	0.53	0.45
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	137	-	3880	247	231	418	4080	9.3	7.9	10	16	11
Potassium	µg/L	50	-	-	-	-	-	2490	-	17300	3220	2280	2850	9160	2680	2710	2710	2440	2530
Selenium	µg/L	0.04	15	1	1	1	10	1.8	-	4.34	1.42	0.366	0.199	0.697	0.217	<0.040	<0.040	<0.040	<0.040
Silicon	µg/L	50	-	-	-	-	-	5860	-	72500	6090	8820	8900	58400	4040	4910	4910	4510	4750
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	0.306	-	12.9	0.703	0.176	0.345	23.5	0.009	<0.0050	<0.0050	0.038	0.031
Sodium	µg/L	50	-	-	-	-	-	1700	-	1560	922	14300	1960	3420	2660	2450	2420	2430	2420
Strontium	µg/L	0.05	-	-	-	-	-	287	-	427	192	144	140	311	239	263	257	235	254
Sulphur	µg/L	3000	-	-	-	-	-	<15,000	-	<15,000	6800	<15,000	<15,000	<15,000	10200	8300	8700	<15,000	<15,000
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	0.011	-	0.877	0.037	0.071	0.09	0.584	0.003	<0.0020	<0.0020	0.008	0.006
Tin	µg/L	0.2	-	-	-	-	-	0.31	-	4.71	0.34	0.35	0.45	2.65	<0.20	<0.20	<0.20	<0.20	<0.20
Titanium	µg/L	0.5	-	100	100	-	1000	37.7	-	3040	142	114	171	1580	1.91	<0.50	0.99	<5.0	<5.0
Uranium	µg/L	0.002	-	15	15	15	3000	2.95	-	6.02	1.44	1.07	1.32	5.57	1.84	2.7	2.71	1.93	1.87
Vanadium	µg/L	0.2	-	-	-	-	-	2.51	-	382	19.6	8.65	13	152	<0.20	<0.20	<0.20	<0.50	<0.50
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	29.7	-	936	51.4	31.2	43.9	464	2.21	0.6	0.59	1.3	3.1
Zirconium	µg/L	0.1	-	-	-	-	-	1.21	-	29.4	0.86	0.96	0.75	9.01	0.53	0.62	0.6	0.94	0.89
Laboratory Work Order Number								B579341		B584163	B5A0147	B577997	B598984	B621096	B577997	B598984	B598984	B621096	B621096

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 147 mg/L to 2530 mg/L for total metals, and 78.9 mg/L to 212 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD** - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED** - Greater than current Site Water Licence QZ97-026



Table 5B: Groundwater Analytical Results, Zone 2 (Class C Storage Facility and Overburden Stockpile)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID Aquifer & Approx. Sample Depth (mbg) Yukon CSR - AW (Freshwater) <sup>3</sup>	MW15-04S				MW15-04D				MW15-05D			MW15-06
				Fine	Coarse			Overburden 12.65				Bedrock 30				Bedrock 26.1			Overburden 7.95
								MW15-04S	DUP03	MW15-04S	MW15-04S	MW15-04D	MW15-04D	DUP01	MW15-04D	MW15-05D	MW15-05D	MW15-05D	MW15-06
				4-Sep-2015	31-Oct-2015			13-Mar-2016	4-Sep-2015	31-Oct-2015	13-Mar-2016	7-Sep-2015	2-Nov-2015	13-Mar-2016	7-Sep-2015				
<b>Total Metals</b>																			
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	38000	32900	68500	43500	54000	86500	65500	938	31300	1630	3270	835
Antimony	µg/L	0.02	-	2000	2000	-	200	0.26	0.266	0.323	0.31	<0.205	0.285	0.277	<0.050	0.082	<0.050	0.054	<0.050
Arsenic	µg/L	0.02	50	5	5	5	50	40.2	39.4	55.7	31.5	120	184	207	5.89	7.49	1.01	1.43	0.546
Barium	µg/L	0.02	-	500	500	-	10,000	674	569	1790	800	5280	4520	3840	87.7	231	79.3	112	86.8
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	1.09	1.01	2.48	1.73	1.41	4.18	2.88	0.094	7.96	0.502	0.858	0.034
Bismuth	µg/L	0.005	-	-	-	-	-	1.11	0.944	2.07	1.1	0.79	1.31	1.17	0.03	1.92	0.154	0.213	0.021
Boron	µg/L	10	-	5000	5000	1500	50,000	<250	<50	<50	<50	<250	<50	<50	<50	<50	<50	<50	<50
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	1.62	1.42	3.97	1.94	3.46	10	6.36	0.074	0.532	0.151	0.594	0.292
Calcium	µg/L	50	-	-	-	-	-	78300	75700	248000	75600	198000	910000	512000	50100	109000	82600	75600	68000
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	105	91.8	215	128	313	978	698	4.49	9.76	0.95	2.59	2.29
Cobalt	µg/L	0.005	-	-	-	-	9	54.7	47.4	120	60.3	295	356	327	3.16	8.76	0.962	3.35	1.02
Copper	µg/L	0.05	15	3.2-4.0 <sup>9</sup>	3.2-4.0 <sup>9</sup>	3.2-4.0 <sup>9</sup>	60-90 <sup>9</sup>	182	153	502	343	419	944	736	6.02	56.4	8.1	13.9	6.29
Iron	µg/L	1	-	300	300	300	-	81800	68700	130000	94900	190000	264000	194000	2790	16500	1540	3550	1630
Lead	µg/L	0.005	26	5.2-7.0 <sup>9</sup>	5.2-7.0 <sup>9</sup>	5.2-7.0 <sup>9</sup>	60-160 <sup>9</sup>	86.7	79.7	230	92.3	93.8	338	195	2.02	98.6	17.7	42.8	2.22
Lithium	µg/L	0.5	-	-	-	-	-	25.9	25	49.4	30	41	93.8	60.1	1.43	16.7	2.38	3.13	2.38
Magnesium	µg/L	50	-	-	-	-	-	28600	23300	44800	28900	36800	61200	44400	5240	16200	9900	8140	6480
Manganese	µg/L	0.05	-	-	-	-	-	2010	1750	4820	2160	3730	10800	6530	245	427	69.4	264	21.4
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Molybdenum	µg/L	0.05	-	73	73	73	10,000	5.24	5.75	6.73	3.97	5.91	34.3	27.7	2.42	1.46	0.997	0.32	3.14
Nickel	µg/L	0.02	-	128-150 <sup>9</sup>	128-150 <sup>9</sup>	128-150 <sup>9</sup>	1100-1500 <sup>9</sup>	121	106	238	134	573	794	695	6.09	13.4	1.89	3.22	4.3
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	1750	1580	8770	2000	3390	27800	19000	93	288	55	100	47
Potassium	µg/L	50	-	-	-	-	-	11600	10300	19100	10500	11200	22100	14700	2410	10500	6830	2420	2100
Selenium	µg/L	0.04	15	1	1	1	10	0.7	0.849	1	0.972	5.86	2.78	4.16	0.117	2.94	2.19	1.41	2.14
Silicon	µg/L	50	-	-	-	-	-	42100	39900	74900	59300	49200	92300	72200	4060	69500	5060	7120	4390
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	6.64	4.76	17.4	6.43	6.8	12.9	17.5	0.161	0.552	0.123	0.796	0.032
Sodium	µg/L	50	-	-	-	-	-	2000	1970	2450	2730	2800	8800	7760	1620	39500	5020	3110	1260
Strontium	µg/L	0.05	-	-	-	-	-	354	340	1100	336	932	3720	2120	205	690	320	319	217
Sulphur	µg/L	3000	-	-	-	-	-	<75,000	<15,000	<15,000	<15,000	<75,000	19000	<15,000	<15,000	<15,000	<15,000	<15,000	<15,000
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	0.834	0.716	1.34	0.73	0.976	1.61	1.11	0.018	0.523	0.1	0.045	0.02
Tin	µg/L	0.2	-	-	-	-	-	1.6	1.43	1.8	1.76	1.5	3.11	3.23	0.21	0.81	0.22	<0.20	<0.20
Titanium	µg/L	0.5	-	100	100	-	1000	1470	1300	2160	1180	323	1030	574	19.4	28.7	13.8	<5.0	44
Uranium	µg/L	0.002	-	15	15	15	3000	3.29	3.02	8.25	4.18	9.46	20.5	17.4	1.09	16.5	3.9	3.44	2.84
Vanadium	µg/L	0.2	-	-	-	-	-	121	107	180	147	78	150	108	1.43	18	1.01	3.29	3.41
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	320	256	704	414	514	1140	849	8.4	116	17.8	46.4	18.5
Zirconium	µg/L	0.1	-	-	-	-	-	8.41	10.4	14.3	4.11	16.4	6.68	11.4	1.14	0.29	0.4	0.18	0.15
Laboratory Work Order Number								B577997	B577997	B598984	B621096	B577997	B598984	B598984	B621096	B579341	B598984	B621096	B579341

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 147 mg/L to 2530 mg/L for total metals, and 78.9 mg/L to 212 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026



Table 5C: Groundwater Analytical Results, Zone 3(Class B Storage Facility)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-32				BH95G-33D					
				Part E - Effluent Quality Standards	Fine			Coarse	Bedrock 13.7				Bedrock 10.6				
									Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95-32	BH95G-32	BH95G-32	BH95G-32	BH95G-33D	BH95G-33D	BNH95G-33D	BH95G-33D
										13-May-2015	22-Sep-2015	5-Nov-2015	15-Mar-2016	13-May-2015	22-Sep-2015	3-Nov-2015	15-Mar-2016
<b>Field</b>																	
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	6.9	7.77	7.67	6.59	7.39	7.8	7.53	7.41		
Field Electric Conductivity	µS/cm		-	-	-	-	-	411.1	430.4	373	417	454.2	486.8	452.6	462		
Field Temperature	°C		-	-	-	-	-	1.2	-0.9	0.3	0.56	2.1	-0.2	-2.4	1.37		
Field Dissolved Oxygen	mg/L		-	-	-	-	-	0	1.17	1.5	3.2	3.56	7.21	6.19	6.2		
Field Redox	mV		-	-	-	-	-	-	-	-	25	-	-	-	17		
<b>Physical Parameters</b>																	
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	8.02	8.12	8.12	7.28	8.07	8.16	8.17	8.02		
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500		
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	<500	<500	3180	1930		<500	<500	<500		
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	376	375	409	402	408	441	460	447		
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	232000	246000	244000	274000	280000	286000	326000	300000		
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	-	3050000	301000	574000	-	900000	1290000	954000		
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	528	433	215	265	430	308	335	275		
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	201	196	202	189	230	257	255	235		
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	158000	159000	179000	589000	152000	165000	173000	176000		
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500		
Bicarbonate	µg/L	500	-	-	-	-	-	193000	193000	219000	718000	186000	201000	211000	215000		
Carbonate	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500		
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500		
Chloride	mg/L	0.5	-	120	120	120	-	<0.50	0.55	0.75	<0.50	<0.50	0.83	0.78	<0.50		
Fluoride	µg/L	10	-	120	120	120	3000	40	41	39	32	61	53	55	45		
Sulphate	mg/L	0.5	-	100	100	-	1000	35.7	33.3	34.4	34.3	62.3	64.7	68.6	62.3		
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	<1.0	5.6	2.6	19	<1.0	3.8	2.4	11		
Turbidity	NTU	0.1	-	-	-	-	-	2570	1950	251	-	2140	561	598	-		
Anions Total	meq/L		-	-	-	-	-	3.9	-	4.3	-	4.4	-	4.9	-		
Cations Total	meq/L		-	-	-	-	-	4.2	-	4.2	-	4.7	-	5.2	-		
Ionic Balance	N/A	0.01	-	-	-	-	-	1.1	1.1	0.97	0.31	1.1	1.1	1	0.98		
<b>Nutrients</b>																	
Ammonia	µg/L	5	2500	749-231,000 <sup>5</sup>	749-231,000 <sup>5</sup>	749-231,000 <sup>5</sup>	1310-18,500 <sup>6</sup>	290	140	29	58	120	32	19	44		
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	830	146	76	109	530	80	89	75		
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	52.4	44.3	51.2	51.5	177	191	213	205		
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200 <sup>7</sup>	<2.0	<2.0	2.1	5.8	<2.0	<2.0	2.2	3.1		
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	52.4	44.3	53.3	57.3	177	191	216	209		
Nitrogen (Total)	µg/L	20	-	-	-	-	-	880	191	129	166	710	271	304	284		
Phosphorus, total	µg/L	2	-	-	-	-	-	4340	2130	454	860	<2.0	832	151	2670		

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
  - <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
  - <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
  - <sup>4</sup> Maximum increase of 25 mg/L from background levels
  - <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.59 to 8.50 and temperature range of -2.4 °C to 2.4 °C
  - <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.59 to 8.50
  - <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 1.4 mg/L
  - <sup>8</sup> Guideline applied is for ultra-oligotrophic
  - <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 215 mg/L to 1010 mg/L for total metals, and 181 mg/L to 296 mg/L for dissolved metals
  - <sup>10</sup> Guideline is for Chromium VI
- " No applicable standard or not analyzed  
 Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026

Table 5C: Groundwater Analytical Results, Zone 3(Class B Storage Facility)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	MW15-01				MW15-02	Statistical Analysis					
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 14.4				Bedrock 27.35	Bedrock								
					Yukon CSR - AW (Freshwater) <sup>3</sup>		MW15-01	DUP02	MW15-01	MW15-01	MW15-02	MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	
							1-Sep-2015	1-Sep-2015	1-Nov-2015	15-Mar-2016	1-Sep-2015							
<b>Field</b>																		
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.62	-	8.5	7.56	7.37	6.59	8.5	7.545	7.509	0.470	7.797
Field Electric Conductivity	µS/cm		-	-	-	-	-	353.7	-	394	572	483.2	353.7	572	441.5	440.833	59	486
Field Temperature	°C		-	-	-	-	-	-1.9	-	-0.1	0.3	-0.7	-2.4	2.1	0.1	-0.031	1.312	1.353
Field Dissolved Oxygen	mg/L		-	-	-	-	-	11.39	-	2.7	7.2	5.77	0	11.39	4.665	4.674	3.237	7.209
Field Redox	mV		-	-	-	-	-	-	-	-	11	-	11	25	17	17.667	7.024	23.400
<b>Physical Parameters</b>																		
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	8.16	8.00	8.19	8.07	7.94	7.28	8.19	8.07	8.025	0.236	8.168
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	-	-	-	-
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	<500	<500	3190	<500	<500	<500	3190	500	1066.67	1071	3055
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	432	428	459	551	323	323	551	428	423.92	54	460
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	286000	274000	344000	370000	206000	206000	370000	280000	282153.85	45669	340400
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	<1000	1000	1910000	179000	410000	<1000	3050000	574000	870000.00	928931	1910000
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	233	233	1010	1010	232	215	1010	308	370.77	214	509
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	239	243	251	296	181	181	296	235	228.85	33	257
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	179000	174000	147000	156000	130000	130000	589000	165000	195153.85	119198	179000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	-	500.00	-	-
Bicarbonate	µg/L	500	-	-	-	-	-	218000	213000	179000	191000	159000	159000	718000	201000	238153.85	145229	218800
Carbonate	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	-	500.00	-	-
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	-	500.00	-	-
Chloride	mg/L	0.5	-	120	120	120	-	0.8	0.8	1.4	<0.50	0.68	<0.5	1.4	0.68	0.70	0.251	0.824
Fluoride	µg/L	10	-	120	120	120	-	94	93	86	94	89	32	94	55	63.23	24.270	93.800
Sulphate	mg/L	0.5	-	100	100	100	-	1000	52.1	50.6	94.3	138	37.4	33.3	138	52.1	59.08	29.772
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	<1.0	<1.0	1.1	8.3	7.2	<1	19	2.6	5.00	5.333	10.460
Turbidity	NTU	0.1	-	-	-	-	-	0.27	0.24	4000	-	291	0.24	4000	579.5	1236.15	1355	2713
Anions Total	meq/L		-	-	-	-	-	4.7	4.6	5	-	3.4	-	-	-	-	-	-
Cations Total	meq/L		-	-	-	-	-	4.9	5	5.1	-	3.7	-	-	-	-	-	-
Ionic Balance	N/A	0.01	-	-	-	-	-	1	1.1	1	1	1.1	-	-	-	-	-	-
<b>Nutrients</b>																		
Ammonia	µg/L	5	2500	749-231,000 <sup>5</sup>	749-231,000 <sup>5</sup>	749-231,000 <sup>5</sup>	1310-18,500 <sup>6</sup>	7.3	<5	86	44	19	<5	290	44	68.72	78.535	136.000
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	78	113	103	83	173	75	830	103	191.15	227.300	458.600
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	189	191	392	231	399	44.3	399	191	183.65	117.323	359.800
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200 <sup>7</sup>	<2.0	<2.0	<2.0	<2.0	<2.0	<2	5.8	2	2.40	1.065	2.920
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	189	191	392	231	399	44.3	399	191	184.79	116.719	359.800
Nitrogen (Total)	µg/L	20	-	-	-	-	-	268	305	495	313	572	129	880	304	376.00	224.134	682.400
Phosphorus, total	µg/L	2	-	-	-	-	-	2.9	3.2	7340	219	612	<2	7340	612	1508.93	2176.789	4006.000

**Notes:**  
<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use  
<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)  
<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)  
<sup>4</sup> Maximum increase of 25 mg/L from background levels  
<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.59 to 8.50 and temperature range of -2.4 °C to 2.4 °C  
<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.59 to 8.50  
<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 1.4 mg/L  
<sup>8</sup> Guideline applied is for ultra-oligotrophic  
<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 215 mg/L to 1010 mg/L for total metals, and 181 mg/L to 296 mg/L for dissolved metals  
<sup>10</sup> Guideline is for Chromium VI  
 "-" No applicable standard or not analyzed  
 Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026

Table 5C: Groundwater Analytical Results, Zone 3(Class B Storage Facility)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-32				BH95G-33D			
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 13.7				Bedrock 10.6						
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95-32	BH95G-32	BH95G-32	BH95G-32	BH95G-33D	BH95G-33D	BNH95G-33D	BH95G-33D	
							13-May-2015	22-Sep-2015	5-Nov-2015	15-Mar-2016	13-May-2015	22-Sep-2015	3-Nov-2015	15-Mar-2016	
<b>Carbon</b>															
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	-	-	-	1900	-	-	-	3080
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	-	1630	930	<500	-	1530	1400	1080	-
<b>Dissolved Metals</b>															
Aluminum	µg/L	0.5	-	100 <sup>6</sup>	100 <sup>6</sup>	100 <sup>6</sup>	-	2.02	2.69	14.2	4.36	1.26	1.2	1.99	5.06
Antimony	µg/L	0.02	-	2000	2000	-	200	0.227	0.118	0.033	0.045	<0.020	0.035	<0.020	0.025
Arsenic	µg/L	0.02	50	5	5	5	50	0.353	0.376	0.256	0.228	0.215	0.213	0.144	0.138
Barium	µg/L	0.02	-	500	500	-	10,000	168	171	176	186	82.4	86.4	98.2	92.3
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Bismuth	µg/L	0.005	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Boron	µg/L	10	-	5000	5000	1500	50,000	<10	<10	<10	<10	<10	<10	<10	<10
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.6 <sup>9</sup>	0.13	0.118	0.051	0.061	<0.0050	0.01	0.006	0.01
Calcium	µg/L	50	-	-	-	-	-	73400	71400	74300	68700	77500	87100	87200	79800
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18
Cobalt	µg/L	0.005	-	-	-	-	9	0.438	0.469	0.279	0.221	0.0149	0.026	0.015	0.015
Copper	µg/L	0.05	15	4 <sup>9</sup>	4 <sup>9</sup>	4 <sup>9</sup>	80-90 <sup>9</sup>	0.111	0.147	0.305	0.593	0.132	0.2	0.36	0.226
Iron	µg/L	1	-	300	300	300	-	38.2	91.9	129	103	1.3	<1.0	4.2	1.4
Lead	µg/L	0.005	26	7.0 <sup>9</sup>	7.0 <sup>9</sup>	7.0 <sup>9</sup>	60-110 <sup>9</sup>	0.141	0.121	0.052	0.137	0.0062	<0.0050	0.011	0.016
Lithium	µg/L	0.5	-	-	-	-	-	1.61	1.1	1.19	1.59	1.26	1.08	1.11	1.33
Magnesium	µg/L	50	-	-	-	-	-	4240	4340	3930	4100	8820	9490	9170	8690
Manganese	µg/L	0.05	-	-	-	-	-	58.5	71.2	72.9	65.5	1.31	7.18	4.83	6.7
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020
Molybdenum	µg/L	0.05	-	73	73	73	10,000	0.714	0.736	-	0.762	1.24	1.18	1.2	1.26
Nickel	µg/L	0.02	-	150 <sup>9</sup>	150 <sup>9</sup>	150 <sup>9</sup>	1500 <sup>9</sup>	1.48	1.68	1.1	0.95	0.781	1.2	1.08	0.906
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	<2.0	2.2	<2.0	3	<2.0	4.4	4.5	2.3
Potassium	µg/L	50	-	-	-	-	-	4530	4560	4310	4330	1010	987	1050	1020
Selenium	µg/L	0.04	15	1	1	1	10	0.326	0.551	0.561	0.615	3.83	6.27	6.14	4.07
Silicon	µg/L	50	-	-	-	-	-	2540	2400	2090	2490	3030	3530	3520	3160
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050
Sodium	µg/L	50	-	-	-	-	-	687	724	664	693	759	802	812	769
Strontium	µg/L	0.05	-	-	-	-	-	281	275	266	288	237	238	260	243
Sulphur	µg/L	3000	-	-	-	-	-	11800	11800	10700	10800	20400	21700	23000	22000
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	0.0235	0.009	0.006	0.005	<0.0020	0.002	<0.0020	<0.0020
Tin	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.43
Titanium	µg/L	0.5	-	100	100	-	1000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50
Uranium	µg/L	0.002	-	15	15	15	3000	1.3	1.17	1.23	1.08	4.85	4.42	4.75	4.28
Vanadium	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Zinc	µg/L	0.1	110	10	10	30	900-16500 <sup>9</sup>	0.57	1.42	2.18	3.33	0.4	1.17	1.82	1.23
Zirconium	µg/L	0.1	-	-	-	-	-	<0.10	0.1	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.59 to 8.50 and temperature range of -2.4 °C to 2.4 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.59 to 8.50
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 1.4 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 215 mg/L to 1010 mg/L for total metals, and 181 mg/L to 296 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026



Table 5C: Groundwater Analytical Results, Zone 3(Class B Storage Facility)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	MW15-01				MW15-02	Statistical Analysis							
				Part E - Effluent Quality Standards	Fine			Coarse	Aquifer & Approx. Sample Depth (mbg)	Bedrock 14.4				Bedrock 27.35	Bedrock					
										Yukon CSR - AW (Freshwater) <sup>3</sup>	MW15-01 1-Sep-2015	DUP02 1-Sep-2015	MW15-01 1-Nov-2015	MW15-01 15-Mar-2016	MW15-02 1-Sep-2015	MIN	MAX	MEDIAN	MEAN	STDV
<b>Carbon</b>																				
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	-	-	-	-	1450	-	1450	3080	1900	2143.33	841.804	2844.000	
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	-	540	<500	2300	-	1500	<500	2300	1240	1191.00	590.281	1697.000		
<b>Dissolved Metals</b>																				
Aluminum	µg/L	0.5	-	100 <sup>6</sup>	100 <sup>6</sup>	100 <sup>6</sup>	-	6.36	3.08	9.21	2.93	5.99	1.2	14.2	3.08	4.64	3.693	8.640		
Antimony	µg/L	0.02	-	2000	2000	-	200	<0.020	0.032	0.048	0.029	0.03	<0.02	0.227	0.032	0.05	0.058	0.104		
Arsenic	µg/L	0.02	50	5	5	5	50	0.88	0.877	0.126	0.098	0.114	0.098	0.88	0.215	0.31	0.267	0.777		
Barium	µg/L	0.02	-	500	500	-	10,000	96.6	97.9	22.4	38.8	15.9	15.9	186	96.6	102.45	57.859	175.000		
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	<0.010	<0.010	<0.010	<0.010	<0.010	<0.01	<0.01	-	-	-	-		
Bismuth	µg/L	0.005	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.005	<0.005	-	-	-	-		
Boron	µg/L	10	-	5000	5000	1500	50,000	<10	<10	<10	<10	<10	<10	<10	-	-	-	-		
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.6 <sup>9</sup>	<0.0050	<0.0050	0.02	0.017	0.007	<0.005	0.13	0.01	0.034	0.044	0.107		
Calcium	µg/L	50	-	-	-	-	-	77500	79000	85700	101000	61700	61700	101000	77500	78792.3	9928.5	87180.0		
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.10	<0.10	<0.10	<0.10	<0.10	<0.1	0.18	0.1	0.106	0.022	0.100		
Cobalt	µg/L	0.005	-	-	-	-	9	0.04	0.038	0.076	0.069	0.04	0.0149	0.469	0.04	0.134	0.164	0.406		
Copper	µg/L	0.05	15	4 <sup>9</sup>	4 <sup>9</sup>	4 <sup>9</sup>	80-90 <sup>9</sup>	0.072	0.062	0.49	0.417	0.613	0.062	0.613	0.226	0.287	0.193	0.572		
Iron	µg/L	1	-	300	300	300	-	12.2	7.4	7.6	108	2.2	<1	129	7.6	39.031	49.416	107.000		
Lead	µg/L	0.005	26	7.0 <sup>9</sup>	7.0 <sup>9</sup>	7.0 <sup>9</sup>	60-110 <sup>9</sup>	0.025	<0.0050	0.014	0.015	<0.0050	<0.005	0.141	0.015	0.043	0.053	0.134		
Lithium	µg/L	0.5	-	-	-	-	-	1.75	1.75	1.13	2.29	1.14	1.08	2.29	1.26	1.410	0.365	1.750		
Magnesium	µg/L	50	-	-	-	-	-	10900	11100	9010	10600	6490	3930	11100	8820	7760.000	2759.484	10840.000		
Manganese	µg/L	0.05	-	-	-	-	-	1.9	1.83	5.41	11.2	2.85	1.31	72.9	6.7	23.947	30.184	70.060		
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.002	<0.002	-	-	-	-		
Molybdenum	µg/L	0.05	-	73	73	73	10,000	0.83	0.888	0.912	0.605	0.951	0.605	1.26	0.9	0.940	0.228	1.236		
Nickel	µg/L	0.02	-	150 <sup>9</sup>	150 <sup>9</sup>	150 <sup>9</sup>	1500 <sup>9</sup>	0.167	0.154	0.512	0.414	0.346	0.154	1.68	0.906	0.828	0.487	1.424		
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	4.6	2.9	2.8	5.5	4.2	<2	5.5	2.9	3.262	1.216	4.580		
Potassium	µg/L	50	-	-	-	-	-	2430	2410	633	841	519	519	4560	1050	2202.308	1653.656	4490.000		
Selenium	µg/L	0.04	15	1	1	1	10	1.5	1.61	0.579	0.788	0.371	0.326	6.27	0.788	2.093	2.205	5.726		
Silicon	µg/L	50	-	-	-	-	-	2480	2530	1990	2370	1960	1960	3530	2490	2622.308	530.175	3448.000		
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.005	<0.005	-	-	-	-		
Sodium	µg/L	50	-	-	-	-	-	715	740	1320	1470	843	664	1470	759	846.000	250.956	1224.600		
Strontium	µg/L	0.05	-	-	-	-	-	297	297	217	303	157	157	303	266	258.385	40.619	297.000		
Sulphur	µg/L	3000	-	-	-	-	-	18800	17600	31500	48300	13800	10700	48300	18800	20169.231	10408.601	29800.000		
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	<0.0020	<0.0020	0.002	<0.0020	0.002	<0.002	0.0235	0.002	0.005	0.006	0.008		
Tin	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	0.43	0.2	0.218	0.064	0.200		
Titanium	µg/L	0.5	-	100	100	-	1000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.5	<0.5	-	-	-	-		
Uranium	µg/L	0.002	-	15	15	15	3000	3.02	2.99	3.77	3.7	1.76	1.08	4.85	3.02	2.948	1.466	4.684		
Vanadium	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.2	<0.2	-	-	-	-		
Zinc	µg/L	0.1	110	10	10	30	900-16500 <sup>9</sup>	0.31	0.25	2.26	5.03	0.71	0.25	5.03	1.23	1.591	1.376	3.116		
Zirconium	µg/L	0.1	-	-	-	-	-	<0.10	<0.10	0.14	<0.10	<0.10	<0.1	0.14	0.1	0.103	0.011	0.100		

**Notes:**  
<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use  
<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)  
<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)  
<sup>4</sup> Maximum increase of 25 mg/L from background levels  
<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.59 to 8.50 and temperature range of -2.4 °C to 2.4 °C  
<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.59 to 8.50  
<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 1.4 mg/L  
<sup>8</sup> Guideline applied is for ultra-oligotrophic  
<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 215 mg/L to 1010 mg/L for total metals, and 181 mg/L to 296 mg/L for dissolved metals  
<sup>10</sup> Guideline is for Chromium VI  
 "-" No applicable standard or not analyzed  
**Shaded** - Greater than Federal Interim Guideline  
**BOLD** - Greater than CCME AW Guideline  
Underlined - Greater than Yukon CSR Guideline  
**RED** - Greater than current Site Water Licence QZ97-026

Table 5C: Groundwater Analytical Results, Zone 3(Class B Storage Facility)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-32				BH95G-33D			
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 13.7				Bedrock 10.6						
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95-32	BH95G-32	BH95G-32	BH95G-32	BH95G-33D	BH95G-33D	BNH95G-33D	BH95G-33D	
							13-May-2015	22-Sep-2015	5-Nov-2015	15-Mar-2016	13-May-2015	22-Sep-2015	3-Nov-2015	15-Mar-2016	
<b>Total Metals</b>															
Aluminum	µg/L	0.5	-	100 <sup>6</sup>	100 <sup>6</sup>	100 <sup>6</sup>	-	86000	53300	3140	15500	43800	13600	15000	9440
Antimony	µg/L	0.02	-	2000	2000	-	200	1.24	1.03	0.101	0.562	0.513	0.289	0.284	0.215
Arsenic	µg/L	0.02	50	5	5	5	50	48.9	30.1	5.01	13.3	149	32.8	31.6	25.7
Barium	µg/L	0.02	-	500	500	-	10,000	3620	2270	423	869	839	322	372	256
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	4.34	3.06	0.434	1.08	2.18	0.887	0.927	0.467
Bismuth	µg/L	0.005	-	-	-	-	-	3.02	1.7	0.219	0.666	1.05	0.306	0.322	0.17
Boron	µg/L	10	-	5000	5000	1500	50,000	<50	<50	<10	<50	<50	<50	<50	<50
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.6 <sup>9</sup>	1.9	5.25	0.798	1.66	0.724	0.263	0.38	0.208
Calcium	µg/L	50	-	-	-	-	-	130000	117000	76800	86700	119000	96400	103000	88200
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	219	169	9.2	43.4	62.9	16.3	24.2	15.8
Cobalt	µg/L	0.005	-	-	-	-	9	111	71.8	6.83	20.6	79.4	28.5	39.6	28
Copper	µg/L	0.05	15	4 <sup>9</sup>	4 <sup>9</sup>	4 <sup>9</sup>	90 <sup>9</sup>	308	194	17.9	75.9	185	61.2	114	66.5
Iron	µg/L	1	-	300	300	300	-	203000	122000	8930	40500	150000	42600	50500	30400
Lead	µg/L	0.005	26	7.0 <sup>9</sup>	7.0 <sup>9</sup>	7.0 <sup>9</sup>	110-160 <sup>9</sup>	297	178	25.8	77.6	68.3	19.4	21.3	14.8
Lithium	µg/L	0.5	-	-	-	-	-	41.6	25.9	2.45	8.9	26.4	9.43	13.9	7.55
Magnesium	µg/L	50	-	-	-	-	-	49500	33900	5570	11700	32400	16400	19000	13400
Manganese	µg/L	0.05	-	-	-	-	-	8690	3600	436	1100	6570	2680	3090	1550
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.0026
Molybdenum	µg/L	0.05	-	73	73	73	10,000	9.39	4.15	0.578	1.46	14	4.2	2.41	2.95
Nickel	µg/L	0.02	-	150 <sup>9</sup>	150 <sup>9</sup>	150 <sup>9</sup>	1500 <sup>9</sup>	183	114	9.83	31.1	296	105	165	89.9
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	3790	2220	357	781	3350	778	862	1970
Potassium	µg/L	50	-	-	-	-	-	21500	15700	5510	7440	5790	2670	3490	2110
Selenium	µg/L	0.04	15	1	1	1	10	20.2	10.8	0.752	2.98	10.3	6.95	5.69	3.91
Silicon	µg/L	50	-	-	-	-	-	99900	67500	7820	24500	62400	21700	28800	15400
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	5.32	0.874	0.101	0.445	1.8	0.677	0.434	0.376
Sodium	µg/L	50	-	-	-	-	-	2130	1890	752	1190	1590	1290	1140	960
Strontium	µg/L	0.05	-	-	-	-	-	544	511	307	367	396	316	317	278
Sulphur	µg/L	3000	-	-	-	-	-	<15,000	<15,000	11500	<15,000	19000	22000	25000	21000
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	1.36	0.671	0.074	0.173	0.389	0.134	0.158	0.104
Tin	µg/L	0.2	-	-	-	-	-	4.71	2.01	<0.20	0.78	2.71	0.91	0.8	0.55
Titanium	µg/L	0.5	-	100	100	-	1000	10400	5900	281	1790	504	185	297	228
Uranium	µg/L	0.002	-	15	15	15	3000	11.5	7.33	1.91	3.44	16.1	8.32	8.8	6.2
Vanadium	µg/L	0.2	-	-	-	-	-	608	402	29	110	148	45.8	53.1	36.5
Zinc	µg/L	0.1	110	10	10	30	1650-2400 <sup>9</sup>	904	530	49.1	175	578	153	251	137
Zirconium	µg/L	0.1	-	-	-	-	-	20.7	8.87	0.88	4.76	18.7	5.67	6.01	5.74
Laboratory Work Order Number								B540423	B584163	B5A0147	B621096	B540423	B584163	B599724	B621096

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.59 to 8.50 and temperature range of -2.4 °C to 2.4 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.59 to 8.50
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 1.4 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 215 mg/L to 1010 mg/L for total metals, and 181 mg/L to 296 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
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- RED - Greater than current Site Water Licence QZ97-026

Table 5C: Groundwater Analytical Results, Zone 3(Class B Storage Facility)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	MW15-01				MW15-02	Statistical Analysis					
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 14.4				Bedrock 27.35	Bedrock								
					Yukon CSR - AW (Freshwater) <sup>3</sup>		MW15-01	DUP02		MW15-01	MW15-01	MW15-02	MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE
Part E - Effluent Quality Standards	Fine	Coarse	1-Sep-2015	1-Sep-2015	1-Nov-2015	15-Mar-2016	1-Sep-2015											
<b>Total Metals</b>																		
Aluminum	µg/L	0.5	-	100 <sup>6</sup>	100 <sup>6</sup>	100 <sup>6</sup>	-	15.3	18	83600	2270	6570	15.3	86000	13600	25557.946	30889.696	77540.000
Antimony	µg/L	0.02	-	2000	2000	-	200	0.023	<0.020	0.448	0.28	0.276	0.02	1.24	0.284	0.406	0.366	0.936
Arsenic	µg/L	0.02	50	5	5	5	50	1.05	0.961	23.9	3.63	3.71	0.961	149	23.9	28.435	39.289	45.680
Barium	µg/L	0.02	-	500	500	-	10,000	98	99	599	106	99.1	98	3620	372	767.085	1038.939	1989.800
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	<0.010	<0.010	1.55	0.14	0.177	0.01	4.34	0.887	1.174	1.314	2.884
Bismuth	µg/L	0.005	-	-	-	-	-	<0.0050	<0.0050	0.683	0.051	0.071	0.005	3.02	0.306	0.636	0.868	1.570
Boron	µg/L	10	-	5000	5000	1500	50,000	<10	<10	<50	<50	<50	<10	<50	-	-	-	-
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.6 <sup>9</sup>	<0.0050	<0.0050	3.14	0.265	0.355	0.005	10.9	0.38	1.843	3.115	4.828
Calcium	µg/L	50	-	-	-	-	-	74900	74600	305000	108000	76500	74600	305000	96400	112008	60874	127800
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.10	<0.10	119	9.9	10.4	<0.1	219	16.3	53.792	70.886	159.000
Cobalt	µg/L	0.005	-	-	-	-	9	0.054	0.071	76	4.54	5.38	0.054	111	28	36.290	36.652	78.720
Copper	µg/L	0.05	15	4 <sup>9</sup>	4 <sup>9</sup>	4 <sup>9</sup>	90 <sup>9</sup>	0.119	0.152	263	17.5	25.6	0.119	308	66.5	102.221	103.385	249.200
Iron	µg/L	1	-	300	300	300	-	38.1	44	200000	13000	17200	38.1	203000	40500	67554.777	74576.351	190000.000
Lead	µg/L	0.005	26	7.0 <sup>9</sup>	7.0 <sup>9</sup>	7.0 <sup>9</sup>	110-160 <sup>9</sup>	0.012	0.016	42.4	6.21	6.2	0.012	297	21.3	58.234	86.643	157.920
Lithium	µg/L	0.5	-	-	-	-	-	1.87	1.86	44.9	3.66	4.51	1.86	44.9	8.9	14.841	15.045	38.560
Magnesium	µg/L	50	-	-	-	-	-	11200	11300	60700	12800	9880	5570	60700	13400	22134.615	16971.775	46380.000
Manganese	µg/L	0.05	-	-	-	-	-	2.38	2.46	3860	161	310	2.38	8690	1550	2465.526	2710.644	6028.000
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.002	0.0026	0.002	0.002	0.000	0.002
Molybdenum	µg/L	0.05	-	73	73	73	10,000	0.86	0.85	4.35	2.45	3.23	0.578	14	2.95	3.914	3.805	8.382
Nickel	µg/L	0.02	-	150 <sup>9</sup>	150 <sup>9</sup>	150 <sup>9</sup>	1500 <sup>9</sup>	0.208	0.225	122	12.2	12.4	0.208	296	89.9	87.759	89.705	179.400
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	4.3	4.7	7060	234	614	4.3	7060	781	1694.231	2029.811	3702.000
Potassium	µg/L	50	-	-	-	-	-	2490	2560	5650	1440	1710	1440	21500	3490	6004.615	6004.807	14048.000
Selenium	µg/L	0.04	15	1	1	1	10	1.73	1.44	3.14	1.39	1.08	0.752	20.2	3.14	5.412	5.578	10.700
Silicon	µg/L	50	-	-	-	-	-	2120	2060	89600	5590	10800	2060	99900	21700	33706.923	34209.723	85180.000
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	<0.0050	<0.0050	42.8	1.14	4.13	<0.005	42.8	0.677	4.470	11.632	5.082
Sodium	µg/L	50	-	-	-	-	-	760	802	3030	1730	1050	752	3030	1190	1408.769	658.338	2082.000
Strontium	µg/L	0.05	-	-	-	-	-	283	286	1090	336	215	215	1090	317	403.538	225.939	537.400
Sulphur	µg/L	3000	-	-	-	-	-	18400	16400	38000	54000	15000	11500	54000	18400	21946.154	11724.377	35400.000
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	<0.0020	<0.0020	0.328	0.037	0.072	<0.002	1.36	0.134	0.270	0.377	0.615
Tin	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	1.57	0.28	0.75	<0.2	4.71	0.78	1.205	1.300	2.570
Titanium	µg/L	0.5	-	100	100	-	1000	<0.50	<0.50	4240	139	386	<0.5	10400	297	1873.154	3151.907	5568.000
Uranium	µg/L	0.002	-	15	15	15	3000	3.03	3.02	17.9	4.85	2.38	1.91	17.9	6.2	7.291	5.185	15.180
Vanadium	µg/L	0.2	-	-	-	-	-	<0.20	<0.20	463	13	27.6	<0.2	608	45.8	148.954	203.967	450.800
Zinc	µg/L	0.1	110	10	10	30	1650-2400 <sup>9</sup>	0.36	0.38	719	83.5	75.2	0.36	904	153	281.195	298.898	690.800
Zirconium	µg/L	0.1	-	-	-	-	-	0.1	0.12	14.7	5.46	3.28	<0.1	20.7	5.67	7.307	6.734	17.900
Laboratory Work Order Number								B577451	B577451	B598984	B621096	B577451						

**Notes:**  
<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use  
<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)  
<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)  
<sup>4</sup> Maximum increase of 25 mg/L from background levels  
<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.59 to 8.50 and temperature range of -2.4 °C to 2.4 °C  
<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.59 to 8.50  
<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 1.4 mg/L  
<sup>8</sup> Guideline applied is for ultra-oligotrophic  
<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 215 mg/L to 1010 mg/L for total metals, and 181 mg/L to 296 mg/L for dissolved metals  
<sup>10</sup> Guideline is for Chromium VI  
 "-" No applicable standard or not analyzed  
 Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026



Table 5D: Groundwater Analytical Results, Zone 4a (Open Pit - West)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	ART - 3 (1)			ART - 3 (3)			ART - 4	BH95-129			BH95-146	
				Aquifer & Approx. Sample Depth (mbg)	Bedrock			Bedrock			Bedrock	Bedrock 157.25			Bedrock 136.4				
					Yukon CSR - AW (Freshwater) <sup>3</sup>		ART - 3 (1)	ART - 3 (1)	DUP04	ART - 3 (3)	ART - 3 (3)	ART - 3 (3)	ART - 4	-	BH95-129	BH95-129	BH95-146	BH95G-146	
							11-Aug-2015	23-Sep-2015		12-May-2015	11-Aug-2015	21-Sep-2015	12-May-2015	17-Aug-2015	4-Nov-2015	17-Mar-2016	11-May-2015	10-Aug-2015	
<b>Field</b>																			
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.26	7.83	-	8.38	7.31	6.58	8.6	7.54	7.77	6.82	6.67	7.63
Field Electric Conductivity	µS/cm		-	-	-	-	-	419	427.6	-	400.7	418.9	4439.2	289.4	262.4	366	372	740.6	774.9
Field Temperature	°C		-	-	-	-	-	0.5	0.4	-	4.1	0.7	0.1	2.2	1.2	-2.4	0.95	2.9	3.3
Field Dissolved Oxygen	mg/L		-	-	-	-	-	1.8	9.99	-	-	2.29	0.68	1.62	2.23	2.84	4.1	2.53	2.16
<b>Physical Parameters</b>								0	0	0	0	0	0	0	0	0	0	0	0
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.9	7.44	7.96	8.03	7.42	7.91	8.28	-	8.17	7.96	8.12	7.92
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	2040	4180	2760	1310	2040	1950	<500	-	<500	<500	<500	<500
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	389.00	387	389	392	392	378	415	-	383	363	767	771
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	258000.00	268000	262000	254000	262000	256000	258000	-	230000	222000	604000	612000
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	5700	9300	5500	-	10100	4600	-	-	20100	6200	-	31500
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	185	199	196	199	196	188	218	-	234	182	399	437
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	191	191	198	186	199	184	209	-	211	187	415	413
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	106000	103000	107000	104000	105000	98400	166000	-	160000	150000	130000	133000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500
Bicarbonate	µg/L	500	-	-	-	-	-	130000	126000	130000	128000	128000	120000	203000	-	195000	183000	159000	163000
Carbonate	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500
Chloride	mg/L	0.5	-	120	120	120	-	<0.50	<0.50	0.65	<0.50	<0.50	0.72	<0.50	-	2.5	<0.50	<0.50	<0.50
Fluoride	µg/L	10	-	120	120	120	3000	170	150	170	180	160	160	240	-	220	220	310	300
Sulphate	mg/L	0.5	-	100	100	-	1000	87.7	100	86.8	90.3	88.5	88	50.6	-	37.2	42.2	273	255
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	1.7	1.3	5	<1.0	1.2	1.9	1	-	2.2	3.7	<1.0	1.8
Turbidity	NTU	0.1	-	-	-	-	-	15	36.9	29.6	52.3	46.4	17.1	126	-	12.3	-	15.7	44.1
Anions Total	meq/L		-	-	-	-	-	-	-	-	4	-	-	4.4	-	4	-	8.3	-
Cations Total	meq/L		-	-	-	-	-	-	-	-	4.1	-	-	4.5	-	4.4	-	8.5	-
Ionic Balance	N/A	0.01	-	-	-	-	-	1.1	1	1.1	1	1.1	1.1	1	-	1.1	1	1	1.1

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
  - <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
  - <sup>3</sup> Environment Act, Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
  - <sup>4</sup> Maximum increase of 25 mg/L from background levels
  - <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH hrange of 5.98 to 8.60 and temperature range of -2.4 °C to 4.3 °C
  - <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.98 to 8.60
  - <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 2.5 mg/L
  - <sup>8</sup> Guideline applied is for ultra-oligotrophic
  - <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 125 mg/L to 773 mg/L for total metals, and 112 mg/L to 683 mg/L for
  - <sup>10</sup> Guideline is for Chromium VI
- “-” No applicable standard or not analyzed  
 Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026

Table 5D: Groundwater Analytical Results, Zone 4a (Open Pit - West)

Parameter	Unit	RDL	Water Use Licence QZ97-026 Part E - Effluent Quality Standards	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-21				BH95G-22				BH95G-23		WW15-01		WW15-02		
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 7.6				Bedrock 4.3				Overburden 11.3		Overburden 13.5		Bedrock 29					
				Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95-21		BH95-21	DUP 01	BH95G-21	BH95G-21	BH95-22	BHG5G-22	BH95G-22	BH95G-22	BH95G-23	BH95G-23	WW15-01	WW15-01	WW15-02	WW15-02		
					1995		12-May-2015	6-Aug-2015	30-Oct-2015	12-May-2015	7-Aug-2015	1-Nov-2015	14-Mar-2016	1995	9-Aug-2015	4-Aug-2015	5-Oct-2015	21-Sep-2015	11-Oct-2015			
<b>Field</b>																						
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	-	7.3	-	7.43	7.42	7.53	5.98	7.5	7.12	-	7.02	-	-	7.59	-
Field Electric Conductivity	µS/cm		-	-	-	-	-	-	413.7	-	380.1	406	395	358.6	317	365	-	301.7	-	-	562.1	-
Field Temperature	°C		-	-	-	-	-	-	0.7	-	4.3	-0.8	3.3	3.4	1.8	1.17	-	0.5	-	-	-0.5	-
Field Dissolved Oxygen	mg/L		-	-	-	-	-	-	1.73	-	0	0.9	7	7.7	7.7	11	-	1.14	-	-	0.85	-
<b>Physical Parameters</b>																						
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	-	8.22	8.21	8.02	8.22	8.22	7.8	8.23	7.87	-	7.33	6.94	7.11	8.22	8.1
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	-	<500	<500	-	<500	<500
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	-	<500	<500	<500	3760	<500	960	8000	1010	-	5150	17600	-	<500	3380
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	-	402	397	403	403	391	328	332	354	-	267	267	317	442	407
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	-	284000	250000	240000	284000	252000	222000	256000	216000	-	180000	248000	232000	282000	274000
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	-	-	-	2830000	6540000	-	2060000	970000	1030000	-	7320000	52900	2700	53300	1100
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	-	238	248	344	573	310	229	289	183	111	306	125	130	255	214
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	-	193	221	215	204	198	159	177	176	-	126	112	132	232	218
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	-	165000	163000	167000	165000	152000	127000	129000	141000	-	53900	32000	44700	174000	160000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500	<500
Bicarbonate	µg/L	500	-	-	-	-	-	-	201000	199000	204000	202000	186000	155000	158000	172000	-	65700	39000	54500	212000	195000
Carbonate	µg/L	500	-	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500	<500
Hydroxide	µg/L	500	-	-	-	-	-	-	<500	<500	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500	<500
Chloride	mg/L	0.5	-	120	120	120	-	-	<0.50	0.51	<0.50	0.99	<0.50	<0.50	1.2	<0.50	-	<0.50	<0.50	1.4	0.71	0.75
Fluoride	µg/L	10	-	120	120	120	-	-	100	100	91	83	70	52	48	47	-	60	81	66	120	86
Sulphate	mg/L	0.5	-	100	100	-	-	-	46.5	45.9	46	47.1	52.8	40.8	41.9	45.1	-	72.8	98	102	59.4	51.8
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	-	<1.0	<1.0	<1.0	2.1	<1.0	<1.0	3.5	17	-	1.6	-	1.6	2.1	<1.0
Turbidity	NTU	0.1	-	-	-	-	-	-	640	728	2120	3570	2850	989	1630	-	-	2960	79.6	4	26.9	3.22
Anions Total	meq/L		-	-	-	-	-	-	4.3	4.2	4.3	4.3	4.2	3.4	3.5	-	-	2.6	2.7	-	-	4.3
Cations Total	meq/L		-	-	-	-	-	-	4.5	4.4	4.2	4.5	4.1	3.3	3.6	-	-	3	2.9	-	-	4.5
Ionic Balance	N/A	0.01	-	-	-	-	-	-	1.1	1	0.97	1	0.98	0.96	1	0.95	-	1.1	1.1	1	1	1

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
  - <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
  - <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
  - <sup>4</sup> Maximum increase of 25 mg/L from background levels
  - <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.98 to 8.60 and temperature range of -2.4 °C to 4.3 °C
  - <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.98 to 8.60
  - <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 2.5 mg/L
  - <sup>8</sup> Guideline applied is for ultra-oligotrophic
  - <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 125 mg/L to 773 mg/L for total metals, and 112 mg/L to 683 mg/L for Chromium VI
  - <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed  
 Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026



Table 5D: Groundwater Analytical Results, Zone 4a (Open Pit - West)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	ART - 3 (1)			ART - 3 (3)			ART - 4	BH95-129			BH95-146	
				Aquifer & Approx. Sample Depth (mbg)	Bedrock			Bedrock			Bedrock	Bedrock 157.25			Bedrock 136.4				
					Yukon CSR - AW (Freshwater) <sup>3</sup>		ART - 3 (1)	ART - 3 (1)	DUP04	ART - 3 (3)	ART - 3 (3)	ART - 3 (3)	ART - 4	-	BH95-129	BH95-129	BH95-146	BH95G-146	
							11-Aug-2015	23-Sep-2015		12-May-2015	11-Aug-2015	21-Sep-2015	12-May-2015	17-Aug-2015	4-Nov-2015	17-Mar-2016	11-May-2015	10-Aug-2015	
<b>Nutrients</b>							0	0	0	0	0	0	0	0	0	0	0	0	
Ammonia	µg/L	5	2500	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	1310-18,500 <sup>6</sup>	39	33	64	18	45	38	900	-	32	41	43	130
Total Kjeldahl Nitrogen (TKN)	µg/L	20		-	-	-	-	96	176	39	72	96	65	850	-	105	72	60	151
Nitrate (as NO <sub>3</sub> -N)	µg/L	2		13,000	13,000	13,000	400,000	<2.0	<2.0	2.7	5.3	<2.0	5.2	<2.0	-	5.5	<2.0	5.3	<2.0
Nitrite (as NO <sub>2</sub> -N)	µg/L	2		60	60	60	200-400 <sup>7</sup>	<2.0	7.3	<2.0	<2.0	7.7	<2.0	<2.0	-	2.1	<2.0	<2.0	<2.0
Nitrate and Nitrite (as N)	µg/L	2		-	-	-	400,000	<2.0	8.9	2.7	5.3	4.7	5.2	<2.0	-	7.6	<2.0	8.9	<2.0
Nitrogen (Total)	µg/L	20		-	-	-	-	96	185	41	77	101	70	850	-	113	72	65	151
Phosphorus, total	µg/L	2		-	-	-	-	23.5	23.5	28	23.4	18.9	29	93.6	-	32.1	15.6	3.4	97.1
<b>Demand Parameters</b>								0	0	0	0	0	0	0	0	0	0	0	0
Biochemical Oxygen Demand (BOD)	µg/L	6000		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-
<b>Carbon</b>								0	0	0	0	0	0	0	0	0	0	0	0
Dissolved Organic Carbon (DOC)	µg/L	500		-	-	-	-	-	-	-	-	-	-	-	-	-	3670	-	-
Total Organic Carbon (TOC)	µg/L	500		-	-	-	-	2700	580	890	<500	580	610	1500	-	840	-	1060	1200
<b>Dissolved Metals</b>								0	0	0	0	0	0	0	0	0	0	0	0
Aluminum	µg/L	0.5		5, 100 <sup>8</sup>	5, 100 <sup>8</sup>	5, 100 <sup>8</sup>	-	7.41	1.86	17.9	1.35	1.93	4.08	0.62	-	5.27	2.5	0.98	3.15
Antimony	µg/L	0.02		2000	2000	-	200	31.8	39	33.2	42.4	33.2	40.1	1.27	-	0.227	0.233	0.522	1.12
Arsenic	µg/L	0.02	50	5	5	5	50	125	156	132	181	140	153	11.8	-	6.11	6.78	0.605	4.52
Barium	µg/L	0.02		500	500	-	10,000	18.4	17.6	19.6	16.7	19.2	17.3	31.9	-	66.6	44.7	15	12.6
Beryllium	µg/L	0.01		5.3	5.3	-	53	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010
Bismuth	µg/L	0.005		-	-	-	-	<0.0050	0.0184	<0.0050	<0.0050	0.0053	<0.0050	<0.0050	-	0.022	<0.0050	<0.0050	0.006
Boron	µg/L	10		5000	5000	1500	50,000	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	0.317	0.424	0.362	0.316	0.877	0.273	<0.0050	-	0.022	0.051	0.0091	<0.0050
Calcium	µg/L	50		-	-	-	-	62800	63100	65100	60700	65600	60300	58400	-	61200	56400	128000	129000
Chromium	µg/L	0.1		8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	<0.10
Cobalt	µg/L	0.005		-	-	-	9	1.55	1.67	1.65	1.3	1.86	1.45	2.54	-	0.153	0.105	0.0562	0.0607
Copper	µg/L	0.05	15	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	50-90 <sup>9</sup>	0.539	<0.050	0.711	<0.050	<0.050	<0.050	0.123	-	0.253	0.202	0.275	0.074
Iron	µg/L	1		300	300	300	-	5430	6680	5570	5660	6750	5880	1650	-	310	475	1110	982
Lead	µg/L	0.005	26	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	60-160 <sup>9</sup>	0.674	0.626	0.894	0.734	2.11	0.463	<0.0050	-	0.028	0.044	0.0133	<0.0050
Lithium	µg/L	0.5		-	-	-	-	4.38	4.76	4.54	4.59	4.46	4.03	12.3	-	9.48	6.89	21.3	23.4
Magnesium	µg/L	50		-	-	-	-	8390	8180	8600	8230	8440	8040	15400	-	14200	11100	23000	22000
Manganese	µg/L	0.05		-	-	-	-	424	507	459	428	531	441	32.8	-	113	117	24.2	50.8
Mercury	µg/L	0.002		0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020
Molybdenum	µg/L	0.05		73	73	73	10,000	0.637	0.647	0.666	0.814	0.596	0.744	11.2	-	1.35	1.12	0.284	0.291
Nickel	µg/L	0.02		104-150 <sup>9</sup>	104-150 <sup>9</sup>	104-150 <sup>9</sup>	650-1500 <sup>9</sup>	2.3	2.42	2.44	1.89	2.67	2.08	16.9	-	0.408	0.285	0.661	0.246
Phosphorus	µg/L	2		-	-	4 <sup>8</sup>	-	4.5	<2.0	8.4	2.4	2.4	3.1	3.6	-	4.1	8.3	5.4	<2.0
Potassium	µg/L	50		-	-	-	-	1850	1760	1940	1940	1760	1940	2220	-	2440	2180	2650	2360
Selenium	µg/L	0.04	15	1	1	1	10	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	-	<0.040	<0.040	<0.040	<0.040
Silicon	µg/L	50		-	-	-	-	5550	5720	5510	5630	5680	5430	10700	-	6490	4590	14600	14000
Silver	µg/L	0.005		0.1	0.1	0.25	15 <sup>9</sup>	0.006	<0.0050	0.006	<0.0050	<0.0050	<0.0050	<0.0050	-	0.014	<0.0050	<0.0050	<0.0050
Sodium	µg/L	50		-	-	-	-	1720	874	1240	877	893	1010	2080	-	3070	1570	3310	3390
Strontium	µg/L	0.05		-	-	-	-	211	204	205	217	209	205	259	-	213	195	426	390
Sulphur	µg/L	3000		-	-	-	-	29300	29800	29900	30400	29800	29400	17700	-	14700	16500	91200	86900
Thallium	µg/L	0.002		0.8	0.8	0.8	3	0.417	0.256	0.454	0.174	0.478	0.303	0.0357	-	0.003	<0.0020	<0.0020	0.0269
Tin	µg/L	0.2		-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20
Titanium	µg/L	0.5		100	100	-	1000	<0.50	<0.50	0.75	<0.50	<0.50	0.56	<0.50	-	<0.50	<0.50	<0.50	<0.50
Uranium	µg/L	0.002		15	15	15	3000	5.3	5.23	5.73	6.13	5.55	4.41	12.2	-	11.2	9.93	1.82	2.31
Vanadium	µg/L	0.2		-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	1580	2270	1680	1620	2350	1710	0.21	-	6.63	5.28	10.3	3.83
Zirconium	µg/L	0.1		-	-	-	-	0.28	0.13	0.3	0.23	0.14	0.27	0.15	-	0.16	0.24	<0.10	<0.10

**Notes:**

<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use

<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)

<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)

<sup>4</sup> Maximum increase of 25 mg/L from background levels

<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.98 to 8.60 and temperature range of -2.4 °C to 4.3 °C

<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.98 to 8.60

<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 2.5 mg/L

<sup>8</sup> Guideline applied is for ultra-oligotrophic

<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 125 mg/L to 773 mg/L for total metals, and 112 mg/L to 683 mg/L for dissolved metals

<sup>10</sup> Guideline is for Chromium VI

"-" No applicable standard or not analyzed

Shaded - Greater than Federal Interim Guideline

BOLD - Greater than CCME AW Guideline

Underlined - Greater than Yukon CSR Guideline

RED - Greater than current Site Water Licence QZ97-026

Table 5D: Groundwater Analytical Results, Zone 4a (Open Pit - West)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-21				BH95G-22				BH95G-23		WW15-01		WW15-02			
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 7.6				Bedrock 4.3				Overburden 11.3		Overburden 13.5		Bedrock 29						
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95-21	BH95-21	DUP 01	BH95G-21	BH95G-21	BH95-22	BHG5G-22	BH95G-22	BH95G-22	BH95G-23	BH95G-23	WW15-01	WW15-01	WW15-02	WW15-02		
							1995	12-May-2015	6-Aug-2015	30-Oct-2015	12-May-2015	7-Aug-2015	1-Nov-2015	14-Mar-2016	1995	9-Aug-2015	4-Aug-2015	5-Oct-2015	21-Sep-2015	11-Oct-2015			
<b>Nutrients</b>																							
Ammonia	µg/L	5	2500	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	1310-18,500 <sup>6</sup>	-	0	0	0	0	0	0	0	0	0	0	0	0	0		
Total Kjeldahl Nitrogen (TKN)	µg/L	20	-	-	-	-	-	-	33	350	295	256	1590	414	270	99	-	2470	-	74	87	76	
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	-	13,000	13,000	13,000	400,000	-	4.8	5.2	2.4	3.9	105	168	198	156	-	<2.0	-	<2.0	<2.0	62	
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	-	60	60	60	200-400 <sup>7</sup>	-	<2.0	<2.0	3.8	7.1	<2.0	<2.0	7.1	-	<2.0	-	<2.0	<2.0	<2.0	62	
Nitrate and Nitrite (as N)	µg/L	2	-	-	-	-	400,000	-	4.8	10	6.2	3.9	105	175	198	163	-	<2.0	-	<2.0	<2.0	62	
Nitrogen (Total)	µg/L	20	-	-	-	-	-	-	38	350	301	260	1700	589	468	261	-	2470	-	74	87	138	
Phosphorus, total	µg/L	2	-	-	-	-	-	-	914	732	<2.0	7330	6610	2.5	3700	305	-	21.4	-	9.8	2	2.7	
<b>Demand Parameters</b>																							
Biochemical Oxygen Demand (BOD)	µg/L	6000	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
<b>Carbon</b>																							
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	-	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Organic Carbon (TOC)	µg/L	500	-	-	-	-	-	-	770	1070	2100	2200	6180	3200	2790	-	-	3700	1200	1700	810	2220	
<b>Dissolved Metals</b>																							
Aluminum	µg/L	0.5	-	5,100 <sup>8</sup>	5,100 <sup>8</sup>	5,100 <sup>8</sup>	-	10	23.6	2.02	7.1	5.69	38	1.58	30	3.32	15	5.83	5.02	1.44	1.45	4.66	
Antimony	µg/L	0.02	-	2000	2000	-	200	-	0.088	0.113	0.069	0.132	0.24	0.088	0.097	0.07	-	3.03	1.1	0.818	0.348	0.094	
Arsenic	µg/L	0.02	50	5	5	5	50	0.7	1.55	1.53	1.34	1.56	0.195	0.024	0.132	0.055	61	74.7	7.46	53	2.47	1.77	
Barium	µg/L	0.02	-	500	500	-	10,000	37	46	42.7	46.5	45.8	104	105	106	101	36	49	47.2	40	52.8	54.7	
Beryllium	µg/L	0.01	-	5.3	5.3	-	53	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	
Bismuth	µg/L	0.005	-	-	-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Boron	µg/L	10	-	5000	5000	1500	50,000	-	<10	<10	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	<0.01	0.0063	<0.0050	0.0078	0.015	0.194	0.129	0.102	0.104	6	1.69	31.6	26.1	0.005	0.015	
Calcium	µg/L	50	-	-	-	-	-	-	68500	66200	61200	67700	62400	49400	56500	56000	-	42800	35100	42400	69100	67100	
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	0.3	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	1.3	<0.10	<0.10	<0.10	<0.10	<0.10	
Cobalt	µg/L	0.005	-	-	-	-	9	<0.4	0.0781	0.0674	0.0457	0.039	0.33	0.006	0.028	0.017	4.2	4.7	4.66	4.4	0.127	0.157	
Copper	µg/L	0.05	15	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	50-90 <sup>9</sup>	0.2	0.15	0.069	0.052	0.242	1.39	6.44	1.05	0.718	0.242	<0.2	0.119	1.33	0.268	<0.050	0.136
Iron	µg/L	1	-	300	300	300	-	8	266	295	523	592	85.5	2.4	49.3	10.2	4800	6480	10400	8180	159	468	
Lead	µg/L	0.005	26	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	60-160 <sup>9</sup>	<0.1	0.0854	0.0144	0.0233	0.047	0.274	<0.0050	0.195	0.057	0.3	0.361	0.782	122	0.024	0.071	
Lithium	µg/L	0.5	-	-	-	-	-	-	6.04	6.01	5.15	4.9	2.44	<0.50	0.99	1.68	-	1.85	2.38	3.59	7.97	6.84	
Magnesium	µg/L	50	-	-	-	-	-	-	12200	12100	12400	12200	10200	8710	8830	8810	-	4760	6010	6400	14400	12400	
Manganese	µg/L	0.05	-	-	-	-	-	-	46	58.6	58.2	60.1	57.9	30.7	0.624	0.498	3.02	570	622	735	619	81.8	86.7
Mercury	µg/L	0.002	-	0.016	0.016	0.026	1	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.01	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Molybdenum	µg/L	0.05	-	73	73	73	10,000	<0.4	0.392	0.353	0.336	0.331	0.28	0.192	0.21	0.194	<0.4	0.185	0.898	0.085	0.513	0.446	
Nickel	µg/L	0.02	-	104-150 <sup>9</sup>	104-150 <sup>9</sup>	104-150 <sup>9</sup>	650-1500 <sup>9</sup>	<1	0.301	0.319	0.105	0.237	0.721	0.201	0.248	0.211	9	6.86	27.2	12.6	0.41	0.506	
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	-	4.8	2.3	<2.0	2.2	5.4	5.9	<2.0	3.8	-	5.2	<2.0	4	2.5	3.3	
Potassium	µg/L	50	-	-	-	-	-	-	1580	1520	1500	1490	1600	1350	1430	1430	-	2130	2140	1950	1980	1660	
Selenium	µg/L	0.04	15	1	1	1	10	<0.05	<0.040	<0.040	<0.040	<0.040	0.461	0.706	0.804	0.698	<0.05	<0.040	0.28	0.284	<0.040	0.167	
Silicon	µg/L	50	-	-	-	-	-	-	3750	3960	4790	3440	3260	2830	2820	2820	-	6500	6680	7820	4140	3840	
Silver	µg/L	0.005	-	0.1	0.1	0.25	15 <sup>9</sup>	<0.01	<0.0050	<0.0050	<0.0050	<0.0050	0.0057	<0.0050	<0.0050	<0.0050	<0.01	<0.0050	<0.0050	0.014	<0.0050	<0.0050	
Sodium	µg/L	50	-	-	-	-	-	-	1260	944	1010	1040	920	817	1160	963	-	716	3100	935	1950	1050	
Strontium	µg/L	0.05	-	-	-	-	-	-	205	204	199	201	184	148	156	176	-	103	110	142	240	221	
Sulphur	µg/L	3000	-	-	-	-	-	-	15300	16300	15100	16100	17900	13200	14000	15700	-	25500	29700	35400	20000	16900	
Thallium	µg/L	0.002	-	0.8	0.8	0.8	3	-	<0.0020	0.0059	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.002	-	0.0387	0.114	0.355	0.015	0.002	
Tin	µg/L	0.2	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	
Titanium	µg/L	0.5	-	100	100	-	1000	-	<0.50	<0.50	<0.50	<0.50	1.62	<0.50	1.25	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	
Uranium	µg/L	0.002	-	15	15	15	3000	-	4.54	4.67	4.28	5.09	2.61	1.9	2.41	2.15	-	0.113	0.063	0.611	7.08	5.15	
Vanadium	µg/L	0.2	-	-	-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	3	19.4	0.43	1.1	5.53	6.78	5.96	7.35	7.07	2700	2030	3610	5080	1.48	5.76	
Zirconium	µg/L	0.1	-	-	-	-	-	-	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	-	<0.10	<0.10	<0.10	0.24	0.34	

**Notes:**  
<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use  
<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)  
<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)  
<sup>4</sup> Maximum increase of 25 mg/L from background levels  
<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.98 to 8.60 and temperature range of -2.4 °C to 4.3 °C  
<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.98 to 8.60  
<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 2.5 mg/L  
<sup>8</sup> Guideline applied is for ultra-oligotrophic  
<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 125 mg/L to 773 mg/L for total metals, and 112 mg/L to 683 mg/L for dissolved metals  
<sup>10</sup> Guideline is for Chromium VI  
 "-" No applicable standard or not analyzed  
**Shaded** - Greater than Federal Interim Guideline  
**BOLD** - Greater than CCME AW Guideline  
**Underlined** - Greater than Yukon CSR Guideline  
**RED** - Greater than current Site Water Licence QZ97-026





Table 5D: Groundwater Analytical Results, Zone 4a (Open Pit - West)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	ART - 3 (1)			ART - 3 (3)			ART - 4	BH95-129			BH95-146	
				Aquifer & Approx. Sample Depth (mbg)	Bedrock			Bedrock			Bedrock	Bedrock 157.25			Bedrock 136.4				
					Yukon CSR - AW (Freshwater) <sup>3</sup>		ART - 3 (1)	ART - 3 (1)	DUP04	ART - 3 (3)	ART - 3 (3)	ART - 3 (3)	ART - 4	-	BH95-129	BH95-129	BH95-146	BH95G-146	
							11-Aug-2015	23-Sep-2015		12-May-2015	11-Aug-2015	21-Sep-2015	12-May-2015	17-Aug-2015	4-Nov-2015	17-Mar-2016	11-May-2015	10-Aug-2015	
<b>Total Metals</b>								0	0	0	0	0	0	0	0	0	0	0	
Aluminum	µg/L	0.5		5,100 <sup>6</sup>	5,100 <sup>6</sup>	5,100 <sup>6</sup>	-	5.99	5.71	8.07	5.17	8.31	6.38	275	-	258	18.6	540	95.8
Antimony	µg/L	0.02		2000	2000	-	200	33.1	43.6	33.1	42.5	33.1	40.3	17.5	-	0.622	0.404	1.21	5.69
Arsenic	µg/L	0.02	50	5	5	5	50	135	172	147	168	148	163	83.1	-	10	7.36	10.8	25
Barium	µg/L	0.02		500	500	-	10,000	18.9	18.3	18.3	15.8	19.6	17.9	43.2	-	81.9	46.3	30.6	18
Beryllium	µg/L	0.01		5.3	5.3	-	53	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	0.066	-	<0.010	<0.010	0.032	0.014
Bismuth	µg/L	0.005		-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	0.058	-	0.041	0.028	0.056	<0.0050
Boron	µg/L	10		5000	5000	1500	50,000	<10	<10	<10	<10	<10	<10	<50	-	<50	<50	<10	<10
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	0.335	0.482	0.337	0.298	0.953	0.335	0.0929	-	0.129	0.245	0.359	0.0837
Calcium	µg/L	50		-	-	-	-	60500	65100	63100	66100	63500	61600	61600	-	68400	56400	121000	131000
Chromium	µg/L	0.1		8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	512	-	1.03	<0.50	2.06	0.36
Cobalt	µg/L	0.005		-	-	-	9	1.51	1.74	1.66	1.31	1.86	1.46	37	-	0.442	0.173	0.465	0.112
Copper	µg/L	0.05	15	2.9-4.0 <sup>9</sup>	2.9-4.0 <sup>9</sup>	2.9-4.0 <sup>9</sup>	60-90 <sup>9</sup>	0.538	0.155	0.721	<0.050	0.263	0.2	849	-	11	1.49	7.03	1.18
Iron	µg/L	1		300	300	300	-	5380	7050	5750	5590	6570	6040	135000	-	1440	661	2230	1980
Lead	µg/L	0.005	26	4.2-7.0 <sup>9</sup>	4.2-7.0 <sup>9</sup>	4.2-7.0 <sup>9</sup>	60-160 <sup>9</sup>	0.746	0.788	0.769	1.12	2.34	0.861	20	-	5.51	6.6	14.3	6.2
Lithium	µg/L	0.5		-	-	-	-	4.7	5.04	5.09	4.43	4.84	4.44	10.4	-	12	7.09	20.9	22
Magnesium	µg/L	50		-	-	-	-	8290	8830	9250	8240	9010	8290	15500	-	15400	9950	23400	26400
Manganese	µg/L	0.05		-	-	-	-	432	526	486	435	543	463	279	-	137	107	37.1	46.8
Mercury	µg/L	0.002		0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-	<0.0020	<0.0020	0.0031	<0.0020
Molybdenum	µg/L	0.05		73	73	73	10,000	0.682	0.662	0.676	0.724	0.571	0.749	253	-	1.42	1.08	0.373	0.322
Nickel	µg/L	0.02		113-150 <sup>9</sup>	113-150 <sup>9</sup>	113-150 <sup>9</sup>	1100-1500 <sup>9</sup>	2.25	2.6	2.52	1.92	2.71	2.15	350	-	1.43	0.41	4.71	0.438
Phosphorus	µg/L	2		-	-	4 <sup>8</sup>	-	<2.0	<2.0	5.7	5.7	3.2	4.1	95	-	49	<10	19.2	5.5
Potassium	µg/L	50		-	-	-	-	1860	2060	2070	1910	2040	1950	2370	-	2680	2080	2930	2920
Selenium	µg/L	0.04	15	1	1	1	10	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	0.047	-	<0.040	<0.040	0.075	<0.040
Silicon	µg/L	50		-	-	-	-	5470	6220	5550	5290	6110	5400	20700	-	7890	4800	16300	15900
Silver	µg/L	0.005		0.1	0.1	0.25	15 <sup>9</sup>	0.005	<0.0050	0.005	0.0159	<0.0050	0.007	0.654	-	0.075	0.02	0.0439	0.0087
Sodium	µg/L	50		-	-	-	-	1750	1340	1920	866	976	998	2130	-	3430	1450	3450	4110
Strontium	µg/L	0.05		-	-	-	-	214	222	228	208	216	212	274	-	226	177	410	448
Sulphur	µg/L	3000		-	-	-	-	30200	34700	32600	28500	34700	30300	43000	-	15000	<15,000	88500	104000
Thallium	µg/L	0.002		0.8	0.8	0.8	3	0.444	0.267	0.447	0.247	0.517	0.311	0.0587	-	0.009	0.003	0.0362	0.0254
Tin	µg/L	0.2		-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	42	-	1.52	<0.20	2.34	<0.20
Titanium	µg/L	0.5		100	100	-	1000	<0.50	<0.50	<0.50	<0.50	<0.50	0.62	72.7	-	12.1	<5.0	40.8	5.95
Uranium	µg/L	0.002		15	15	15	3000	5.38	5.52	5.35	6.14	5.94	4.5	205	-	12.6	9.94	1.96	2.4
Vanadium	µg/L	0.2		-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	0.31	13	-	<0.50	<0.50	0.99	<0.20
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	1730	2300	1860	1420	2390	1810	85.2	-	32.1	27.1	49.1	70.2
Zirconium	µg/L	0.1		-	-	-	-	0.25	0.15	0.3	0.33	0.18	0.2	26.1	-	0.43	0.55	8.35	0.16
Laboratory Work Order Number								B584163	B569978	B584163	B540423	B569978	B584163	B540423		B599724	B621096	B540423	B569978

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.98 to 8.60 and temperature range of -2.4 °C to 4.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.98 to 8.60
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 2.5 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 125 mg/L to 773 mg/L for total metals, and 112 mg/L to 683 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- - No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026

Table 5D: Groundwater Analytical Results, Zone 4a (Open Pit - West)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-21				BH95G-22				BH95G-23		WW15-01		WW15-02		
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 7.6				Bedrock 4.3				Overburden 11.3		Overburden 13.5		Bedrock 29					
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95-21	BH95-21	DUP 01	BH95G-21	BH95G-21	BH95-22	BH95G-22	BH95G-22	BH95G-22	BH95G-23	BH95G-23	WW15-01	WW15-01	WW15-02	WW15-02	
							1995	12-May-2015	6-Aug-2015	30-Oct-2015	12-May-2015	7-Aug-2015	1-Nov-2015	14-Mar-2016	1995	9-Aug-2015	4-Aug-2015	5-Oct-2015	21-Sep-2015	11-Oct-2015		
<b>Total Metals</b>							0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Aluminum	µg/L	0.5		5,100 <sup>6</sup>	5,100 <sup>6</sup>	5,100 <sup>6</sup>	-	-	11000	11200	29700	64600	39500	18600	33300	4630	-	58100	256	11.2	1080	5.75
Antimony	µg/L	0.02		2000	2000	-	200	-	0.952	1.01	2.16	1.22	4.23	3.26	2.9	1.04	-	135	2.03	0.931	0.346	0.093
Arsenic	µg/L	0.02	50	5	5	5	50	-	28.9	27.5	81.3	82.3	160	71.7	92.7	29.9	-	1360	37.6	51.6	4.15	1.73
Barium	µg/L	0.02		500	500	-	10,000	-	1620	1690	11400	18100	1090	509	844	246	-	3390	52.8	38.4	83.9	52.4
Beryllium	µg/L	0.01		5.3	5.3	-	53	-	0.858	0.922	1.67	3.49	2.08	0.959	1.54	0.242	-	2.12	0.013	<0.010	0.042	<0.010
Bismuth	µg/L	0.005		-	-	-	-	-	0.873	0.882	2.57	6.9	4.42	1.91	3.49	0.545	-	39.3	0.0235	<0.0050	0.103	<0.0050
Boron	µg/L	10		5000	5000	1500	50,000	-	<50	<50	<50	<50	<50	<50	<50	<50	-	<50	<10	<10	<10	<10
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	-	0.612	0.602	1.65	4.96	21.3	9.94	14.2	2.36	-	857	58.1	24.4	0.115	0.025
Calcium	µg/L	50		-	-	-	-	-	66900	71700	90100	147000	75700	61900	71500	55700	-	66100	41300	41700	75800	64900
Chromium	µg/L	0.1		8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	-	14.2	14.5	52	108	78.2	38.5	69	9.16	-	167	0.43	0.11	2.37	0.15
Cobalt	µg/L	0.005		-	-	-	9	-	8.26	7.7	27.9	64.4	69.1	33.4	76.5	11	-	93.7	4.74	4.23	1.33	0.154
Copper	µg/L	0.05	15	2.9-4.0 <sup>9</sup>	2.9-4.0 <sup>9</sup>	2.9-4.0 <sup>9</sup>	60-90 <sup>9</sup>	-	83.4	81.5	333	770	887	360	533	107	-	4450	4.02	0.705	9.63	0.228
Iron	µg/L	1		300	300	300	-	-	34900	36800	133000	228000	206000	62000	118000	25500	-	276000	22800	7950	3250	470
Lead	µg/L	0.005	26	4.2-7.0 <sup>9</sup>	4.2-7.0 <sup>9</sup>	4.2-7.0 <sup>9</sup>	60-160 <sup>9</sup>	-	44.6	47.3	132	321	532	191	406	67.6	-	17700	126	120	14.3	0.097
Lithium	µg/L	0.5		-	-	-	-	-	12.5	11.9	27.2	66.4	38.6	16.6	32.7	5.66	-	45.3	3.02	3.32	11.2	7.08
Magnesium	µg/L	50		-	-	-	-	-	17100	16600	28800	50000	29300	18200	26800	10600	-	34300	5420	6350	15900	12600
Manganese	µg/L	0.05		-	-	-	-	-	339	328	918	2340	6300	2790	4070	824	-	2960	717	582	130	84.1
Mercury	µg/L	0.002		0.016	0.016	0.026	1	-	<0.0020	<0.0020	<0.0020	<0.0020	0.0065	0.0039	0.007	0.0057	-	<0.0020	<0.0020	0.0025	<0.0020	<0.0020
Molybdenum	µg/L	0.05		73	73	73	10,000	-	1.61	1.76	2.88	0.497	6.73	2.56	1.47	1.13	-	6.69	1.39	0.095	0.656	0.446
Nickel	µg/L	0.02		113-150 <sup>9</sup>	113-150 <sup>9</sup>	113-150 <sup>9</sup>	1100-1500 <sup>9</sup>	-	17	16.8	59.9	125	127	57.8	121	18.6	-	221	27.3	12.3	2.99	0.474
Phosphorus	µg/L	2		-	-	4 <sup>8</sup>	-	-	509	550	2470	10900	2220	723	3670	252	-	5240	11.5	4.9	55	2.8
Potassium	µg/L	50		-	-	-	-	-	4560	4480	8350	16400	11300	6140	8880	2480	-	11800	2110	1960	2670	1620
Selenium	µg/L	0.04	15	1	1	1	10	-	1.06	1.1	2.43	1.17	2.81	1.29	1.22	0.81	-	22.5	0.308	0.322	0.282	0.141
Silicon	µg/L	50		-	-	-	-	-	26300	25600	44900	74700	69200	31700	46700	10200	-	60700	12000	7240	6260	3750
Silver	µg/L	0.005		0.1	0.1	0.25	15 <sup>9</sup>	-	0.411	0.529	1.75	4.99	16.8	7.33	6.09	1.65	-	150	0.0452	0.012	0.066	<0.0050
Sodium	µg/L	50		-	-	-	-	-	1360	1320	1710	1720	1310	1090	1200	990	-	1020	2800	971	2560	1030
Strontium	µg/L	0.05		-	-	-	-	-	281	265	514	1040	281	186	254	175	-	243	114	135	273	211
Sulphur	µg/L	3000		-	-	-	-	-	17000	15000	19000	24000	15000	<15,000	<15,000	<15,000	-	26000	29600	32100	21000	17000
Thallium	µg/L	0.002		0.8	0.8	0.8	3	-	0.149	0.156	0.398	0.991	0.769	0.365	0.811	0.087	-	13.3	0.251	0.386	0.02	0.002
Tin	µg/L	0.2		-	-	-	-	-	0.91	0.93	1.1	0.76	6.09	2.42	1.89	1.28	-	5.7	0.25	<0.20	0.33	<0.20
Titanium	µg/L	0.5		100	100	-	1000	-	217	230	556	946	1170	635	1380	182	-	3380	13.8	<0.50	45.7	0.54
Uranium	µg/L	0.002		15	15	15	3000	-	9.45	11.8	19.2	46.4	12.9	6.74	10	3.56	-	39.1	0.194	0.572	7.28	5.07
Vanadium	µg/L	0.2		-	-	-	-	-	22	20.8	75	142	124	54.3	122	14.2	-	191	0.26	<0.20	3.87	<0.20
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	-	220	215	814	1690	2530	1070	1970	327	-	25100	3610	4970	39.6	5.96
Zirconium	µg/L	0.1		-	-	-	-	-	10.1	9.05	13.2	43.6	11.1	2.66	8.26	1.89	-	12.9	0.5	<0.10	12.4	0.32
Laboratory Work Order Number									B540423	B540423	B569283	B598984	B540423	B569283	B598984	B621096		B569283	B567068	B588975	B584163	B590273

**Notes:**  
<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use  
<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)  
<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)  
<sup>4</sup> Maximum increase of 25 mg/L from background levels  
<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.98 to 8.60 and temperature range of -2.4 °C to 4.3 °C  
<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.98 to 8.60  
<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 2.5 mg/L  
<sup>8</sup> Guideline applied is for ultra-oligotrophic  
<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 125 mg/L to 773 mg/L for total metals, and 112 mg/L to 683 mg/L for dissolved metals  
<sup>10</sup> Guideline is for Chromium VI  
 "-" No applicable standard or not analyzed  
 Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026





Table 5E: Groundwater Analytical Results, Zone 4b (Open Pit - A Open Pit - West East)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-25S				BH95G-25D		BH95G-29		BH95-131				MW15-11S	
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 7.9		Overburden 10				Bedrock 19.3		Overburden 17.1		Bedrock 125.75				Overburden 5.6		
				Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95G-24		BH95-25	BH95G-25S	BH95G-25S	BH95G-25D	BH95G-25D	BH95G-29	BH95G-29	BH95G-131	BH95-131	BH95-131	DUP02	MW15-11S	MW15-11S		
Part E - Effluent Quality Standards	Fine	Coarse	9-Aug-2015	10-May-2015	6-Aug-2015	1-Nov-2015	6-Aug-2015	1-Nov-2015	1995	9-Aug-2015	19-Aug-2015	31-Oct-2015	14-Mar-2016	7-Nov-2015	19-Mar-2016						
<b>Field</b>																					
Field pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.24	7.50	7.13	7.19	7.22	7.13	-	7.56	7.05	7.09	7.26	-	7.67	7.79
Field Electric Conductivity	µS/cm		-	-	-	-	-	779.9	926	931	937	985	984	-	446.2	109.8	1163	1166	-	621	732
Field Temperature	°C		-	-	-	-	-	0.6	1	3.3	1.2	2.5	1.1	-	-0.1	1.8	-0.8	2.06	-	4.3	0.59
Field Dissolved Oxygen	mg/L		-	-	-	-	-	0.82	11.3	0	1.8	0	0.9	-	0.81	0.67	5.8	4.5	-	1.2	3.2
Field Redox	mV		-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	66	-	-	448
<b>Physical Parameters</b>																					
pH	pH Units		6.5-9	6.5-9	6.5-9	6.5-9	-	7.81	8.11	7.88	8.15	7.66	8.16	7.8	8.03	7.77	8.07	8.04	8.03	7.98	8.03
Acidity (pH 4.5)	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500	<500	<500	<500
Acidity (pH 8.3)	µg/L	500	-	-	-	-	-	4680	1330	4290	18,500	9700	14,600	-	<500	16700	18000	5360	4550	1010	890
Electrical Conductivity (EC)	µS/cm	1	-	-	-	-	-	768	908	961	962	1020	1050	516	435	1160	1120	1100	1110	680	701
Total Dissolved Solids (TDS)	µg/L	1000	-	-	-	-	-	502,000	656,000	668,000	688,000	734,000	772,000	224,000	258,000	824000	832000	728000	790000	462,000	434,000
Total Suspended Solids (TSS)	µg/L	1000	15,000	-	-	See note <sup>4</sup>	-	983,000	-	3,320,000	539,000	1,560,000	459,000	-	9,360,000	161000	154000	36300	36000	88,000	464,000
Hardness as CaCO <sub>3</sub>	mg/L	0.5	-	-	-	-	-	484	610	639	565	616	677	-	775	693	773	654	643	218	364
Dissolved Hardness	mg/L	0.5	-	-	-	-	-	387	522	517	558	556	593	204	217	683	653	627	644	226	368
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	293,000	302,000	332,000	329,000	349,000	350,000	168,000	181,000	430000	355000	431000	441000	188,000	268,000
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500	<500	<500	<500
Bicarbonate	µg/L	500	-	-	-	-	-	358,000	368,000	405,000	401,000	425,000	427,000	-	221,000	524000	433000	525000	538000	230,000	327,000
Carbonate	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500	<500	<500	<500
Hydroxide	µg/L	500	-	-	-	-	-	<500	<500	<500	<500	<500	<500	-	<500	<500	<500	<500	<500	<500	<500
Chloride	mg/L	0.5	-	120	120	120	-	0.63	0.51	0.63	1.2	1.0	1.2	-	0.88	1	0.69	0.76	0.87	24	0.93
Fluoride	µg/L	10	-	120	120	120	3000	67	120	120	110	98	83	-	110	95	85	75	75	190	160
Sulphate	mg/L	0.5	-	100	100	-	1000	135	197	203	189	220	222	38.1	44	231	235	215	217	128	138
Orthophosphate (as P)	µg/L	1	-	-	-	-	-	1.0	1.2	1.7	1.1	1.5	1.4	-	60	2.1	2.1	7	3.4	1.5	4.8
Turbidity	NTU	0.1	-	-	-	-	-	198	587	665	193	476	201	-	2240	135	148	-	-	42.4	-
Anions Total	meq/L		-	-	-	-	-	8.7	10	11	11	12	12	-	4.6	-	12	-	-	7.1	-
Cations Total	meq/L		-	-	-	-	-	8.0	11	11	12	11	12	-	4.5	-	13	-	-	6.8	-
Ionic Balance	N/A	0.01	-	-	-	-	-	0.92	1.1	1.0	1.1	0.98	1.0	-	0.99	1	1.1	0.98	0.98	0.96	0.97

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
  - <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
  - <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
  - <sup>4</sup> Maximum increase of 25 mg/L from background levels
  - <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 7.13 to 7.79 and temperature range of -0.1 °C to 4.3 °C
  - <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 7.13 to 7.79
  - <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of 0.51 mg/L to 24 mg/L
  - <sup>8</sup> Guideline applied is for ultra-oligotrophic
  - <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 218 mg/L to 775 mg/L for total metals, and 217 mg/L to 593 mg/L for dissolved metals
  - <sup>10</sup> Guideline is for Chromium VI
  - "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026



Table 5E: Groundwater Analytical Results, Zone 4b (Open Pit - A Open Pit - West East)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-24	BH95G-25S				BH95G-25D		BH95G-29		BH95-131				MW15-11S	
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 7.9		Overburden 10				Bedrock 19.3		Overburden 17.1		Bedrock 125.75				Overburden 5.6			
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95G-24	BH95-25	BH95G-25S	BH95G-25S	BH95G-25D	BH95G-25D	BH95G-29	BH95G-29	BH95G-131	BH95-131	BH95-131	DUP02	MW15-11S	MW15-11S		
							9-Aug-2015	10-May-2015	6-Aug-2015	1-Nov-2015	6-Aug-2015	1-Nov-2015	1995	9-Aug-2015	19-Aug-2015	31-Oct-2015	14-Mar-2016	7-Nov-2015	19-Mar-2016			
<b>Nutrients</b>																						
Ammonia	µg/L	5	2500	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	1310-18,500 <sup>6</sup>	62	160	400	200	100	79	<5	220	32	42	46	59	640	54	
Total Kjeldahl Nitrogen (TKN)	µg/L	20		-	-	-	-	200	217	482	319	215	171	-	1060	163	153	99	97	4650	268	
Nitrate (as NO <sub>3</sub> -N)	µg/L	2		13,000	13,000	13,000	400,000	5.4	2.4	<2.0	<2.0	9.5	<2.0	<20	<2.0	2.8	2.7	<2.0	<2.0	87.1	10.6	
Nitrite (as NO <sub>2</sub> -N)	µg/L	2		60	60	60	200-400 <sup>7</sup>	6.2	<2.0	9.5	<2.0	<2.0	<2.0	<5	<2.0	<2.0	<2.0	<2.0	<2.0	21.6	10	
Nitrate and Nitrite (as N)	µg/L	2		-	-	-	400,000	11.6	2.4	9.3	<2.0	9.5	<2.0	-	<2.0	2.8	2.7	<2.0	<2.0	109	20.6	
Nitrogen (Total)	µg/L	20		-	-	-	-	211	220	491	319	225	171	-	1060	166	156	99	97	4760	289	
Phosphorus, total	µg/L	2		-	-	-	-	4.0	3280	4.3	676	8.7	256	511	59.8	162	157	29.9	32.3	122	350	
<b>Carbon</b>																						
Dissolved Organic Carbon (DOC)	µg/L	500		-	-	-	-	-	-	-	-	-	-	-	-	0	0	0	0	-	4440	
Total Organic Carbon (TOC)	µg/L	500		-	-	-	-	1300	2410	3200	1980	1700	1510	-	2000	2500	1420	-	-	34,300	-	
<b>Dissolved Metals</b>																						
Aluminum	µg/L	0.5		5,100 <sup>8</sup>	5,100 <sup>8</sup>	5,100 <sup>8</sup>	-	1.39	0.76	3.61	2.04	3.30	2.58	17	9.66	0.79	13.6	3.52	1.61	46.2	3.02	
Antimony	µg/L	0.02		2000	2000	-	200	0.528	0.026	<0.020	<0.020	0.057	0.024	-	0.253	0.909	0.616	0.635	0.605	2.86	0.412	
Arsenic	µg/L	0.02	50	5	5	5	50	10.3	7.19	6.61	8.24	1.63	1.52	3.8	7.82	1.69	2.72	7.1	6.61	0.407	2.84	
Barium	µg/L	0.02		500	500	-	10,000	60.2	68.9	87.9	69.8	22.9	23.3	55	45.9	19.9	17.3	20.1	20	72.2	143	
Beryllium	µg/L	0.01		5.3	5.3	-	53	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	-	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	
Bismuth	µg/L	0.005		-	-	-	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	-	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	<0.0050	
Boron	µg/L	10		5000	5000	1500	50,000	<10	<10	<10	<10	<10	<10	-	<10	<10	<10	<10	<10	18	<10	
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	3.75	<0.0050	0.0074	<0.0050	<0.0050	<0.0050	<0.01	<0.0050	0.007	0.02	0.039	0.038	0.171	0.045	
Calcium	µg/L	50		-	-	-	-	117,000	140,000	134,000	150,000	132,000	146,000	-	67,100	171,000	166,000	155,000	163,000	68,500	100,000	
Chromium	µg/L	0.1		8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.5	<0.10	<0.10	<0.10	0.19	0.19	0.21	<0.10	
Cobalt	µg/L	0.005		-	-	-	9	6.65	0.183	0.307	0.176	0.112	0.121	<0.4	0.347	0.098	0.098	0.069	0.061	0.564	1.23	
Copper	µg/L	0.05	15	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	50-90 <sup>9</sup>	0.408	0.112	<0.050	0.089	3.70	0.134	0.2	<0.050	0.061	0.359	0.423	0.2	1.09	0.684	
Iron	µg/L	1		300	300	300	-	571	5350	5970	7620	1860	2210	500	438	832	1430	2150	2210	114	3240	
Lead	µg/L	0.005	26	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	60-160 <sup>9</sup>	4.06	0.0138	<0.0050	0.017	0.0658	0.054	0.2	0.0303	1.67	1.94	1.9	1.84	0.179	0.021	
Lithium	µg/L	0.5		-	-	-	-	5.63	11.8	9.80	11.1	14.2	11.4	-	2.90	14.1	13.1	16.2	16.4	9.70	9.65	
Magnesium	µg/L	50		-	-	-	-	23,300	42,100	44,300	44,300	54,900	55,500	-	12,000	62,300	57,700	58,600	57,900	13,400	28,500	
Manganese	µg/L	0.05		-	-	-	-	820	373	439	389	320	317	120	315	193	159	176	171	158	3850	
Mercury	µg/L	0.002		0.016	0.016	0.026	1	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.04	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	
Molybdenum	µg/L	0.05		73	73	73	10,000	1.70	1.52	1.30	1.49	0.217	0.24	<0.4	0.887	0.083	0.071	0.066	0.061	10.3	6.61	
Nickel	µg/L	0.02		104-150 <sup>9</sup>	104-150 <sup>9</sup>	104-150 <sup>9</sup>	650-1500 <sup>9</sup>	2.12	0.63	0.691	0.481	0.339	0.252	<1	0.449	0.193	0.196	0.348	0.204	1.93	4.22	
Phosphorus	µg/L	2		-	-	4 <sup>8</sup>	-	<2.0	3.0	10.5	6.5	7.8	6.1	-	302	14.6	9.9	5.6	10.7	16.5	14.2	
Potassium	µg/L	50		-	-	-	-	4420	5710	5950	5760	4430	4520	-	3570	4180	4090	4070	3860	11,500	4860	
Selenium	µg/L	0.04	15	1	1	1	10	<0.040	<0.040	<0.040	<0.040	<0.040	<0.040	<0.05	<0.040	<0.040	<0.040	<0.040	<0.040	1.35	0.045	
Silicon	µg/L	50		-	-	-	-	5170	6530	6240	5780	6300	4510	-	3240	9960	10400	13000	13200	3170	4340	
Silver	µg/L	0.005		0.1	0.1	0.25	15 <sup>9</sup>	<0.0050	<0.0050	<0.0050	<0.0050	0.0051	0.011	<0.01	<0.0050	0.009	0.023	0.036	0.035	0.011	<0.0050	
Sodium	µg/L	50		-	-	-	-	2440	2050	2080	2220	2090	2310	-	1520	1540	1710	1610	1610	44,400	5890	
Strontium	µg/L	0.05		-	-	-	-	385	505	501	468	536	490	-	364	767	686	783	794	242	534	
Sulphur	µg/L	3000		-	-	-	-	43,300	71,900	73,100	74,100	78,200	81,200	-	18,800	89,200	80,300	74,800	80,300	37,900	43,400	
Thallium	µg/L	0.002		0.8	0.8	0.8	3	0.105	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-	0.0092	0.006	0.004	0.003	0.002	0.009	<0.0020	
Tin	µg/L	0.2		-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Titanium	µg/L	0.5		100	100	-	1000	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	-	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	<0.50	
Uranium	µg/L	0.002		15	15	15	3000	4.65	4.41	4.27	4.95	5.97	9.10	-	3.38	20.5	17.7	16	15.1	9.34	8.32	
Vanadium	µg/L	0.2		-	-	-	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	-	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	845	0.50	0.71	1.34	12.5	7.94	4	1.10	3.78	4.67	8.11	7.03	3.91	13.5	
Zirconium	µg/L	0.1		-	-	-	-	<0.10	<0.10	0.36	<0.10	3.02	4.67	-	<0.10	5.73	9.55	14.8	15.1	<0.10	0.40	

**Notes:**  
<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier  
<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)  
<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for  
<sup>4</sup> Maximum increase of 25 mg/L from background levels  
<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 7.13 to 7.79 and temperature range of -0.1 °C to 4.3 °C  
<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 7.13 to 7.79  
<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of 0.51 mg/L to 24 mg/L  
<sup>8</sup> Guideline applied is for ultra-oligotrophic  
<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 218 mg/L to 775 mg/L for total metals, and 217 mg/L to 593 mg/L for dissolved metals  
<sup>10</sup> Guideline is for Chromium VI  
 -" No applicable standard or not analyzed  
 Shaded - Greater than Federal Interim Guideline  
 BOLD - Greater than CCME AW Guideline  
 Underlined - Greater than Yukon CSR Guideline  
 RED - Greater than current Site Water Licence QZ97-026

Table 5E: Groundwater Analytical Results, Zone 4b (Open Pit - A Open Pit - West East)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID		Statistical Analysis																
				Part E - Effluent Quality Standards	Fine		Coarse	Aquifer & Approx. Sample Depth (mbg)		Overburden					Shallow Bedrock (<50 m depth)					Deep Bedrock (>50 depth)					
								Yukon CSR - AW (Freshwater) <sup>3</sup>	MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	MIN	MAX	MEDIAN	MEAN	STDV	90th PERCENTILE	MIN	MAX	MEDIAN	MEAN	STDV
<b>Nutrients</b>																									
Ammonia	µg/L	5	2500	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	1310-18,500 <sup>6</sup>	<5	640	200	240	217	496	62	100	79	80	19	96	32	59	44	45	11	55
Total Kjeldahl Nitrogen (TKN)	µg/L	20		-	-	-	-	217	4650	401	1166	1734	2855	171	215	200	195	22	212	97	163	126	128	35	160
Nitrate (as NO <sub>3</sub> -N)	µg/L	2		13,000	13,000	13,000	400,000	<2	87.1	2.4	18.014	31.211	46.84	<2	9.5	5.4	5.633	3.755	8.68	<2	2.8	2.35	2.375	0.435	2.77
Nitrite (as NO <sub>2</sub> -N)	µg/L	2		60	60	60	200-400 <sup>7</sup>	<2	21.6	5	7.443	7.142	14.64	<2	6.2	2	3.400	2.425	5.36	<2	<2	-	-	-	-
Nitrate and Nitrite (as N)	µg/L	2		-	-	-	400,000	<2	109	5.85	24.217	42.159	64.8	<2	11.6	9.5	7.700	5.047	11.18	<2	2.8	2.35	2.375	0.435	2.77
Nitrogen (Total)	µg/L	20		-	-	-	-	220	4760	405	1189.833	1775.485	2910	171	225	211	202.333	28.024	222.2	97	166	127.5	129.500	36.611	163
Phosphorus, total	µg/L	2		-	-	-	-	0.511	3280	122	641.802	1188.345	1717.6	4	256	8.7	89.567	144.155	206.54	29.9	162	94.65	95.300	74.166	160.5
<b>Carbon</b>																									
Dissolved Organic Carbon (DOC)	µg/L	500		-	-	-	-	4440	4440	4440	4440.000	-	4440	0	0	-	-	-	-	2120	2440	2280	2280.000	226.274	2408
Total Organic Carbon (TOC)	µg/L	500		-	-	-	-	1980	34300	2410	8778.000	14275.784	21860	1300	1700	1510	1503.333	200.083	1662	1420	2500	1960	1960.000	763.675	2392
<b>Dissolved Metals</b>																									
Aluminum	µg/L	0.5		5,100 <sup>8</sup>	5,100 <sup>8</sup>	5,100 <sup>8</sup>	-	0.76	46.2	3.61	11.756	16.208	28.68	1.39	3.3	2.58	2.423	0.965	3.156	0.79	13.6	2.565	4.880	5.925	10.576
Antimony	µg/L	0.02		2000	2000	-	200	<0.02	2.86	0.1395	0.599	1.119	1.636	0.024	0.528	0.057	0.203	0.282	0.4338	0.605	0.909	0.6255	0.691	0.146	0.8268
Arsenic	µg/L	0.02	50	5	5	5	50	0.407	8.24	6.61	5.272	2.959	7.988	1.52	10.3	1.63	4.483	5.038	8.566	1.69	7.1	4.665	4.530	2.725	6.953
Barium	µg/L	0.02		500	500	-	10,000	45.9	143	69.8	77.529	31.792	109.94	22.9	60.2	23.3	35.467	21.421	52.82	17.3	20.1	19.95	19.325	1.352	20.07
Beryllium	µg/L	0.01		5.3	5.3	-	53	<0.01	<0.01	-	-	-	-	<0.01	<0.01	-	-	-	-	<0.01	<0.01	-	-	-	-
Bismuth	µg/L	0.005		-	-	-	-	<0.005	<0.005	-	-	-	-	<0.005	<0.005	-	-	-	-	<0.005	<0.005	-	-	-	-
Boron	µg/L	10		5000	5000	1500	50,000	<10	18	10	11.333	3.266	14	<10	<10	-	-	-	-	<10	<10	-	-	-	-
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	<0.005	0.171	0.0074	0.035	0.061	0.0954	<0.005	3.75	0.005	1.253	2.162	3.001	0.007	0.039	0.029	0.026	0.015	0.0387
Calcium	µg/L	50		-	-	-	-	67100	150000	117000	109933.333	36711.397	145000	117000	146000	132000	131666.667	14502.873	143200	155000	171000	164500	163750.000	6701.990	169500
Chromium	µg/L	0.1		8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	<0.1	0.5	0.1	0.173	0.150	0.326	<0.1	<0.1	-	-	-	-	<0.1	0.19	0.145	0.145	0.052	0.19
Cobalt	µg/L	0.005		-	-	-	9	0.176	1.23	0.347	0.458	0.365	0.8304	0.112	6.65	0.121	2.294	3.772	5.3442	0.061	0.098	0.0835	0.082	0.019	0.098
Copper	µg/L	0.05	15	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	50-90 <sup>9</sup>	<0.05	1.09	0.112	0.325	0.405	0.8464	0.134	3.7	0.408	1.414	1.984	3.0416	0.061	0.423	0.2795	0.261	0.163	0.4038
Iron	µg/L	1		300	300	300	-	114	7620	3240	3318.857	3059.862	6630	571	2210	1860	1547.000	863.167	2140	832	2210	1790	1655.500	653.453	2192
Lead	µg/L	0.005	26	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	60-160 <sup>9</sup>	<0.005	0.2	0.021	0.067	0.085	0.1874	0.054	4.06	0.0658	1.393	2.309	3.26116	1.67	1.94	1.87	1.838	0.119	1.928
Lithium	µg/L	0.5		-	-	-	-	2.9	11.8	9.75	9.158	3.189	11.45	5.63	14.2	11.4	10.410	4.370	13.64	13.1	16.4	15.15	14.950	1.613	16.34
Magnesium	µg/L	50		-	-	-	-	12000	44300	35300	30766.667	15189.953	44300	23300	55500	54900	44566.667	18419.917	55380	57700	62300	58250	59125.000	2151.550	61190
Manganese	µg/L	0.05		-	-	-	-	120	3850	373	806.286	1347.441	1803.4	317	820	320	485.667	289.545	720	159	193	173.5	174.750	14.104	187.9
Mercury	µg/L	0.002		0.016	0.016	0.026	1	<0.002	0.04	0.002	0.007	0.014	0.0172	<0.002	<0.002	-	-	-	-	<0.002	<0.002	-	-	-	-
Molybdenum	µg/L	0.05		73	73	73	10,000	0.4	10.3	1.49	3.215	3.755	8.086	0.217	1.7	0.24	0.719	0.850	1.408	0.061	0.083	0.0685	0.070	0.009	0.0794
Nickel	µg/L	0.02		104-150 <sup>9</sup>	104-150 <sup>9</sup>	104-150 <sup>9</sup>	650-1500 <sup>9</sup>	0.449	4.22	0.691	1.343	1.367	2.846	0.252	2.12	0.339	0.904	1.054	1.7638	0.193	0.348	0.2	0.235	0.075	0.3048
Phosphorus	µg/L	2		-	-	4 <sup>8</sup>	-	3	302	12.35	58.783	119.253	159.25	<2	7.8	6.1	5.300	2.982	7.46	5.6	14.6	10.3	10.200	3.691	13.43
Potassium	µg/L	50		-	-	-	-	3570	11500	5735	6225.000	2731.115	8725	11500	4520	4430	4456.667	55.076	4502	3860	4180	4080	4050.000	135.401	4153
Selenium	µg/L	0.04	15	1	1	1	10	<0.04	1.35	0.04	0.229	0.494	0.57	<0.04	<0.04	-	-	-	-	<0.04	<0.04	-	-	-	-
Silicon	µg/L	50		-	-	-	-	3170	6530	5060	4883.333	1502.487	6385	4510	6300	5170	5326.667	905.226	6074	9960	13200	11700	11640.000	1697.371	13140
Silver	µg/L	0.005		0.1	0.1	0.25	15 <sup>9</sup>	<0.005	0.011	0.005	0.007	0.003	0.0104	<0.005	0.011	0.0051	0.007	0.003	0.00982	0.009	0.036	0.029	0.026	0.013	0.0357
Sodium	µg/L	50		-	-	-	-	1520	44400	2150	9693.333	17076.625	25145	2090	2440	2310	2280.000	176.918	2414	1540	1710	1610	1617.500	69.940	1680
Strontium	µg/L	0.05		-	-	-	-	242	534	484.5	435.667	111.744	519.5	385	536	490	470.333	77.397	526.8	686	794	775	757.500	48.939	790.7
Sulphur	µg/L	3000		-	-	-	-	18800	74100	57650	53200.000	23220.680	73600	43300	81200	78200	67566.667	21069.014	80600	74800	89200	80300	81150.000	5960.145	86530
Thallium	µg/L	0.002		0.8	0.8	0.8	3	<0.002	0.0092	0.002	0.004	0.004	0.0091	<0.002	0.105	0.002	0.036	0.059	0.0844	<0.002	0.006	0.0035	0.004	0.002	0.0054
Tin	µg/L	0.2		-	-	-	-	<0.2	<0.2	-	-	-	-	<0.2	<0.2	-	-	-	-	<0.2	<0.2	-	-	-	-
Titanium	µg/L	0.5		100	100	-	1000	<0.5	<0.5	-	-	-	-	<0.5	<0.5	-	-	-	-	<0.5	0.85	0.5	0.588	0.175	0.745
Uranium	µg/L	0.002		15	15	15	3000	3.38	9.34	4.68	5.778	2.438	8.83	4.65	9.1	5.97	6.573	2.286	8.474	15.1	20.5	16.85	17.325	2.375	19.66
Vanadium	µg/L	0.2		-	-	-	-	<0.2	<0.2	-	-	-	-	<0.2	<0.2	-	-	-	-	<0.2	<0.2	-	-	-	-
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	0.5	13.5	1.34	3.580	4.611	7.8	7.94	845	12.5	288.480	481.966	678.5	3.78	8.11	5.85	5.898	2.014	7.786
Zirconium	µg/L	0.1		-	-	-	-	<0.1	0.4	0.1	0.193	0.145	0.38	<0.1	4.67	3.02	2.597	2.314	4.34	5.73	15.1	12.175	11.295	4.501	15.01

**Notes:**

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act, Contaminated Sites



Table 5E: Groundwater Analytical Results, Zone 4b (Open Pit - A Open Pit - West East)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-24	BH95G-25S				BH95G-25D		BH95G-29		BH95-131				MW15-11S	
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 7.9		Overburden 10				Bedrock 19.3		Overburden 17.1		Bedrock 125.75				Overburden 5.6			
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95G-24	BH95-25	BH95G-25S	BH95G-25S	BH95G-25D	BH95G-25D	BH95G-29	BH95G-29	BH95G-131	BH95-131	BH95-131	DUP02	MW15-11S	MW15-11S		
							9-Aug-2015	10-May-2015	6-Aug-2015	1-Nov-2015	6-Aug-2015	1-Nov-2015	1995	9-Aug-2015	19-Aug-2015	31-Oct-2015	14-Mar-2016	7-Nov-2015	19-Mar-2016			
<b>Total Metals</b>																						
Aluminum	µg/L	0.5		5, 100 <sup>5</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	13,400	23,200	20,900	6330	6720	3580	-	79,800	981	1280	309	252	867	1050	
Antimony	µg/L	0.02		2000	2000	-	200	6.00	0.396	0.366	0.179	0.78	0.619	-	2.07	52.9	36.3	10.6	10.1	2.85	0.495	
Arsenic	µg/L	0.02	50	5	5	5	50	75.0	39.0	43.9	15.8	15.8	8.53	-	134	140	110	31.9	30.7	1.10	4.22	
Barium	µg/L	0.02		500	500	-	10,000	1040	408	402	174	629	551	-	1970	48.3	60.1	29.3	28.2	110	213	
Beryllium	µg/L	0.01		5.3	5.3	-	53	0.628	1.49	1.57	0.452	0.617	0.346	-	6.17	0.114	0.152	0.044	0.04	0.049	0.086	
Bismuth	µg/L	0.005		-	-	-	-	1.27	0.846	0.844	0.263	0.398	0.239	-	4.82	0.14	0.213	0.055	0.05	0.026	0.036	
Boron	µg/L	10		5000	5000	1500	50,000	<50	<50	<50	<50	<50	<50	-	52	<50	<50	<50	<50	17	<50	
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	54.0	0.928	1.08	0.317	0.438	0.334	-	21.2	0.698	1.07	0.32	0.298	0.371	0.998	
Calcium	µg/L	50		-	-	-	-	139,000	152,000	160,000	149,000	145,000	165,000	-	202,000	177000	193000	166000	161000	65,300	99,500	
Chromium	µg/L	0.1		8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	34.9	53.1	54.6	14.0	8.86	4.83	-	173	1.87	2.26	0.76	0.64	2.70	4.23	
Cobalt	µg/L	0.005		-	-	-	-	22.7	19.1	18.0	5.99	4.76	3.32	-	83.6	0.754	0.931	0.236	0.21	1.21	3.18	
Copper	µg/L	0.05	15	2.9-4.0 <sup>9</sup>	2.9-4.0 <sup>9</sup>	2.9-4.0 <sup>9</sup>	60-90 <sup>9</sup>	1560	72.3	85.6	22.8	22.1	14.3	-	565	6.32	9.53	2.56	2.22	8.51	14.3	
Iron	µg/L	1		300	300	300	-	34,100	60,600	57,600	21,700	19,300	12,300	-	161,000	14600	15300	5270	4870	3510	7450	
Lead	µg/L	0.005	26	4.2-7.0 <sup>9</sup>	4.2-7.0 <sup>9</sup>	4.2-7.0 <sup>9</sup>	60-160 <sup>9</sup>	243	65.8	62.9	20.9	28.7	21.9	-	786	519	423	136	128	4.98	6.96	
Lithium	µg/L	0.5		-	-	-	-	18.8	40.3	39.3	19.1	17.6	16.2	-	104	15.1	18.4	15.7	15.7	10.6	9.8	
Magnesium	µg/L	50		-	-	-	-	33,200	56,100	58,300	46,700	61,500	64,400	-	65,500	60900	70400	58200	58400	13,300	28,200	
Manganese	µg/L	0.05		-	-	-	-	1600	1070	907	594	566	580	-	5440	246	269	181	179	310	4030	
Mercury	µg/L	0.002		0.016	0.016	0.026	1	0.0251	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	-	<0.0020	<0.0020	<0.0020	<0.0020	<0.0020	0.004	<0.0020	
Molybdenum	µg/L	0.05		73	73	73	10,000	3.64	2.46	2.09	1.60	0.76	0.48	-	3.90	0.286	0.306	0.109	0.094	11.7	8.35	
Nickel	µg/L	0.02		113-150 <sup>9</sup>	113-150 <sup>9</sup>	113-150 <sup>9</sup>	1100-1500 <sup>9</sup>	36.4	46.3	47.8	12.5	10.0	7.24	-	228	1.75	2.11	0.65	0.58	3.67	7.99	
Phosphorus	µg/L	2		-	-	4 <sup>8</sup>	-	744	3290	1140	602	347	246	-	12,100	115	109	29	28	131	286	
Potassium	µg/L	50		-	-	-	-	9420	13,500	12,300	8110	6490	6560	-	22,700	4670	5330	4000	4110	11,100	5270	
Selenium	µg/L	0.04	15	1	1	1	10	2.90	0.222	0.283	0.090	0.181	0.102	-	2.39	0.312	0.318	0.078	0.051	1.39	0.061	
Silicon	µg/L	50		-	-	-	-	26,400	47,600	41,300	16,900	17,300	11,400	-	106,000	12400	15900	13700	13700	4660	5670	
Silver	µg/L	0.005		0.1	0.1	0.25	15 <sup>9</sup>	2.86	0.342	0.275	0.180	0.133	0.162	-	4.26	0.557	0.529	0.258	0.167	2.92	3.45	
Sodium	µg/L	50		-	-	-	-	2530	2350	2490	2120	2150	2530	-	2650	1500	1880	1630	1610	43,000	5620	
Strontium	µg/L	0.05		-	-	-	-	464	597	577	544	589	649	-	1330	791	919	735	744	240	529	
Sulphur	µg/L	3000		-	-	-	-	45,000	67,000	73,000	72,000	78,000	94,000	-	19,000	90000	93000	79000	80000	36,700	43,000	
Thallium	µg/L	0.002		0.8	0.8	0.8	3	1.39	0.429	0.383	0.142	0.110	0.067	-	1.86	0.072	0.075	0.026	0.015	0.036	0.045	
Tin	µg/L	0.2		-	-	-	-	1.07	1.86	1.09	0.39	0.78	0.67	-	1.90	0.91	0.75	0.43	0.37	0.41	<0.20	
Titanium	µg/L	0.5		100	100	-	1000	917	1010	751	373	122	129	-	876	55.2	68	16	13.2	83.7	55.2	
Uranium	µg/L	0.002		15	15	15	3000	6.64	8.75	9.16	6.51	8.56	11.6	-	48.6	22.1	22.5	17.3	15.5	9.48	9.46	
Vanadium	µg/L	0.2		-	-	-	-	43.3	68.6	61.2	18.7	12.3	7.78	-	225	3.19	3.45	0.94	0.61	3.54	3.61	
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	3170	176	182	66.1	509	313	-	3070	132	197	52.6	48.3	19.6	28.2	
Zirconium	µg/L	0.1		-	-	-	-	2.67	2.54	1.44	0.59	2.88	4.76	-	5.58	123	97.6	41	31.9	0.79	1.61	
<b>Laboratory Work Order Number</b>								B569283	B540423	B569283	B598984	B569283	B598984		B569283	B572767	B598984	B621096	B621096	B5A0448	B621096	

Notes:

- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 7.13 to 7.79 and temperature range of -0.1 °C to 4.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 7.13 to 7.79
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of 0.51 mg/L to 24 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 218 mg/L to 775 mg/L for total metals, and 217 mg/L to 593 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026



**Table 6: Quality Assurance / Quality Control**

Parameter	Unit	RDL	DUPLICATES						DUPLICATES					
			MW15-03D	DUP01	RPD (%)	BH95-131	DUP02	RPD (%)	BH95-21	DUP 01	RPD (%)	MW15-01	DUP02	RPD (%)
			13-Mar-2016			14-Mar-2016			12-May-2015			1-Sep-2015		
<b>Physical Parameters</b>														
pH	pH Units	N/A	8.02	8.19	2.1	8.04	8.03	0.1	8.22	8.21	0.1	8.16	8.00	2.0
Acidity (pH 4.5)	µg/L	500	<500	<500	-	<500	<500	-	<500	<500	-	<500	<500	-
Acidity (pH 8.3)	µg/L	500	<500	<500	-	5360	4550	16.3	<500	<500	-	<500	<500	-
Electrical Conductivity (EC)	µS/cm	1	394	391	0.8	1100	1110	0.9	402	397	1.3	432	428	0.9
Total Dissolved Solids (TDS)	µg/L	1000	230,000	246,000	6.7	728,000	790,000	8.2	284,000	250,000	12.7	286,000	274,000	4.3
Total Suspended Solids (TSS)	µg/L	1000	61,700	15,200	<b>121</b>	36,300	36,000	0.8			-	<1000	1000	-
Hardness as CaCO <sub>3</sub>	mg/L	0.5	199	199	0.0	654	643	1.7	238	248	4.1	233	233	0.0
Dissolved Hardness	mg/L	0.5	201	198	1.5	627	644	2.7	221	215	2.8	239	243	1.7
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	194,000	195,000	0.5	431,000	441,000	2.3	165,000	163,000	1.2	179,000	174,000	2.8
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	<500	<500	-	<500	<500	-	<500	<500	-	<500	<500	-
Bicarbonate	µg/L	500	237,000	238,000	0.4	525,000	538,000	2.4	201,000	199,000	1.0	218,000	213,000	2.3
Carbonate	µg/L	500	<500	<500	-	<500	<500	-	<500	<500	-	<500	<500	-
Hydroxide	µg/L	500	<500	<500	-	<500	<500	-	<500	<500	-	<500	<500	-
Chloride	mg/L	0.5	<0.50	0.58	-	0.76	0.87	13.5	<0.50	0.51	-	0.8	0.8	-
Fluoride	µg/L	10	150	150	0.0	75	75	0.0	100	100	0.0	94	93	1.1
Sulphate	mg/L	0.5	21.3	21.3	0.0	215	217	0.9	46.5	45.9	1.3	52.1	50.6	2.9
Orthophosphate (as P)	µg/L	1	4.9	4.2	-	7.0	3.4	<b>69.2</b>	<1.0	<1.0	-	<1.0	<1.0	-
Turbidity	NTU	0.1							640	728	12.9	0.27	0.24	-
Anions Total	meq/L	N/A							4.3	4.2	2.4	4.7	4.6	2.2
Cations Total	meq/L	N/A							4.5	4.4	2.2	4.9	5.0	2.0
Ionic Balance	N/A	0.01	0.98	0.96	2.1	0.98	0.98	0.0	1.1	1.0	9.5	1.0	1.1	9.5
<b>Nutrients</b>														
Ammonia	µg/L	5	88	110	22.2	46	59	24.8	19	42	-	7.3	<5	-
Total Kjeldahl Nitrogen (TKN)	µg/L	20	150	138	8.3	99	97	2.0	33	350	-	78	113	<b>36.6</b>
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	<2.0	<2.0	-	<2.0	<2.0	-	4.8	5.2	-	189	191	1.1
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	<2.0	<2.0	-	<2.0	<2.0	-	<2.0	<2.0	-	<2.0	<2.0	-
Nitrate and Nitrite (as N)	µg/L	2	<2.0	<2.0	-	<2.0	<2.0	-	4.8	10	-	189	191	1.1
Nitrogen (Total)	µg/L	20	150	138	8.3	99	97	2.0	38	350	-	268	305	12.9
Phosphorus	µg/L	2	12.3	16.4	28.6	29.9	32.3	7.7	914	732	22.1	2.9	3.2	-
<b>Carbon</b>														
Dissolved Organic Carbon (DOC)	µg/L	500	1960	2540	-	2120	2440	-			-			-
Total Organic Carbon (TOC)	µg/L	500							770	1070	-	540	<500	-

**Notes:**  
 RDL - Reportable detection limit  
 RPD - Relative percent difference calculated as  $(\text{abs}(C1-C2)/\text{average}(C1+C2)) \times 100$   
 N/A - Not applicable  
 "-" Indicates RPD not calculated. RPD cannot be calculated if one or more of the analytical results are less than detection limits or within 5 times the detection limits.  
**BOLD** - RPD value greater than 30%



Table 6: Quality Assurance / Quality Control

Parameter	Unit	RDL	DUPLICATES						DUPLICATES					
			MW15-03D	DUP01	RPD (%)	BH95-131	DUP02	RPD (%)	BH95-21	DUP 01	RPD (%)	MW15-01	DUP02	RPD (%)
			13-Mar-2016			14-Mar-2016			12-May-2015			1-Sep-2015		
<b>Dissolved Metals</b>														
Aluminum	µg/L	0.5	2.76	2.50	9.9	3.52	1.61	-	23.6	2.02	-	6.36	3.08	<b>69.5</b>
Antimony	µg/L	0.02	0.228	0.221	3.1	0.635	0.605	4.8	0.088	0.113	-	<0.020	0.032	-
Arsenic	µg/L	0.02	1.82	1.83	0.5	7.10	6.61	7.1	1.55	1.53	1.3	0.880	0.877	0.3
Barium	µg/L	0.02	47.1	48.0	1.9	20.1	20.0	0.5	46.0	42.7	7.4	96.6	97.9	1.3
Beryllium	µg/L	0.01	<0.010	<0.010	-	<0.010	<0.010	-	<0.01	<0.01	-	<0.010	<0.010	-
Bismuth	µg/L	0.005	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-
Boron	µg/L	10	<10	<10	-	<10	<10	-	<10	<10	-	<10	<10	-
Cadmium	µg/L	0.005	<0.0050	<0.0050	-	0.039	0.038	2.6	0.0063	<0.0050	-	<0.0050	<0.0050	-
Calcium	µg/L	50	54,800	53,400	2.6	155,000	163,000	5.0	68,500	66,200	3.4	77,500	79,000	1.9
Chromium	µg/L	0.1	<0.10	<0.10	-	0.19	0.19	-	<0.10	<0.10	-	<0.10	<0.10	-
Cobalt	µg/L	0.005	0.090	0.089	1.1	0.069	0.061	12.3	0.0781	0.0674	14.7	0.040	0.038	5.1
Copper	µg/L	0.05	<0.050	0.052	-	0.423	0.200	-	0.15	0.069	-	0.072	0.062	-
Iron	µg/L	1	911	934	2.5	2150	2210	2.8	266	295	10.3	12.2	7.4	<b>49.0</b>
Lead	µg/L	0.005	<0.0050	<0.0050	-	1.9	1.84	3.2	0.0854	0.0144	-	0.025	<0.0050	-
Lithium	µg/L	0.5	6.54	6.1	7.0	16.2	16.4	1.2	6.04	6.01	0.5	1.75	1.75	-
Magnesium	µg/L	50	15,600	15,800	1.3	58,600	57,900	1.2	12,200	12,100	0.8	10,900	11,100	1.8
Manganese	µg/L	0.05	66.2	66.7	0.8	176	171	2.9	58.6	58.2	0.7	1.90	1.83	3.8
Mercury	µg/L	0.002	<0.0020	<0.0020	-	<0.0020	<0.0020	-	<0.0020	<0.0020	-	<0.0020	<0.0020	-
Molybdenum	µg/L	0.05	3.96	3.92	1.0	0.066	0.061	-	0.392	0.353	10.5	0.83	0.888	6.8
Nickel	µg/L	0.02	0.248	0.255	2.8	0.348	0.204	<b>52.2</b>	0.301	0.319	5.8	0.167	0.154	8.1
Phosphorus	µg/L	2	7.6	5.7	-	5.6	10.7	-	4.8	2.3	-	4.6	2.9	-
Potassium	µg/L	50	2640	2700	2.2	4070	3860	5.3	1580	1520	3.9	2430	2410	0.8
Selenium	µg/L	0.04	<0.040	<0.040	-	<0.040	<0.040	-	<0.040	<0.040	-	1.50	1.61	7.1
Silicon	µg/L	50	4910	4830	1.6	13,000	13,200	1.5	3750	3960	5.4	2480	2530	2.0
Silver	µg/L	0.005	<0.0050	<0.0050	-	0.036	0.035	2.8	<0.0050	<0.0050	-	<0.0050	<0.0050	-
Sodium	µg/L	50	2720	2740	0.7	1610	1610	0.0	1260	944	28.7	715	740	3.4
Strontium	µg/L	0.05	269	266	1.1	783	794	1.4	205	204	0.5	297	297	0.0
Sulphur (Elemental)	µg/L	3000	7900	7700	-	74,800	80,300	7.1	15,300	16,300	6.3	18,800	17,600	6.6
Thallium	µg/L	0.002	<0.0020	<0.0020	-	0.003	0.002	-	<0.0020	0.0059	-	<0.0020	<0.0020	-
Tin	µg/L	0.2	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-
Titanium	µg/L	0.5	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-	<0.50	<0.50	-
Uranium	µg/L	0.002	1.84	1.83	0.5	16.0	15.1	5.8	4.54	4.67	2.8	3.02	2.99	1.0
Vanadium	µg/L	0.2	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-
Zinc	µg/L	0.1	0.84	0.57	<b>38.3</b>	8.11	7.03	14.3	19.4	0.43	-	0.31	0.25	-
Zirconium	µg/L	0.1	1.01	0.95	6.1	14.8	15.1	2.0	0.11	<0.10	-	<0.10	<0.10	-

**Notes:**  
 RDL - Reportable detection limit  
 RPD - Relative percent difference calculated as  $(\text{abs}(C1-C2)/\text{average}(C1+C2))*100$   
 N/A - Not applicable  
 "-" Indicates RPD not calculated. RPD cannot be calculated if one or more of the analytical results are less than detection limits or within 5 times the detection limits.  
**BOLD** - RPD value greater than 30%

Table 6: Quality Assurance / Quality Control

Parameter	Unit	RDL	DUPLICATES			DUPLICATES								
			MW15-04S	DUP03	RPD (%)	ART - 3 (1)	DUP04	RPD (%)	MW15-04D	DUP01	RPD (%)	MW15-03D	DUP02	RPD (%)
			4-Sep-2015			23-Sep-2015			31-Oct-2015			2-Nov-2015		
<b>Physical Parameters</b>														
pH	pH Units	N/A	8.12	7.66	5.8	7.44	7.96	6.8	8.23	8.23	0.0	8.29	8.29	0.0
Acidity (pH 4.5)	µg/L	500	<500	<500	-	<500	<500	-	<500	<500	-	<500	<500	-
Acidity (pH 8.3)	µg/L	500	840	2350	<b>94.7</b>	4180	2760	<b>40.9</b>	1830	1270	-	4260	3610	16.5
Electrical Conductivity (EC)	µS/cm	1	239	242	1.2	387	389	0.5	344	354	2.9	395	402	1.8
Total Dissolved Solids (TDS)	µg/L	1000	136,000	152,000	11.1	268,000	262,000	2.3	266,000	264,000	0.8	240,000	260,000	8.0
Total Suspended Solids (TSS)	µg/L	1000	2,590,000	4,350,000	<b>50.7</b>	9300	5500	<b>51.4</b>	5,570,000	5,180,000	7.3	3500	3400	-
Hardness as CaCO <sub>3</sub>	mg/L	0.5	313	285	9.4	199	196	1.5	2530	1460	<b>53.6</b>	199	207	3.9
Dissolved Hardness	mg/L	0.5	127	119	6.5	191	198	3.6	78.9	89	12.0	210	208	1.0
Alkalinity (total as CaCO <sub>3</sub> )	µg/L	500	117,000	114,000	2.6	103,000	107,000	3.8	140,000	139,000	0.7	188,000	187,000	0.5
Alkalinity (pp as CaCO <sub>3</sub> )	µg/L	500	<500	<500	-	<500	<500	-	<500	<500	-	<500	<500	-
Bicarbonate	µg/L	500	142,000	139,000	2.1	126,000	130,000	3.1	171,000	169,000	1.2	229,000	228,000	0.4
Carbonate	µg/L	500	<500	<500	-	<500	<500	-	<500	<500	-	<500	<500	-
Hydroxide	µg/L	500	<500	<500	-	<500	<500	-	<500	<500	-	<500	<500	-
Chloride	mg/L	0.5	0.96	0.82	-	<0.50	0.65	-	2.6	3.2	20.7	1.1	1.6	-
Fluoride	µg/L	10	100	100	0.0	150	170	12.5	240	250	4.1	150	150	0.0
Sulphate	mg/L	0.5	10.1	10.7	5.8	100	86.8	14.1	34.8	36.8	5.6	24	23.9	0.4
Orthophosphate (as P)	µg/L	1	3.4	2.3	-	1.3	5.0	-	2.9	1.8	-	1.8	2.1	-
Turbidity	NTU	0.1	2070	2220	7.0	36.9	29.6	22.0	2890	2710	6.4	3.59	3.18	12.1
Anions Total	meq/L	N/A	2.6	2.5	3.9	-	-	-	3.6	3.6	0.0	4.3	4.3	0.0
Cations Total	meq/L	N/A	2.7	2.5	7.7	-	-	-	4.0	4.2	4.9	4.4	4.4	0.0
Ionic Balance	N/A	0.01	1.0	0.99	1.0	1.0	1.1	9.5	1.1	1.1	0.0	1.0	1.0	0.0
<b>Nutrients</b>														
Ammonia	µg/L	5	88	37	<b>81.6</b>	33	64	<b>63.9</b>	47	65	<b>32.1</b>	160	150	6.5
Total Kjeldahl Nitrogen (TKN)	µg/L	20	209	183	13.3	176	39	-	142	170	17.9	225	202	10.8
Nitrate (as NO <sub>3</sub> -N)	µg/L	2	155	158	1.9	<2.0	2.7	-	3.6	5.0	-	2.7	<2.0	-
Nitrite (as NO <sub>2</sub> -N)	µg/L	2	<2.0	5.4	-	7.3	<2.0	-	2.2	<2.0	-	<2.0	<2.0	-
Nitrate and Nitrite (as N)	µg/L	2	155	163	5.0	8.9	2.7	-	5.8	5.0	-	2.7	<2.0	-
Nitrogen (Total)	µg/L	20	364	346	5.1	185	41	-	148	175	16.7	228	202	12.1
Phosphorus	µg/L	2	2310	1580	<b>37.5</b>	23.5	28	17.5	27,800	19,000	<b>37.6</b>	9.2	10	-
<b>Carbon</b>														
Dissolved Organic Carbon (DOC)	µg/L	500	-	-	-	-	-	-	-	-	-	-	-	-
Total Organic Carbon (TOC)	µg/L	500	960	1200	-	580	890	-	1910	1660	-	1170	910	-

**Notes:**  
 RDL - Reportable detection limit  
 RPD - Relative percent difference calculated as  $(\text{abs}(C1-C2)/\text{average}(C1+C2)) \times 100$   
 N/A - Not applicable  
 "-" Indicates RPD not calculated. RPD cannot be calculated if one or more of the analytical results are less than detection limits or within 5 times the detection limits.  
**BOLD** - RPD value greater than 30%

Table 6: Quality Assurance / Quality Control

Parameter	Unit	RDL	DUPLICATES			DUPLICATES								
			MW15-04S	DUP03	RPD (%)	ART - 3 (1)	DUP04	RPD (%)	MW15-04D	DUP01	RPD (%)	MW15-03D	DUP02	RPD (%)
			4-Sep-2015			23-Sep-2015			31-Oct-2015			2-Nov-2015		
<b>Dissolved Metals</b>														
Aluminum	µg/L	0.5	4.55	4.48	1.6	1.86	17.9	-	2.99	7.15	<b>82.1</b>	14.4	7.81	<b>59.3</b>
Antimony	µg/L	0.02	0.021	<0.020	-	39.0	33.2	16.1	0.033	0.026	-	1.93	1.74	10.4
Arsenic	µg/L	0.02	0.25	0.252	0.8	156	132	16.7	1.74	1.82	4.5	2.29	2.27	0.9
Barium	µg/L	0.02	69.5	70.8	1.9	17.6	19.6	10.8	22.7	22.1	2.7	50.1	46.0	8.5
Beryllium	µg/L	0.01	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-	<0.010	<0.010	-
Bismuth	µg/L	0.005	<0.0050	<0.0050	-	0.0184	<0.0050	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-
Boron	µg/L	10	<10	<10	-	<10	<10	-	23	22	4.4	<10	<10	-
Cadmium	µg/L	0.005	0.015	0.015	-	0.424	0.362	15.8	0.028	0.028	0.0	<0.0050	<0.0050	-
Calcium	µg/L	50	44,600	41,300	7.7	63,100	65,100	3.1	28,300	27,600	2.5	57,600	56,500	1.9
Chromium	µg/L	0.1	0.13	0.14	-	<0.10	<0.10	-	<0.10	<0.10	-	<0.10	<0.10	-
Cobalt	µg/L	0.005	0.194	0.203	4.5	1.67	1.65	1.2	0.343	0.353	2.9	0.134	0.128	4.6
Copper	µg/L	0.05	0.693	0.669	3.5	<0.050	0.711	-	0.885	0.230	-	0.091	0.094	-
Iron	µg/L	1	1.1	2.1	-	6680	5570	18.1	71.6	70.8	1.1	806	779	3.4
Lead	µg/L	0.005	<0.0050	<0.0050	-	0.626	0.894	<b>35.3</b>	0.096	0.032	<b>100</b>	0.014	0.047	-
Lithium	µg/L	0.5	0.79	0.81	-	4.76	4.54	4.7	2.93	2.91	0.7	6.70	5.88	13.0
Magnesium	µg/L	50	3810	3860	1.3	8180	8600	5.0	3050	3040	0.3	16,200	16,400	1.2
Manganese	µg/L	0.05	38.3	39.6	3.3	507	459	9.9	102	103	1.0	73.8	73.3	0.7
Mercury	µg/L	0.002	<0.0020	<0.0020	-	<0.0020	<0.0020	-	<0.0020	<0.0020	-	<0.0020	<0.0020	-
Molybdenum	µg/L	0.05	3.29	3.30	0.3	0.647	0.666	2.9	5.19	5.78	10.8	3.72	3.25	13.5
Nickel	µg/L	0.02	3.53	3.98	12.0	2.42	2.44	0.8	1.07	0.849	23.0	0.455	0.476	4.5
Phosphorus	µg/L	2	4.2	4.1	-	<2.0	8.4	-	9.4	7.5	-	4.1	4.4	-
Potassium	µg/L	50	1740	1790	2.8	1760	1940	9.7	2690	2640	1.9	2680	2690	0.4
Selenium	µg/L	0.04	0.741	0.741	0.0	<0.040	<0.040	-	0.089	0.088	-	<0.040	<0.040	-
Silicon	µg/L	50	3080	2950	4.3	5720	5510	3.7	2570	2500	2.8	4130	4020	2.7
Silver	µg/L	0.005	<0.0050	<0.0050	-	<0.0050	0.006	-	<0.0050	<0.0050	-	<0.0050	<0.0050	-
Sodium	µg/L	50	1830	1900	3.8	874	1240	<b>34.6</b>	55,800	55,000	1.4	2710	2700	0.4
Strontium	µg/L	0.05	173	171	1.2	204	205	0.5	203	206	1.5	244	243	0.4
Sulphur (Elemental)	µg/L	3000	3500	<3000	-	29,800	29,900	0.3	17,300	17,300	0.0	8200	8200	-
Thallium	µg/L	0.002	0.002	0.002	-	0.256	0.454	<b>55.8</b>	0.004	0.003	-	<0.0020	<0.0020	-
Tin	µg/L	0.2	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-
Titanium	µg/L	0.5	<0.50	<0.50	-	<0.50	0.75	-	0.65	<0.50	-	0.62	<0.50	-
Uranium	µg/L	0.002	0.739	0.735	0.5	5.23	5.73	9.1	3.91	3.78	3.4	3.02	2.70	11.2
Vanadium	µg/L	0.2	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-	<0.20	<0.20	-
Zinc	µg/L	0.1	1.47	1.44	2.1	2270	1680	29.9	9.56	0.64	<b>175</b>	0.48	0.39	-
Zirconium	µg/L	0.1	<0.10	<0.10	-	0.13	0.30	-	<0.10	0.19	-	0.43	0.42	-

**Notes:**  
 RDL - Reportable detection limit  
 RPD - Relative percent difference calculated as  $(\text{abs}(C1-C2)/\text{average}(C1+C2))*100$   
 N/A - Not applicable  
 "-" Indicates RPD not calculated. RPD cannot be calculated if one or more of the analytical results are less than detection limits or within 5 times the detection limits.  
**BOLD** - RPD value greater than 30%

**Table 7A: Maximum Groundwater Guideline Exceedances, Zone 1 (Tailing Management Facility, Mill Site, Polishing Pond, Water Management Pond) (2015/16)**

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-2	MW15-07S	MW15-07D	MW15-08S	MW15-08D	MW15-09S	MW15-09D	MW15-10S	MW15-10D	
				Part E - Effluent Quality Standards	Fine		Coarse	Aquifer & Approx. Sample Depth (mbg)	Bedrock 17.5	Overburden 9.55	Bedrock 29.2	Overburden 10.15	Bedrock 32.7	Overburden 14.35	Bedrock 38	Overburden 8.1	Bedrock 28.6
								Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95-2	MW15-07S	MW15-07D	MW15-08S	MW15D-08D	MW15-09S	MW15-09D	MW15-10S	MW15-10D
							2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16		
Field pH	pH Units	0.05	6.5-9	6.5-9	6.5-9	6.5-9	-	-	-	-	-	-	-	5.68	6.17	6.03	
Total Suspended Solids (TSS)	µg/L	1000	15000	-	-	-	-	1230000	6590000	-	-	242000	102000	284000	1200000	428000	
Fluoride	µg/L	10	-	120	120	120	3000	-	300	340	-	610	250	730	190	1300	
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	-	-	-	-	-	-	170	8.18	438	
Arsenic	µg/L	0.02	50	5	5	5	50	-	5.07	-	-	-	-	8.48	11.7	-	
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	1.57	-	-	0.059	0.032	0.046	-	0.190	0.172	
Chromium	µg/L	0.1	-	8.9	8.9	1 <sup>10</sup>	10 <sup>10</sup>	-	-	-	-	-	-	3.04	-	5.39	
Iron	µg/L	1	-	300	300	300	-	-	592	498	-	655	1310	12,300	4250	36,600	
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	16.4	6.9	5.3	-	5.0	8.7	8.4	16.8	15.1	
Selenium	µg/L	0.04	15	1	1	1	10	6.23	-	-	1.48	-	-	-	1.72	-	
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	24.9	-	-	-	-	-	-	-	21.7	

**Notes:**

- Result does not exceed guideline value
- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.68 to 7.71 and temperature range of -2.7 °C to 3.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.68 to 7.71
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.8 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 200 mg/L to 2120 mg/L for total metals, and 136 mg/L to 2180 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed

Shaded - Greater than Federal Interim Guideline

**BOLD** - Greater than CCME AW Guideline

Underlined - Greater than Yukon CSR Guideline

**RED** - Greater than current Site Water Licence QZ97-026

**Table 7B: Maximum Groundwater Guideline Exceedances, Zone 2 (Class C Storage Facility and Overburden Stockpile) (2015/16)**

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-30	BH95G-31	MW15-03S	MW15-03D	MW15-04S	MW15-04D	MW15-05D	MW15-06
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 17.7		Bedrock 8.5	Overburden 5.6	Bedrock 13.05	Overburden 12.65	Bedrock 30	Bedrock 26.1	Overburden 7.95		
					Yukon CSR - AW (Freshwater) <sup>3</sup>		BH95G-30	BH95G-31	MW15-03S	MW15-03D	MW15-04S	MW15-04D	MW15-05D	MW15-06	
								2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16
Field pH	pH Units	0.01	6.5-9	6.5-9	6.5-9	6.5-9	-	-	-	6.06	-	-	-	-	-
Total Suspended Solids (TSS)	µg/L	1000	15000	-	-	-	-	970000	5060000	2340000	61700	4350000	5570000	1970000	134000
Fluoride	µg/L	10	-	120	120	120	3000	140	-	-	170	-	250	180	-
Aluminum	µg/L	0.5	-	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	5, 100 <sup>6</sup>	-	-	-	11.4	-	-	-	-	-
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.3-0.6 <sup>9</sup>	0.095	0.023	0.033	-	-	0.040	0.065	0.175
Iron	µg/L	1	-	300	300	300	-	-	-	-	934	-	-	-	-
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	8.4	9.0	10.5	7.6	4.3	10.1	5.5	5.6
Selenium	µg/L	0.04	15	1	1	1	10	2.11	1.66	-	-	-	-	1.77	2.49
Zinc	µg/L	0.1	110	10	10	30	75-1650 <sup>9</sup>	-	-	10.6	-	-	-	-	-

**Notes:**

- Result does not exceed guideline value
- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.06 to 8.10 and temperature range of -1 °C to 3.2 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.06 to 8.10
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 3.2 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 147 mg/L to 2530 mg/L for total metals, and 78.9 mg/L to 212 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI

"-" No applicable standard or not analyzed

Shaded - Greater than Federal Interim Guideline

**BOLD** - Greater than CCME AW Guideline

Underlined - Greater than Yukon CSR Guideline

**RED** - Greater than current Site Water Licence QZ97-026

**Table 7C: Maximum Groundwater Guideline Exceedances, Zone 3 (Class B Storage Facility) (2015/16)**

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-32	BH95G-33D	MW15-01	MW15-02
			Part E - Effluent Quality Standards	Fine	Coarse		Aquifer & Approx. Sample Depth (mbg)	Bedrock 13.7	Bedrock 10.6	Bedrock 14.4	Bedrock 27.35
							Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95-32	BH95G-33D	MW15-01	MW15-02
							2015/16	2015/16	2015/16	2015/16	
Total Suspended Solids (TSS)	µg/L	1000	15000	-	-	-	-	3050000	1290000	1910000	410000
Sulphate	mg/L	0.5	-	100	100	-	1000	-	-	138	-
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.6 <sup>9</sup>	0.130	-	0.020	-
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	-	4.5	5.5	4.2
Selenium	µg/L	0.04	15	1	1	1	10	-	6.27	1.61	-

**Notes:**

- Result does not exceed guideline value

<sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use

<sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)

<sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)

<sup>4</sup> Maximum increase of 25 mg/L from background levels

<sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 6.59 to 8.50 and temperature range of -2.4 °C to 2.4 °C

<sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 6.59 to 8.50

<sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 1.4 mg/L

<sup>8</sup> Guideline applied is for ultra-oligotrophic

<sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 215 mg/L to 1010 mg/L for total metals, and 181 mg/L to 296 mg/L for dissolved metals

<sup>10</sup> Guideline is for Chromium VI

"-" No applicable standard or not analyzed

Shaded - Greater than Federal Interim Guideline

**BOLD** - Greater than CCME AW Guideline

Underlined - Greater than Yukon CSR Guideline

**RED** - Greater than current Site Water Licence QZ97-026

Table 7D: Maximum Groundwater Guideline Exceedances, Zone 4a (Open Pit - West)

Parameter	Unit	RDL	Water Use Licence QZ97-026	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	ART - 3 (1)	ART - 3 (3)	ART - 4	BH95-129	BH95-146	BH95G-21	BH95G-22	BH95G-23	WW15-01	WW15-02
				Aquifer & Approx. Sample Depth (mbg)	Bedrock		Bedrock	Bedrock	Bedrock 157.25	Bedrock 136.4	Bedrock 7.6	Bedrock 4.3	Overburden 11.3	Overburden 13.5	Bedrock 29		
					Yukon CSR - AW (Freshwater) <sup>3</sup>		ART - 3 (1)	ART - 3 (3)	ART - 4	-	BH95-146	BH95-21	BH95-22	BH95G-23	WW15-01	WW15-02	
Field pH	pH Units	0.01	6.5-9	6.5-9	6.5-9	6.5-9	-	-	-	-	-	-	5.98	-	-	-	-
Total Suspended Solids (TSS)	µg/L	1000	15000	-	-	-	-	-	-	20100	31500	6540000	2060000	7320000	52900	53300	-
Fluoride	µg/L	10	-	120	120	120	3000	170	180	240	220	310	-	-	-	-	-
Sulphate	mg/L	0.5	-	100	100	-	1000	-	-	-	-	273	-	-	-	102	-
Ammonia	µg/L	5	2500	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	502-231,000 <sup>5</sup>	1310-18,500 <sup>6</sup>	-	-	900	-	-	-	-	-	-	-
Arsenic	µg/L	0.02	50	5	5	5	50	156	181	11.8	6.78	-	-	-	74.7	53.0	-
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	0.5-0.6 <sup>9</sup>	0.424	0.877	-	0.051	-	-	0.194	1.69	31.6	-
Copper	µg/L	0.05	15	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	2.6-4.0 <sup>9</sup>	50-90 <sup>9</sup>	-	-	-	-	-	-	6.44	-	-	-
Iron	µg/L	1	-	300	300	300	-	6680	6750	1650	475	1110	592	-	6480	10,400	468
Lead	µg/L	0.005	26	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	3.7-7.0 <sup>9</sup>	60-160 <sup>9</sup>	-	-	-	-	-	-	-	-	122	-
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	8.4	-	-	8.3	-	4.8	5.9	5.2	-	-
Zinc	µg/L	0.1	110	10	10	30	900-2400 <sup>9</sup>	2270	2350	-	-	10.3	19.4	-	2030	5080	-

Notes:

- Result does not exceed guideline value
- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 5.98 to 8.60 and temperature range of -2.4 °C to 4.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 5.98 to 8.60
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of <0.50 mg/L to 2.5 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 125 mg/L to 773 mg/L for total metals, and 112 mg/L to 683 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED - Greater than current Site Water Licence QZ97-026



**Table 7E: Maximum Groundwater Guideline Exceedances, Zone 4b (Open Pit - East)**

Parameter	Unit	RDL	Aquifer & Approx. Sample Depth (mbg)	Federal Interim Guideline - Commercial/Industrial <sup>1</sup>		CCME - AW (Freshwater) <sup>2</sup>	Well ID	BH95G-24	BH95G-25S	BH95G-25D	BH95G-29	BH95-131	MW15-11S
				Aquifer & Approx. Sample Depth (mbg)	Bedrock 7.9		Overburden 10	Bedrock 19.3	Overburden 17.1	Bedrock 125.75	Overburden 5.6		
			Yukon CSR - AW (Freshwater) <sup>3</sup>	Fine	Coarse	Yukon CSR - AW (Freshwater) <sup>3</sup>	BH95G-24	BH95-25	BH95G-25D	BH95G-29	BH95-131	MW15-11S	
						2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	2015/16	
Total Suspended Solids (TSS)	µg/L	1000	15000	-	-	-	-	983000	3320000	1560000	9360000	161000	464000
Fluoride	µg/L	10	-	120	120	120	<u>3000</u>	-	-	-	-	-	190
Sulphate	mg/L	0.5	-	100	100	-	<u>1000</u>	135	203	222	-	235	138
Arsenic	µg/L	0.02	50	5	5	5	<u>50</u>	10.3	8.24	-	7.82	7.10	-
Cadmium	µg/L	0.005	7	0.017	0.017	0.09	<u>0.6</u> <sup>9</sup>	<u>3.75</u>	-	-	-	0.039	0.171
Iron	µg/L	1	-	300	300	300	-	571	7620	2210	438	2210	3240
Phosphorus	µg/L	2	-	-	-	4 <sup>8</sup>	-	-	10.5	7.8	302	14.6	16.5
Selenium	µg/L	0.04	15	1	1	1	<u>10</u>	-	-	-	-	-	1.35
Uranium	µg/L	0.002	-	15	15	15	<u>3000</u>	-	-	-	-	20.5	-
Zinc	µg/L	0.1	110	10	10	30	<u>1650-2400</u> <sup>9</sup>	845	-	12.5	-	-	13.5

**Notes:**

- Result does not exceed guideline value
- <sup>1</sup> Environment Canada (Revised March 2014). Guidance Document on Federal Interim Groundwater Quality Guidelines (FIGQG) for Federal Contaminated Sites, Tier 1 guidelines for fine and coarse grained soil under Commercial/Industrial land use
- <sup>2</sup> Canadian Council of Ministers of the Environment (CCME) (Updated 2014). Canadian Water Quality Guidelines for the Protection of Aquatic Life (Freshwater)
- <sup>3</sup> Environment Act. Contaminated Sites Regulation (CSR) (2002). Schedule 3, Generic Numerical Water Standards for Aquatic Life (AW)
- <sup>4</sup> Maximum increase of 25 mg/L from background levels
- <sup>5</sup> Standard varies with pH and temperature. Values shown based on field pH range of 7.13 to 7.79 and temperature range of -0.1 °C to 4.3 °C
- <sup>6</sup> Guideline varies with pH. Values shown based on field pH range of 7.13 to 7.79
- <sup>7</sup> Guideline varies with chloride. Values shown based on chloride range of 0.51 mg/L to 24 mg/L
- <sup>8</sup> Guideline applied is for ultra-oligotrophic
- <sup>9</sup> Guideline varies with hardness. Value shown based on hardness range of 218 mg/L to 775 mg/L for total metals, and 217 mg/L to 593 mg/L for dissolved metals
- <sup>10</sup> Guideline is for Chromium VI
- "-" No applicable standard or not analyzed
- Shaded - Greater than Federal Interim Guideline
- BOLD** - Greater than CCME AW Guideline
- Underlined - Greater than Yukon CSR Guideline
- RED** - Greater than current Site Water Licence QZ97-026

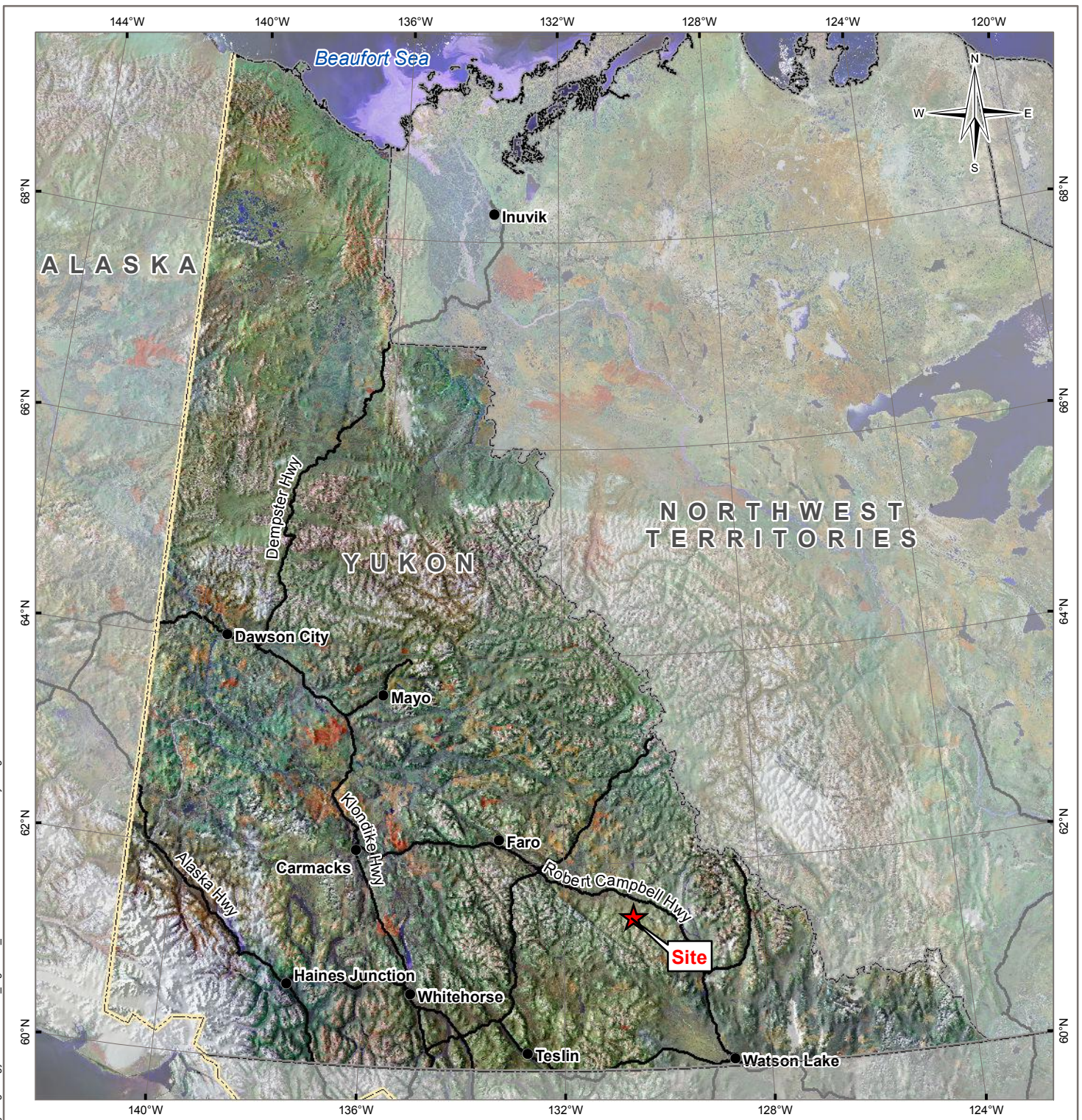


# FIGURES

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Figure 1	Site Location
Figure 2	Site Plan with Monitoring Well Locations
Figure 3	Surficial Geology
Figure 4	Bedrock Geology
Figure 5	Packer Test Diagnostic Plots
Figure 6	Inferred Hydraulic Conductivities, Recovery and RQD
Figure 7	Groundwater Geochemistry Zones
Figure 8	Piper Plots
Figure 9	Groundwater Contours Overburden Aquifer (September 2015)
Figure 10	Groundwater Contours Bedrock Aquifer (September 2015)
Figure 11	Hydrogeological Cross Section A – A'





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**LEGEND**

- ★ Site Location
- Populated Place
- Major Road
- ▭ Provincial / Territorial / State Boundary
- International Border

**NOTES**  
 Base data source:  
 ESRI Data & Maps  
 Geomatics Yukon

**STATUS**  
 ISSUED FOR USE

**BASELINE HYDROGEOLOGY ASSESSMENT, KUDZ ZE KAYAH, YK**

**Site Location**

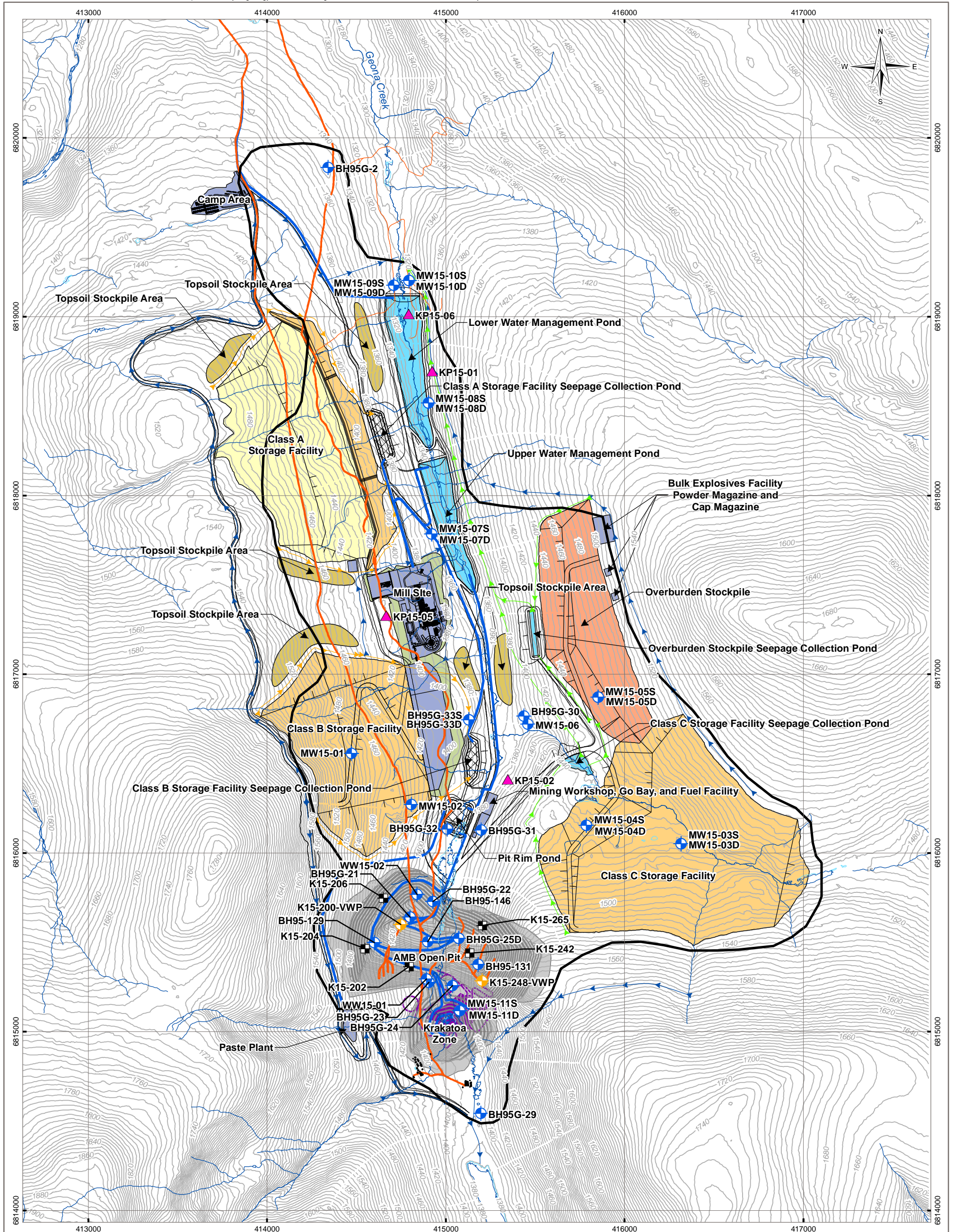
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Scale: 1:6,000,000 	

CLIENT

<b>FILE NO.</b> MIN03071-01_Figure01_Site.mxd				
<b>PROJECT NO.</b> ENVMIN03071-01	<b>DWN</b> MEZ	<b>CKD</b> SL	<b>APVD</b> SK	<b>REV</b> 0
<b>OFFICE</b> Tl EBA-VANC	<b>DATE</b> June 22, 2016			

**Figure 1**





**LEGEND**

- Monitoring Well
- Vibrating Wire Piezometer
- Drill Hole with Packer Tests
- ▲ Ground Temperature Observation Well
- Study Area
- Contour (5 m)
- Existing Road
- Existing Trail
- Existing Building/Structure
- Watercourse/Waterbody
- Wetland Extent
- Proposed Infrastructure
- Proposed Road
- Dewatering Pipeline
- Diversion Ditch (Non Contact)
- Diversion Ditch (Contact Class A & B)
- Diversion Ditch (Contact Class C)
- Water
- Class A Storage Facility
- Class B & C Storage Facilities
- Overburden Stockpile
- Topsoil Stockpile
- Open Pit
- Reclaimed/Progressive Closure
- Seepage Collection Pond
- Other Facilities
- Underground Workings

**BASELINE HYDROGEOLOGY ASSESSMENT, KUDZE KAYAH, YK**

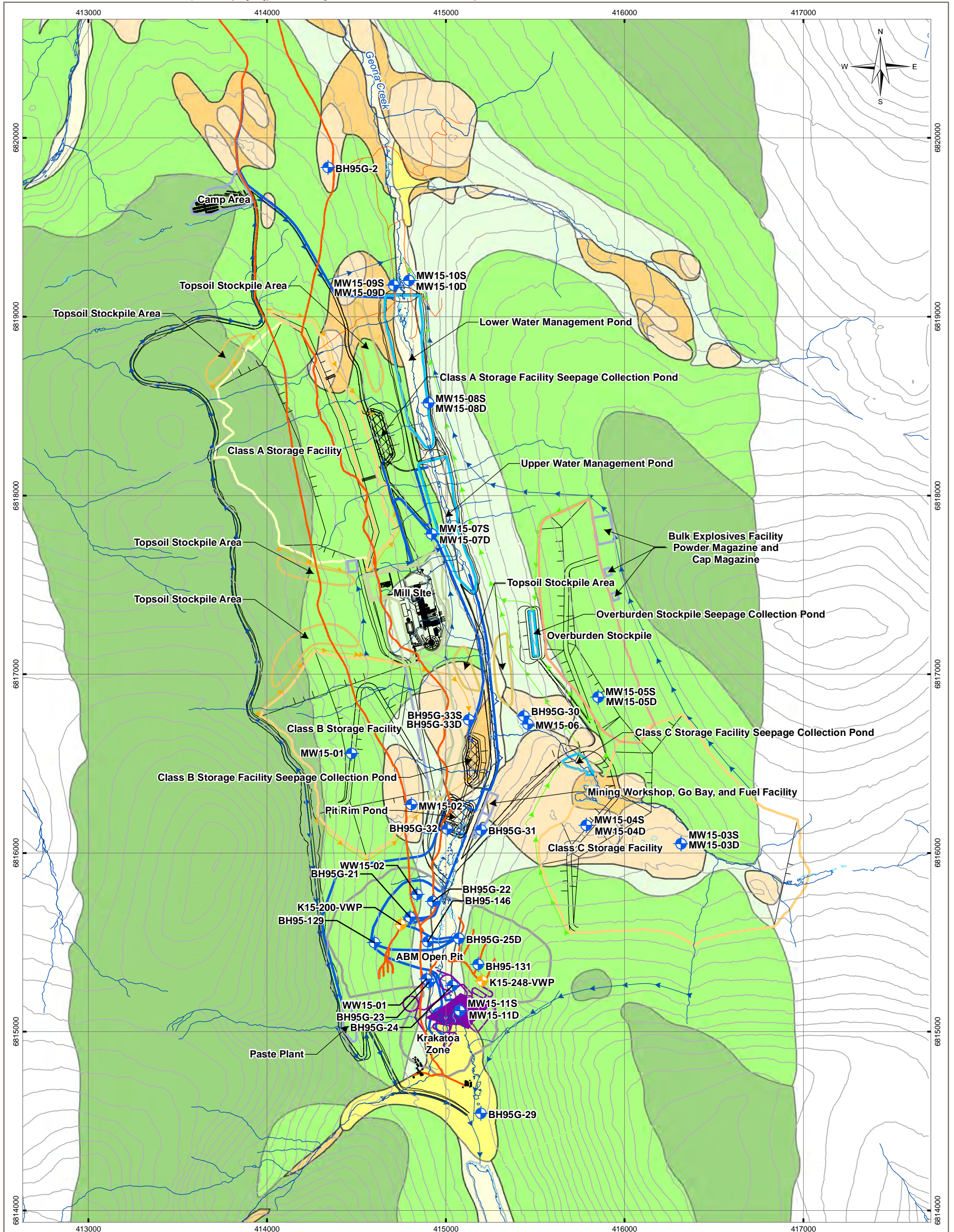
**Site Plan with Monitoring Well Locations**

<b>PROJECTION</b> UTM Zone 9	<b>DATUM</b> NAD83	<b>CLIENT</b> 
Scale: 1:20,000 400 200 0 400 Metres		
<b>FILE NO.</b> MIN03071-01_Figure02_MWLocations.mxd		
<b>PROJECT NO.</b> ENVMIN03071-01	<b>DWN</b> MEZ	<b>CKD</b> SL
<b>OFFICE</b> TlEBA-VANC	<b>APVD</b> SK	<b>REV</b> 1
<b>DATE</b> October 12, 2016		<b>Figure 2</b>

**NOTES**  
Base data provided by BMC Minerals (No. 1) Ltd. (Feb 2016)  
Infrastructure from Knight Piesold (September 20, 2016)

**STATUS**  
ISSUED FOR USE





**LEGEND**

**Surficial Geology**

**Glaciofluvial Deposits**

- Glaciofluvial Complex
- Glaciofluvial Fan Sediments

**Morainial Deposits**

- Till Apron
- Till Blanket
- Till Veneer

**Alluvial Deposits**

- Alluvial Sediments, Undivided
- Alluvial Fan Sediments
- Monitoring Well
- Vibrating Wire Piezometer

- Contour (20 m)
- Existing Road
- Existing Trail
- Existing Building/Structure
- Watercourse/Waterbody
- Wetland Extent

**Proposed Infrastructure**

- Proposed Road
- Dewatering Pipeline
- Diversion Ditch (Non Contact)
- Diversion Ditch (Contact Class A & B)
- Diversion Ditch (Contact Class C)
- Water
- Class A Storage Facility

- Class B & C Storage Facilities
- Overburden Stockpile
- Topsoil Stockpile Area
- Open Pit
- Reclaimed/Progressive Closure
- Seepage Collection Pond
- Other Facilities
- Underground Workings

**NOTES**  
 Base data provided by BMC Minerals (No. 1) Ltd. (Feb 2016)  
 Infrastructure from Knight Piesold (September 20, 2016)  
 Surficial geology from Cominco (1996)

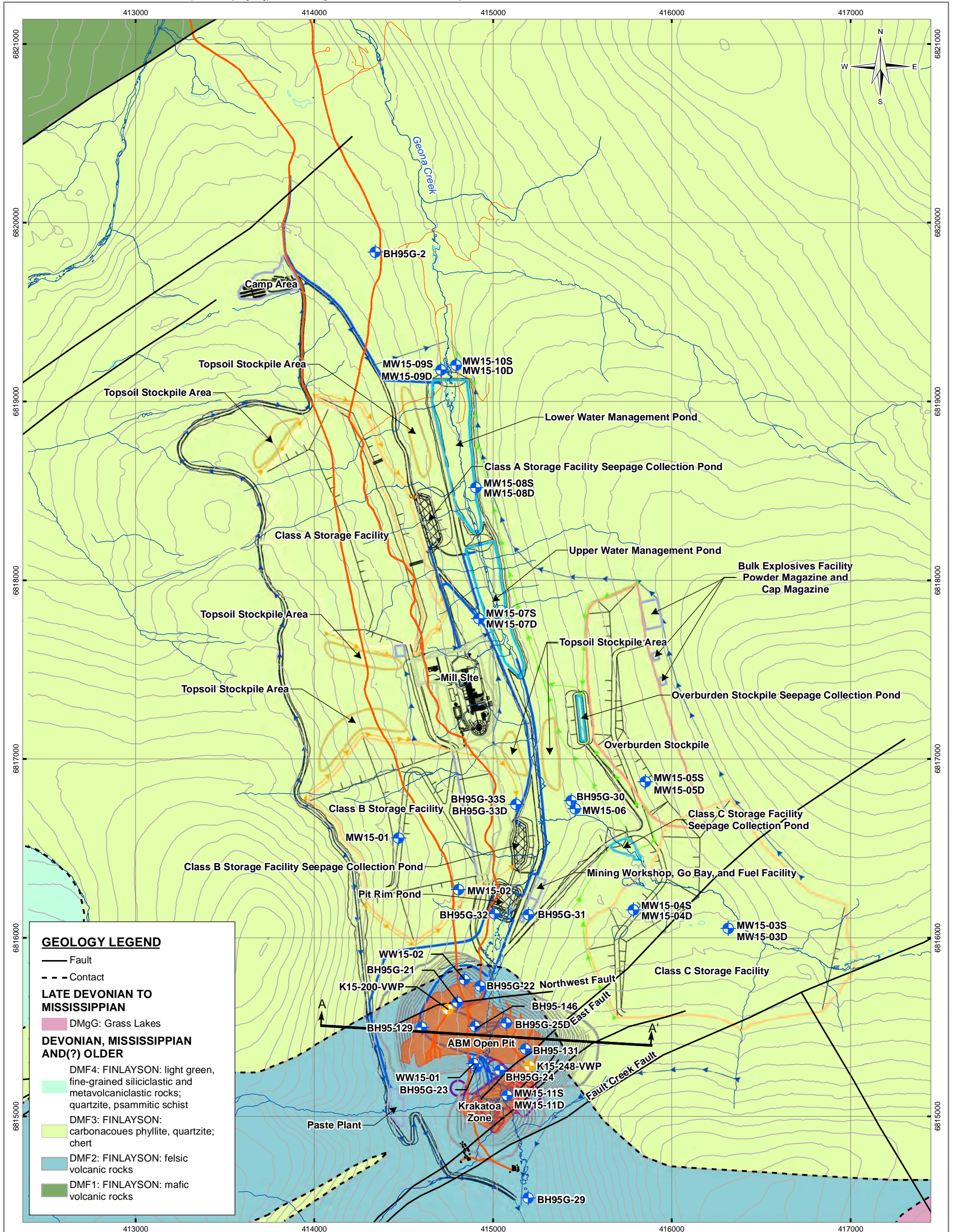
**STATUS**  
 ISSUED FOR USE

**BASELINE HYDROGEOLOGY ASSESSMENT, KUDZ ZE KAYAH, YK**

**Surficial Geology**

<b>PROJECTION</b> UTM Zone 9	<b>DATUM</b> NAD83	<b>CLIENT</b> 
Scale: 1:20,000 400 200 0 400 Metres		
<b>FILE NO.</b> MIN03071-01_Figure03_SurficialGeol.mxd	<b>CLIENT</b> 	
<b>PROJECT NO.</b> ENVMIN03071-01	<b>DWN</b> MEZ	<b>CKD</b> SL
<b>OFFICE</b> TlEBA-VANC	<b>APVD</b> SK	<b>REV</b> 1
<b>DATE</b> October 12, 2016		<b>Figure 3</b>





**GEOLOGY LEGEND**

- Fault
- - - Contact

**LATE DEVONIAN TO MISSISSIPPIAN**

- DMgG: Grass Lakes

**DEVONIAN, MISSISSIPPIAN AND(?) OLDER**

- DMF4: FINLAYSON: light green, fine-grained siliciclastic and metavolcanic rocks; quartzite, psammitic schist
- DMF3: FINLAYSON: carbonaceous phyllite, quartzite; chert
- DMF2: FINLAYSON: felsic volcanic rocks
- DMF1: FINLAYSON: mafic volcanic rocks

**LEGEND**

- Monitoring Well
- Vibrating Wire Piezometer
- Cross Section
- Contour (20 m)
- Existing Road
- Existing Trail
- Existing Building/Structure
- Watercourse/Waterbody
- Wetland Extent
- Proposed Infrastructure**
- Proposed Road
- Dewatering Pipeline
- Diversion Ditch (Non Contact)
- Diversion Ditch (Contact Class A & B)
- Diversion Ditch (Contact Class C)
- Water
- Class A Storage Facility
- Class B & C Storage Facilities
- Overburden Stockpile
- Topsoil Stockpile Area
- Open Pit
- Reclaimed/Progressive Closure
- Seepage Collection Pond
- Other Facilities
- Mineralized Zone
- Underground Workings

**NOTES**  
 Geology data provided by Government of Yukon (accessed April 2016) Infrastructure from Knight Piesold (September 20, 2016)

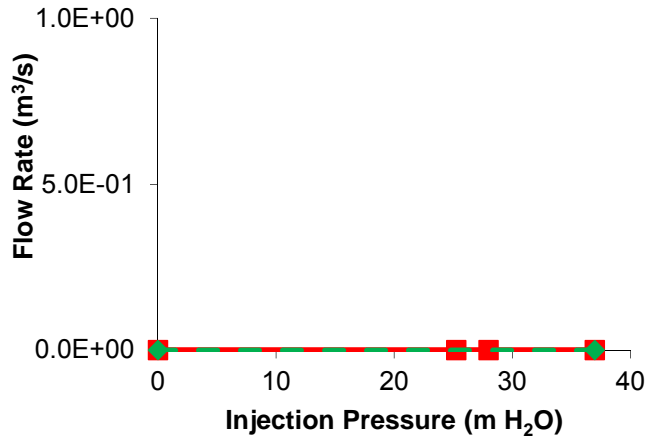
**STATUS**  
 ISSUED FOR USE

**BASILINE HYDROGEOLOGY ASSESSMENT, KUDZ ZE KAYAH, YK**

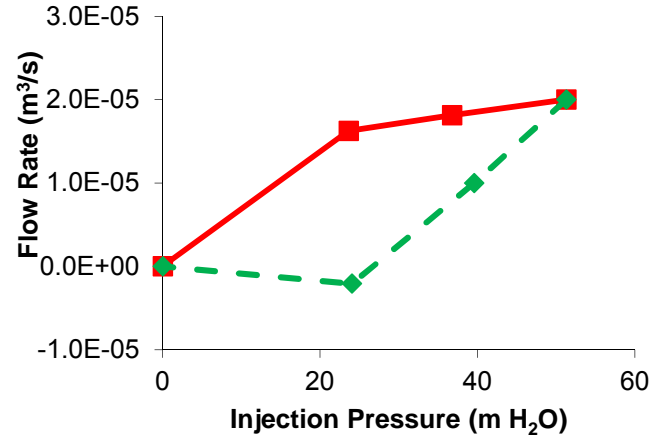
**Bedrock Geology**

PROJECTION UTM Zone 9	DATUM NAD83	CLIENT 
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PROJECT NO. ENVMIN03071-01	DWN MEZ	CKD SL
APVD SK	REV 1	CLIENT 
OFFICE TlEBA-VANC	DATE October 12, 2016	<b>Figure 4</b>

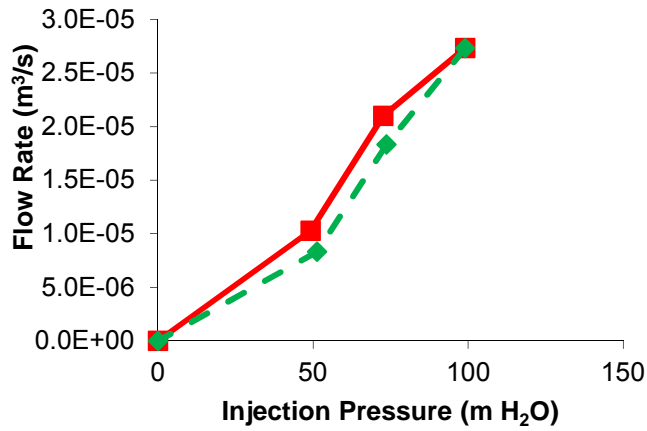
ABM2 / K15-204: 21.5 to 35m ah <sup>1</sup>



ABM2 / K15-204: 72.5 to 95m ah



ABM2 / K15-204: 123.5 to 149m ah



**LEGEND**

- Ascending Pressure
- ◆ Reducing Pressure

**NOTES**

<sup>1</sup> No measurable flow.

**CLIENT**



**Kudz Ze Kayah  
Hydrogeological Assessment**

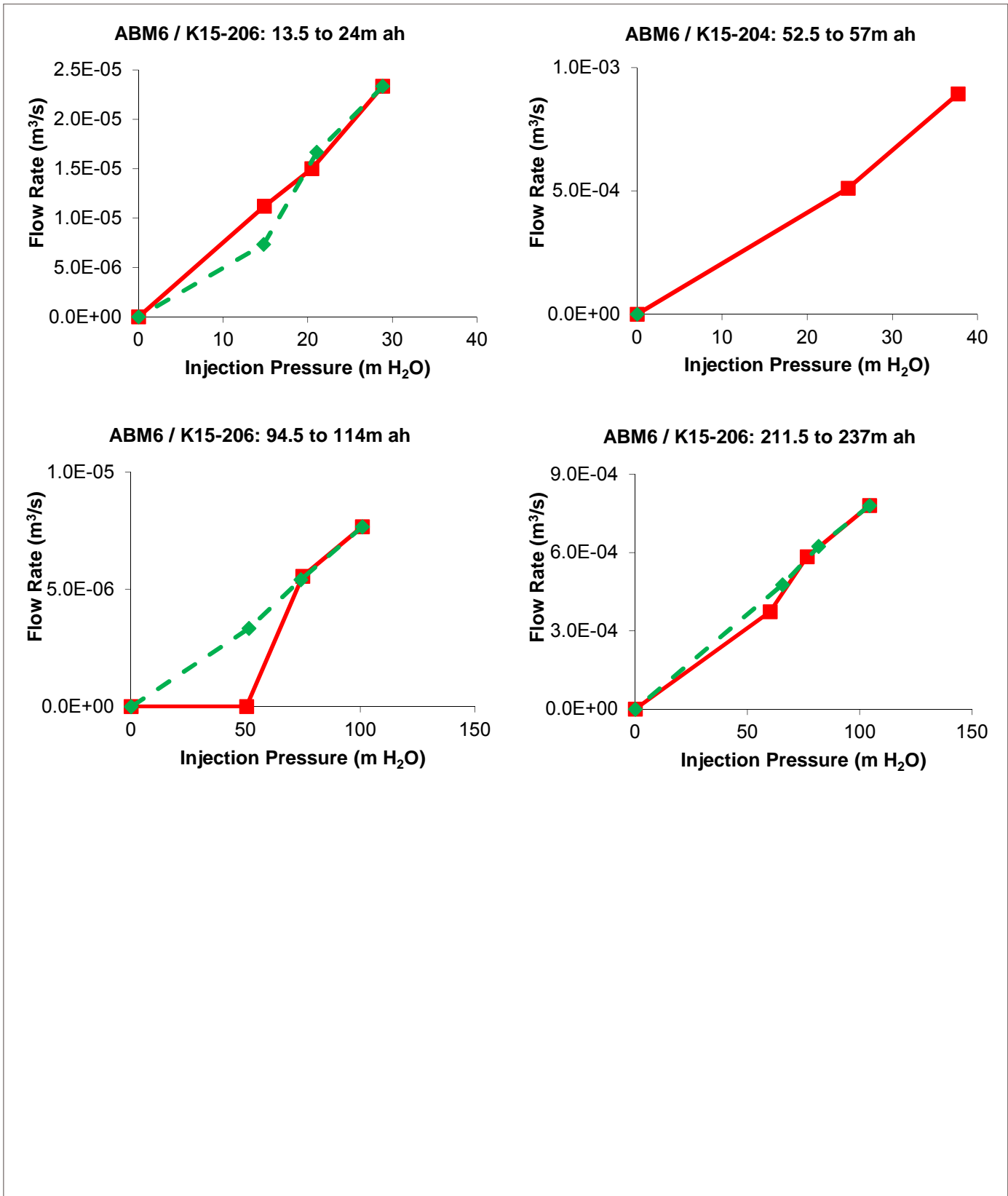
**Packer Test Diagnostic Plots  
ABM2 / K15-204**

PROJECT NO. ENVMIN03071-01	DWN ER	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

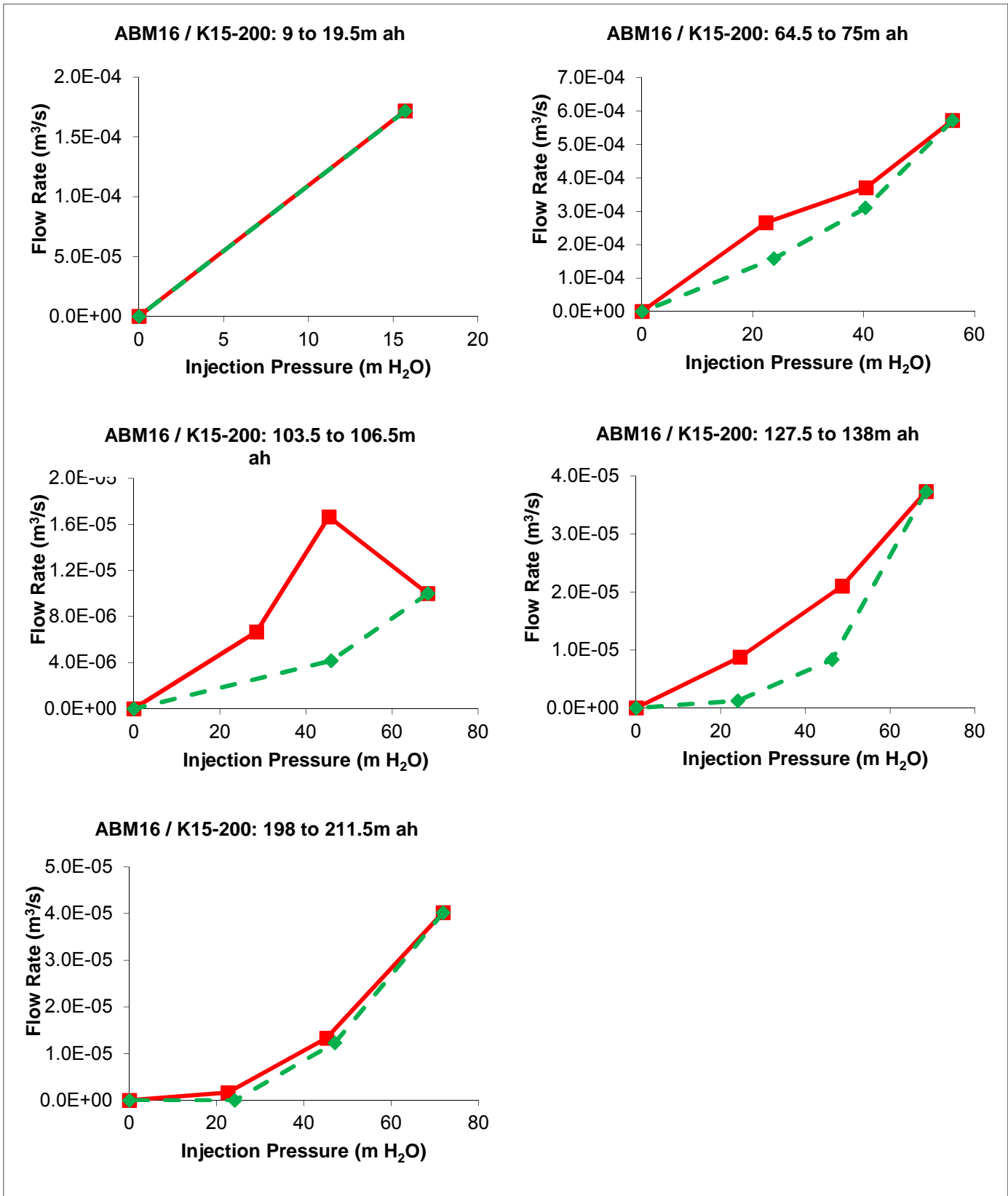
**Figure 5a**

**STATUS**  
ISSUED FOR USE





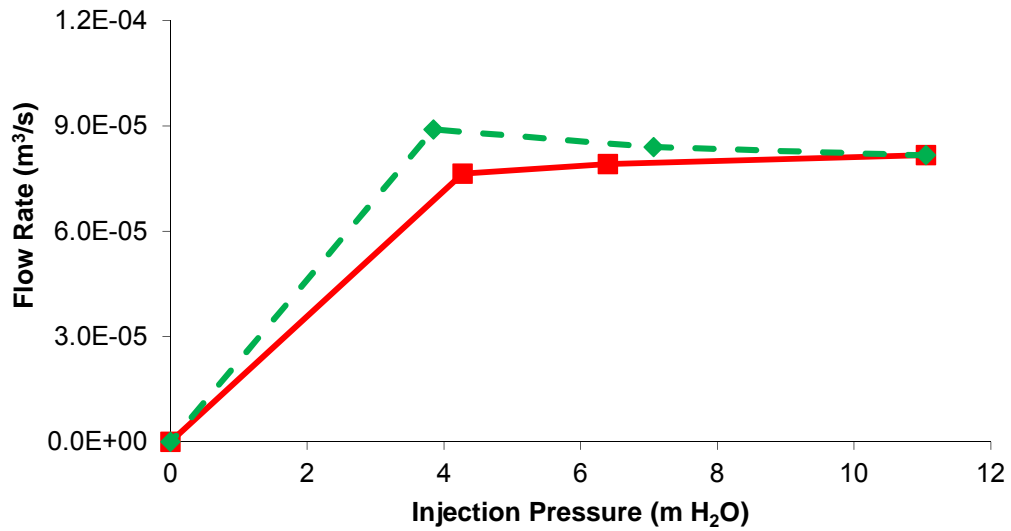
<b>LEGEND</b> Ascending Pressure Reducing Pressure	<b>NOTES</b>  STATUS ISSUED FOR USE	<b>CLIENT</b>  	<b>Kudz Ze Kayah Hydrogeological Assessment</b>				<b>Figure 5b</b>
		<b>Packer Test Diagnostic Plots ABM6 / K15-206</b>		PROJECT NO. ENVMIN03071-01	DWN ER	CKD SK	
		OFFICE EBA-WHSE	DATE June 23, 2016				



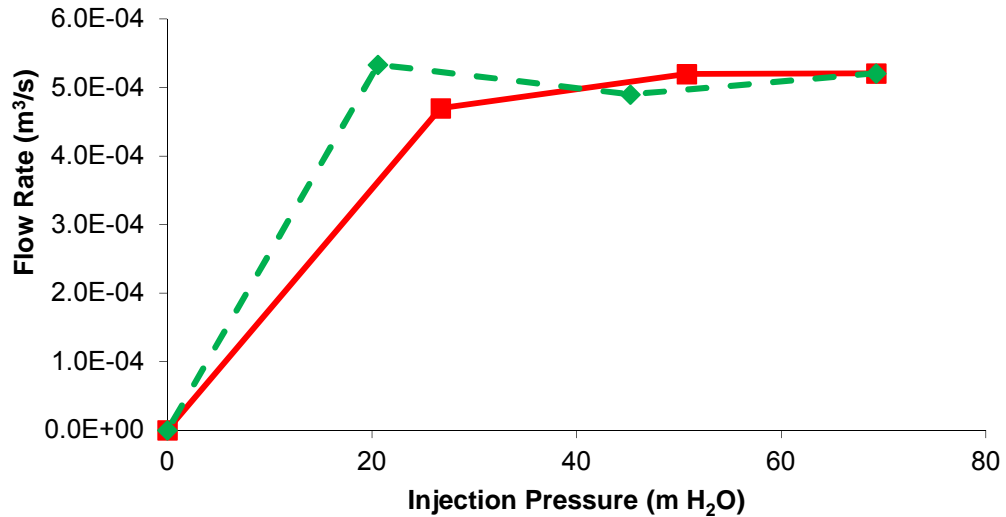
<b>LEGEND</b> Ascending Pressure Reducing Pressure	<b>NOTES</b>  <b>STATUS</b> ISSUED FOR USE	<b>CLIENT</b>    	<b>Kudz Ze Kayah Hydrogeological Assessment</b>				<b>Figure 5c</b>
			<b>Packer Test Diagnostic Plots ABM16 / K15-200</b>		<b>PROJECT NO.</b> ENVMIN03071-01	<b>DWN</b> ER	
			<b>OFFICE</b> EBA-WHSE	<b>DATE</b> June 23, 2016			



ABM18 / K15-202: 21.5 to 32m ah



ABM18 / K15-202: 57.5 to 71m ah



**LEGEND**

- Ascending Pressure
- ◆ Reducing Pressure

NOTES

STATUS  
ISSUED FOR USE

CLIENT

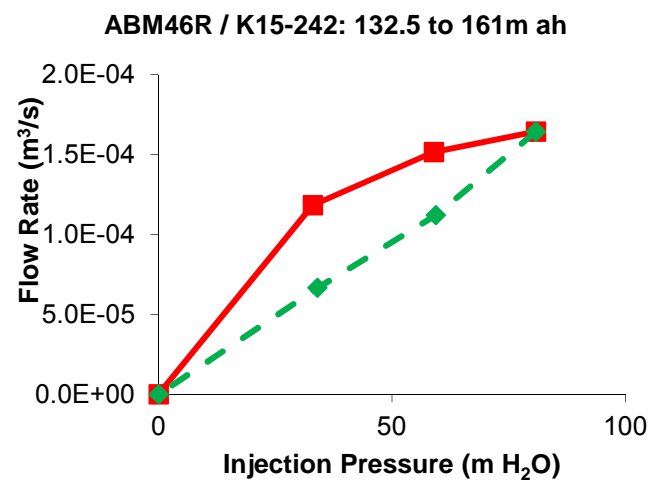
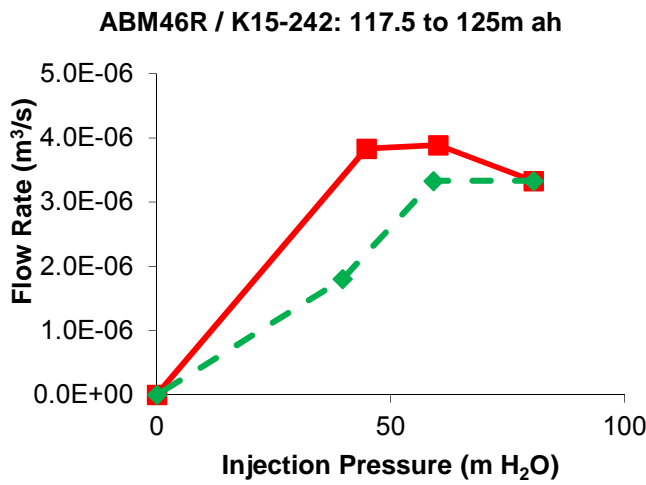
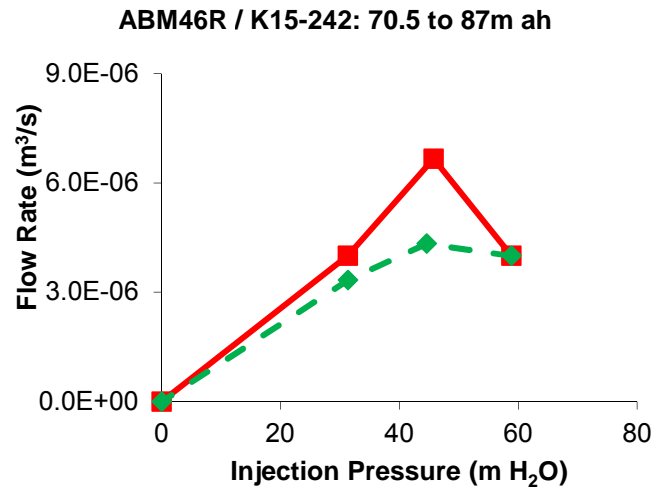
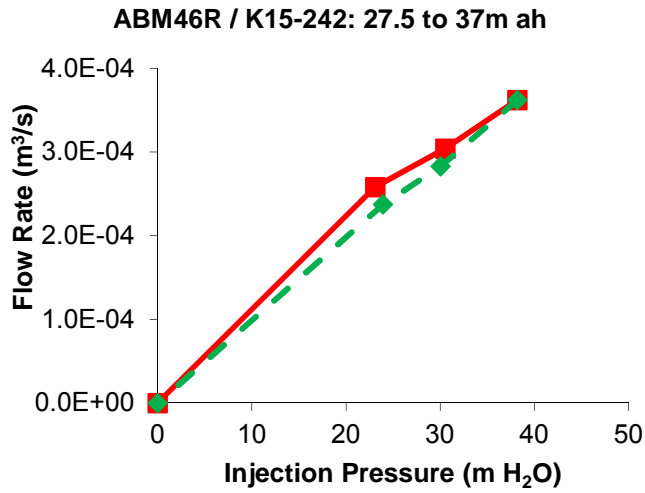


**Kudz Ze Kayah  
Hydrogeological Assessment**

**Packer Test Diagnostic Plots  
ABM18 / K15-202**

PROJECT NO. ENVMIN03071-01	DWN ER	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

Figure 5d



**LEGEND**

- Ascending Pressure
- -◇- - Reducing Pressure

**NOTES**

STATUS  
ISSUED FOR USE

**CLIENT**

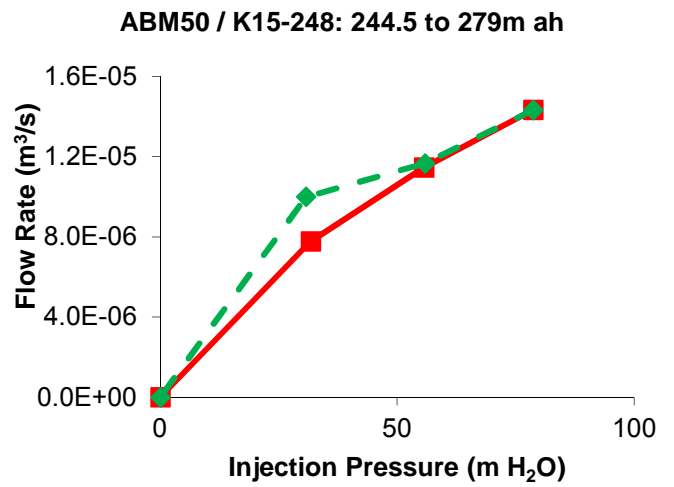
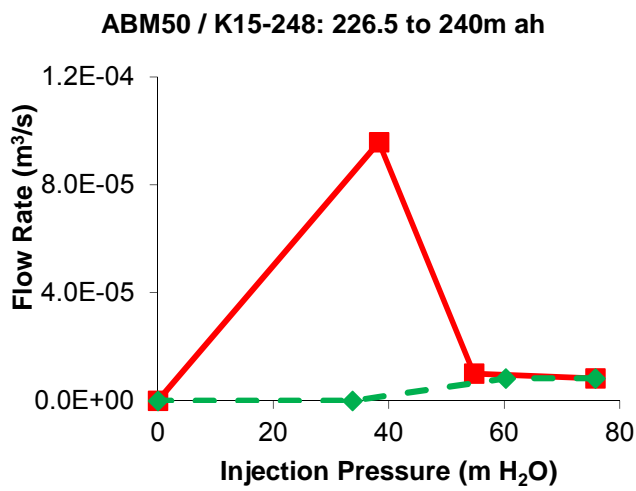
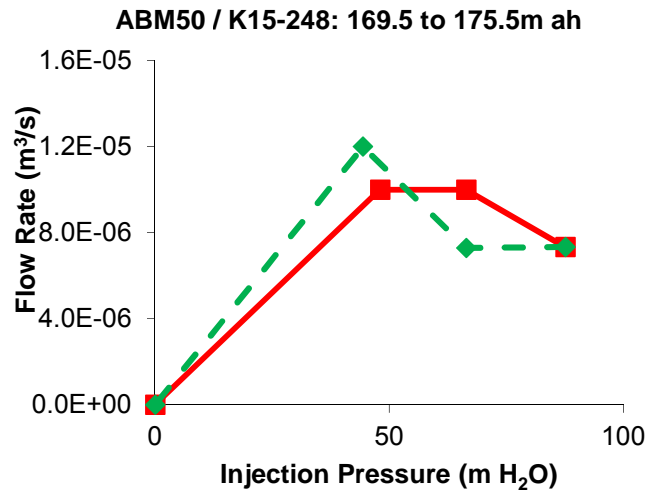
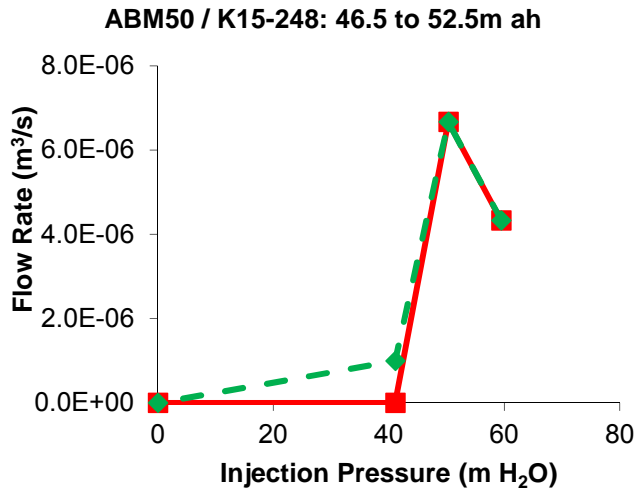


**Kudz Ze Kayah  
Hydrogeological Assessment**

**Packer Test Diagnostic Plots  
ABM46R / K15-242**

PROJECT NO. ENVMIN03071-01	DWN ER	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

**Figure 5e**



**LEGEND**

- Ascending Pressure
- ◆ Reducing Pressure

NOTES

STATUS  
ISSUED FOR USE

CLIENT



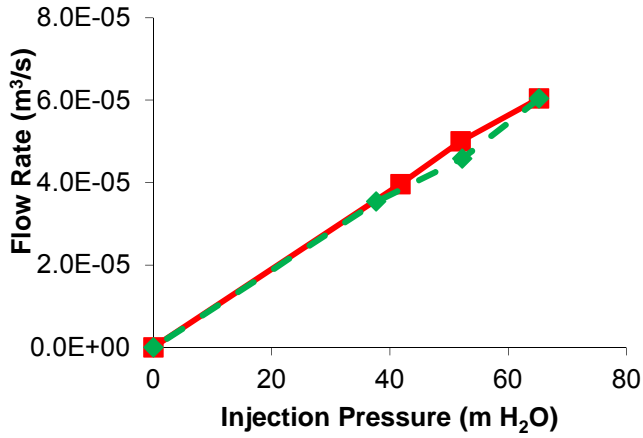
**Kudz Ze Kayah  
Hydrogeological Assessment**

**Packer Test Diagnostic Plots  
ABM50 / K15-248**

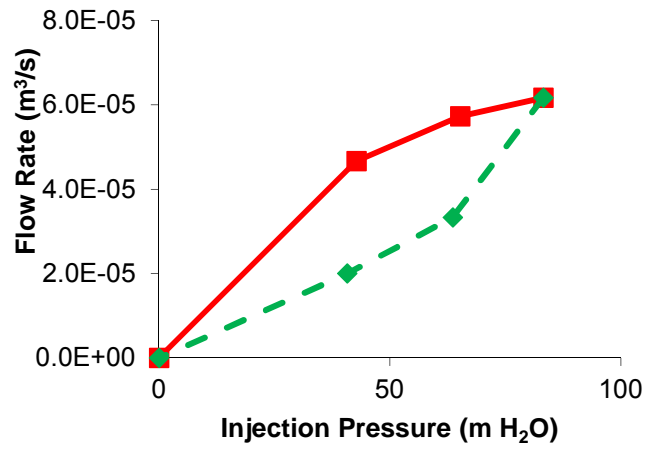
PROJECT NO. ENVMIN03071-01	DWN ER	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

**Figure 5f**

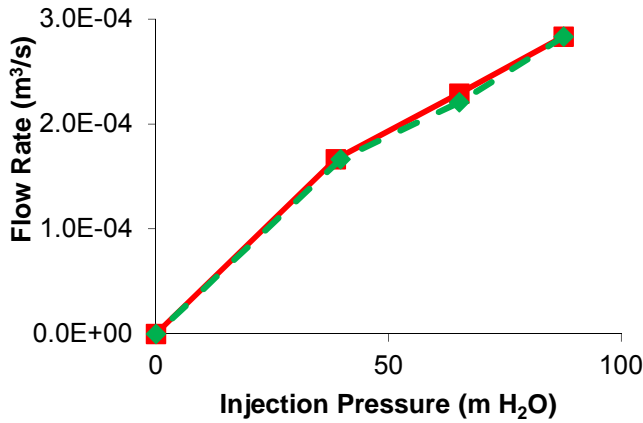
ABM51R / K15-265: 70.5 to 90m ah



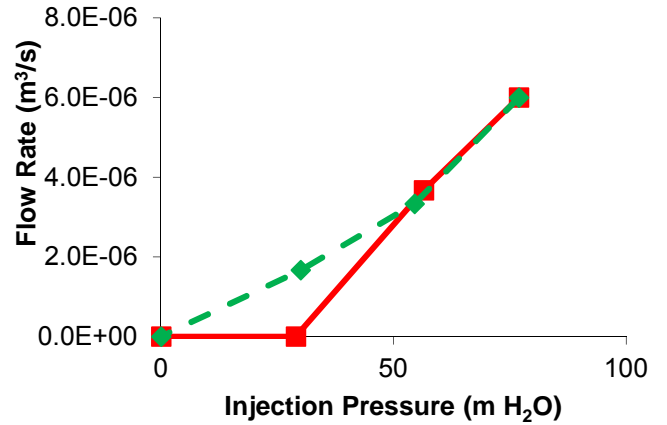
ABM51R / K15-265: 133.5 to 153m ah



ABM51R / K15-265: 190.5 to 201m ah



ABM51R / K15-265: 271.5 to 285m ah



**LEGEND**

- Ascending Pressure
- -◇- - Reducing Pressure

NOTES

STATUS  
ISSUED FOR USE

CLIENT

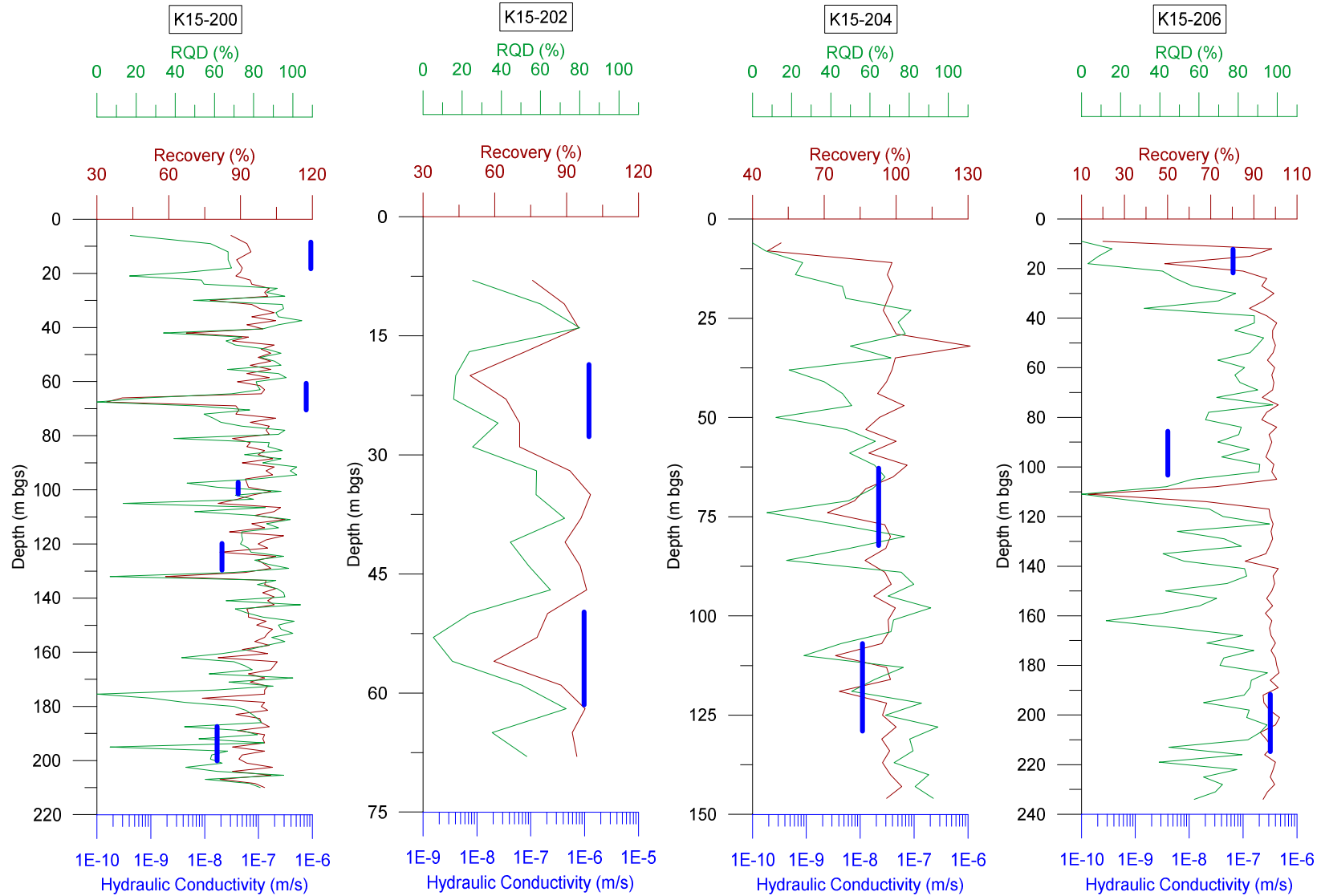


**Kudz Ze Kayah  
Hydrogeological Assessment**

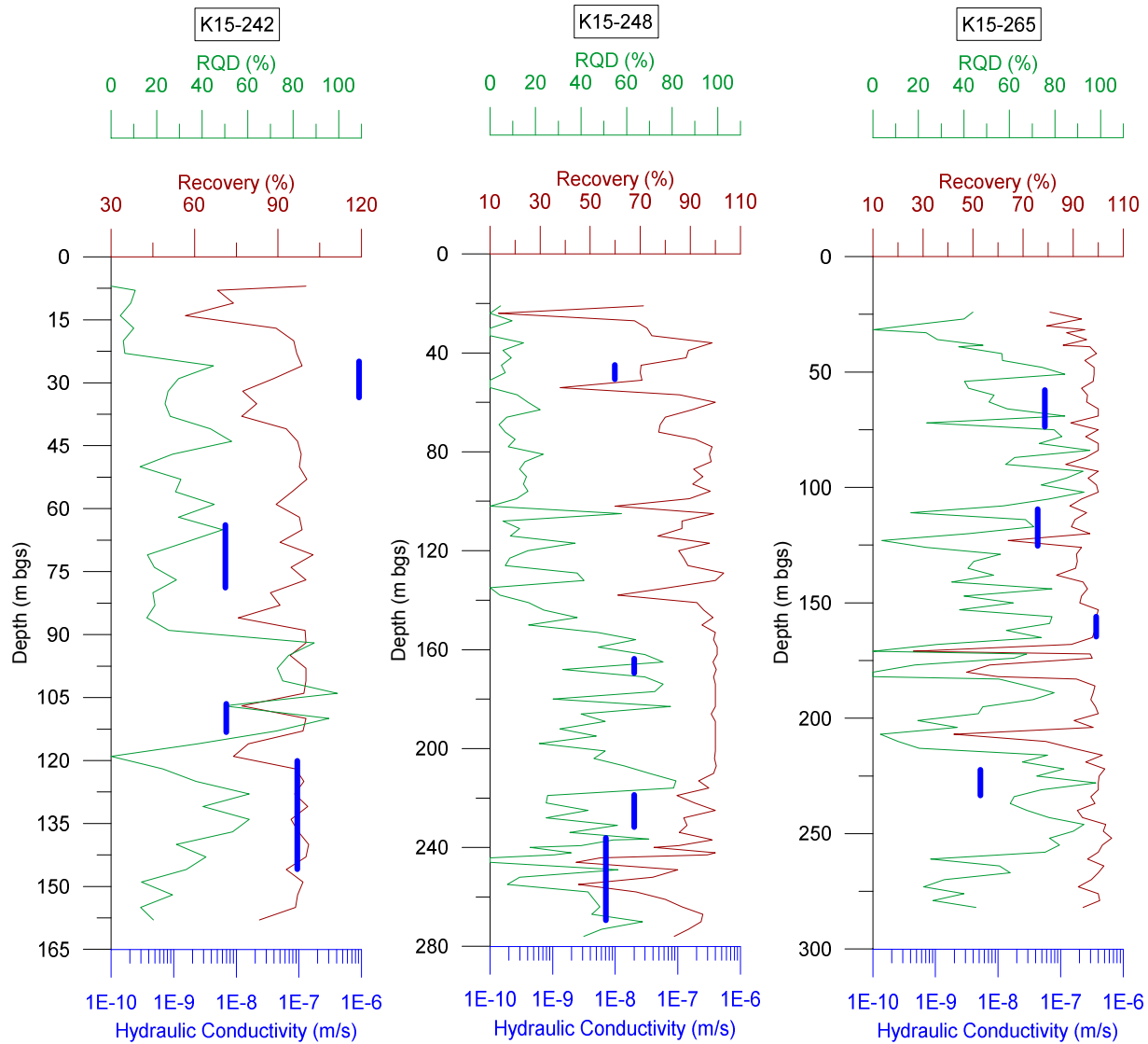
**Packer Test Diagnostic Plots  
ABM51R / K15-265**

PROJECT NO. ENVMIN03071-01	DWN ER	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

Figure 5g

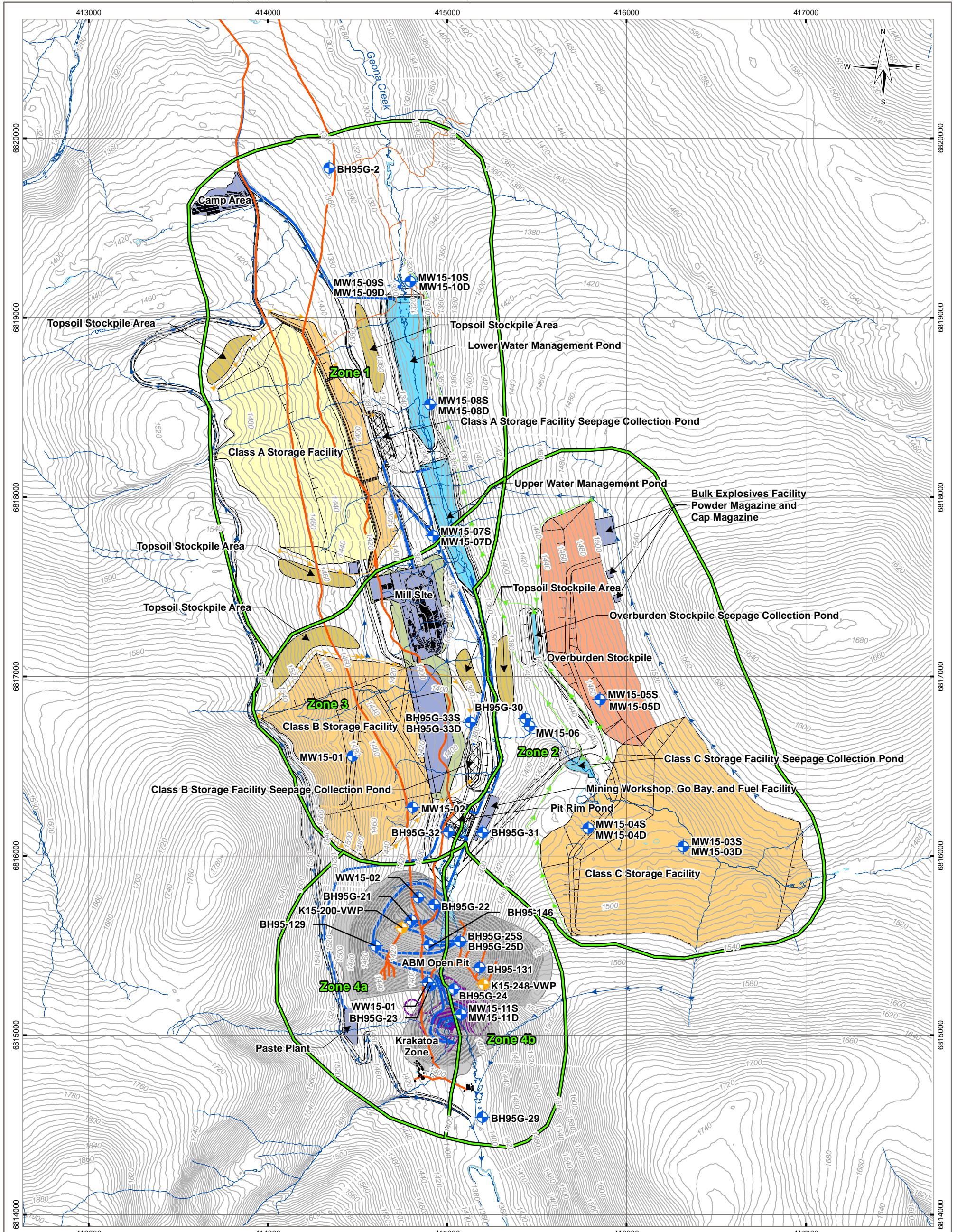


**Figure 6A: Inferred Hydraulic Conductivities, Recovery and RQD**



**Figure 6B: Inferred Hydraulic Conductivities, Recovery and RQD**





**LEGEND**

- |  |  |  |
|--|--|--|
| <ul style="list-style-type: none"> <li> Monitoring Well</li> <li> Vibrating Wire Piezometer</li> <li> Groundwater Geochemistry Zone</li> <li> Contour (5 m)</li> <li> Existing Road</li> <li> Existing Trail</li> <li> Existing Building/Structure</li> <li> Watercourse/Waterbody</li> <li> Wetland Extent</li> </ul> | <p><b>Proposed Infrastructure</b></p> <ul style="list-style-type: none"> <li> Proposed Road</li> <li> Dewatering Pipeline</li> <li> Diversion Ditch (Non Contact)</li> <li> Diversion Ditch (Contact Class A &amp; B)</li> <li> Diversion Ditch (Contact Class C)</li> <li> Water</li> <li> Class A Storage Facility</li> <li> Class B &amp; C Storage Facilities</li> </ul> | <ul style="list-style-type: none"> <li> Overburden Stockpile</li> <li> Topsoil Stockpile</li> <li> Open Pit</li> <li> Reclaimed/Progressive Closure</li> <li> Seepage Collection Pond</li> <li> Other Facilities</li> <li> Underground Workings</li> </ul> |
|--|--|--|

**BASELINE HYDROGEOLOGY ASSESSMENT, KUDZ ZE KAYAH, YK**

**Groundwater Geochemistry Zones**

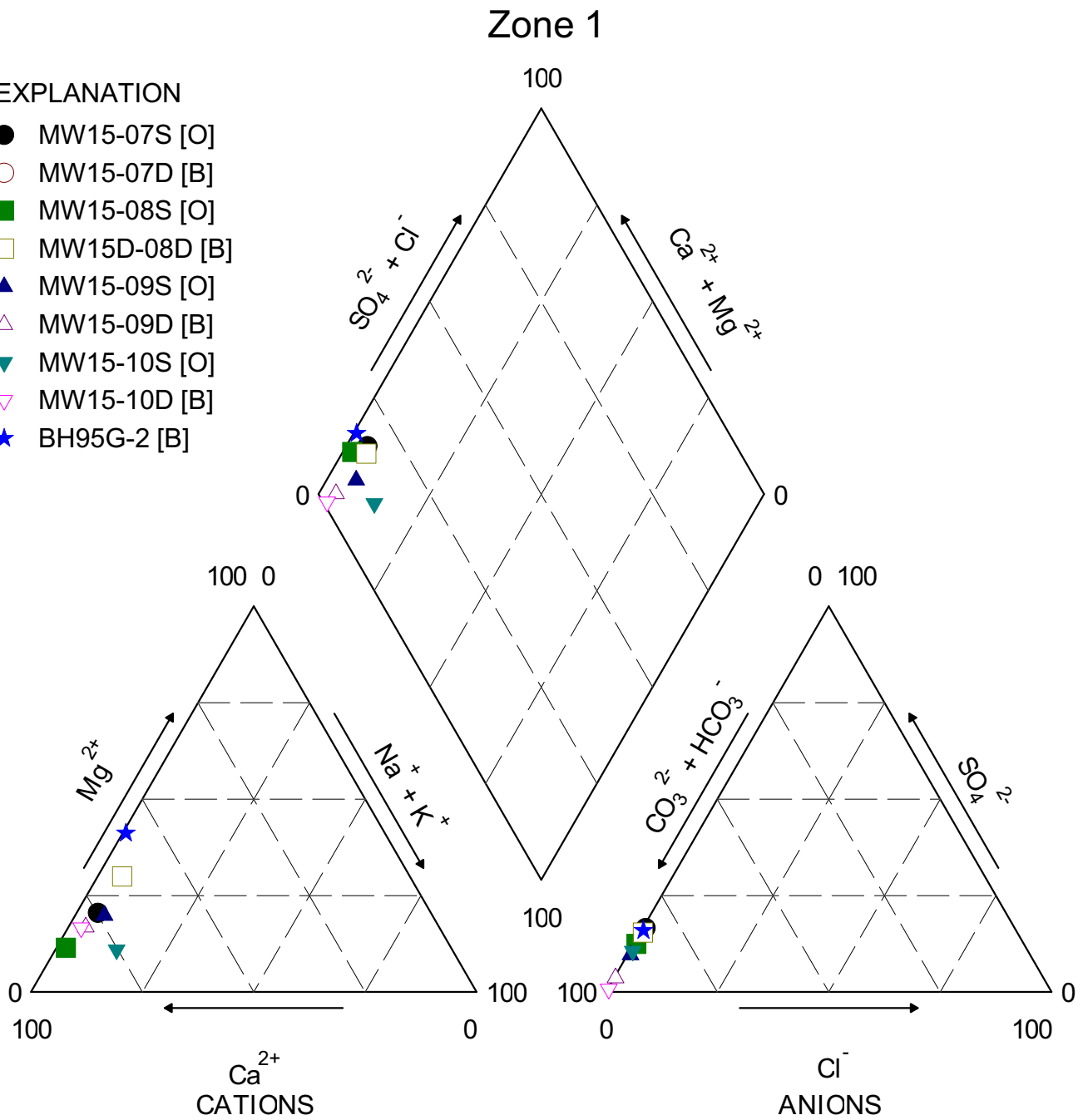
<p><b>PROJECTION</b> UTM Zone 9</p>	<p><b>DATUM</b> NAD83</p>	<p><b>CLIENT</b> </p>
<p>Scale: 1:20,000</p> <p>Metres</p>		
<p><b>FILE NO.</b> MIN03071-01_Figure07_Geochem.mxd</p>		
<p><b>PROJECT NO.</b> ENVMIN03071-01</p>	<p><b>DWN</b> MEZ</p>	<p><b>CKD</b> SL</p>
<p><b>OFFICE</b> TlEBA-VANC</p>	<p><b>DATE</b> October 12, 2016</p>	<p><b>APVD</b> SK</p>
		<p><b>REV</b> 1</p>
<p><b>STATUS</b> ISSUED FOR USE</p>		
<p><b>Figure 7</b></p>		

**NOTES**  
Base data provided by BMC Minerals (No. 1) Ltd. (Feb 2016)  
Infrastructure from Knight Piesold (September 20, 2016)



EXPLANATION

- MW15-07S [O]
- MW15-07D [B]
- MW15-08S [O]
- MW15D-08D [B]
- ▲ MW15-09S [O]
- △ MW15-09D [B]
- ▼ MW15-10S [O]
- ▽ MW15-10D [B]
- ★ BH95G-2 [B]



CLIENT



**Baseline Hydrogeology Assessment  
Kudz Ze Kayah Project, Yukon**

**Piper Plot  
Zone 1**

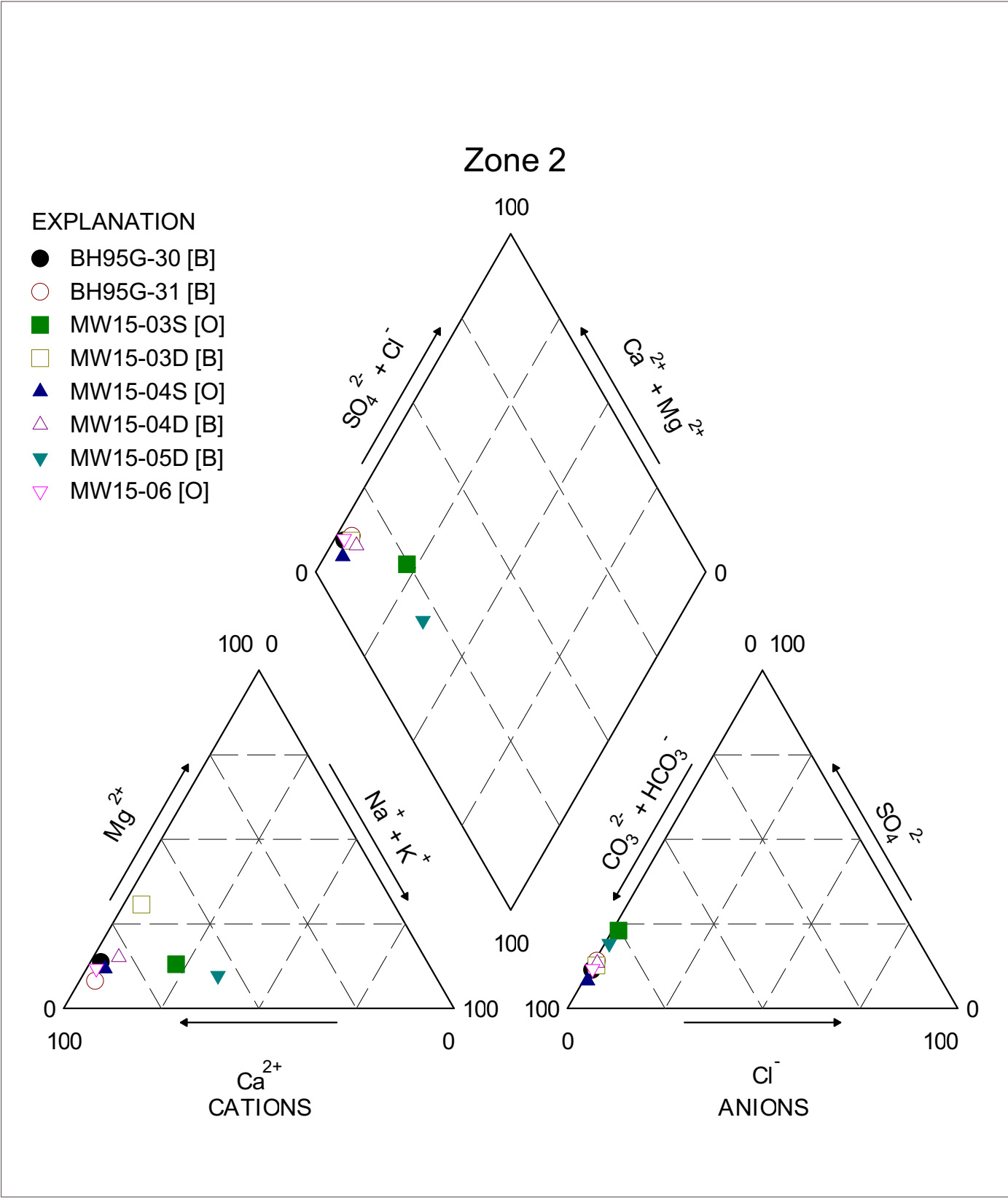


PROJECT NO. ENVMIN03071-01	DWN AS	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

**Figure 8a**

STATUS  
ISSUED FOR USE





CLIENT



**Baseline Hydrogeology Assessment  
Kudz Ze Kayah Project, Yukon**

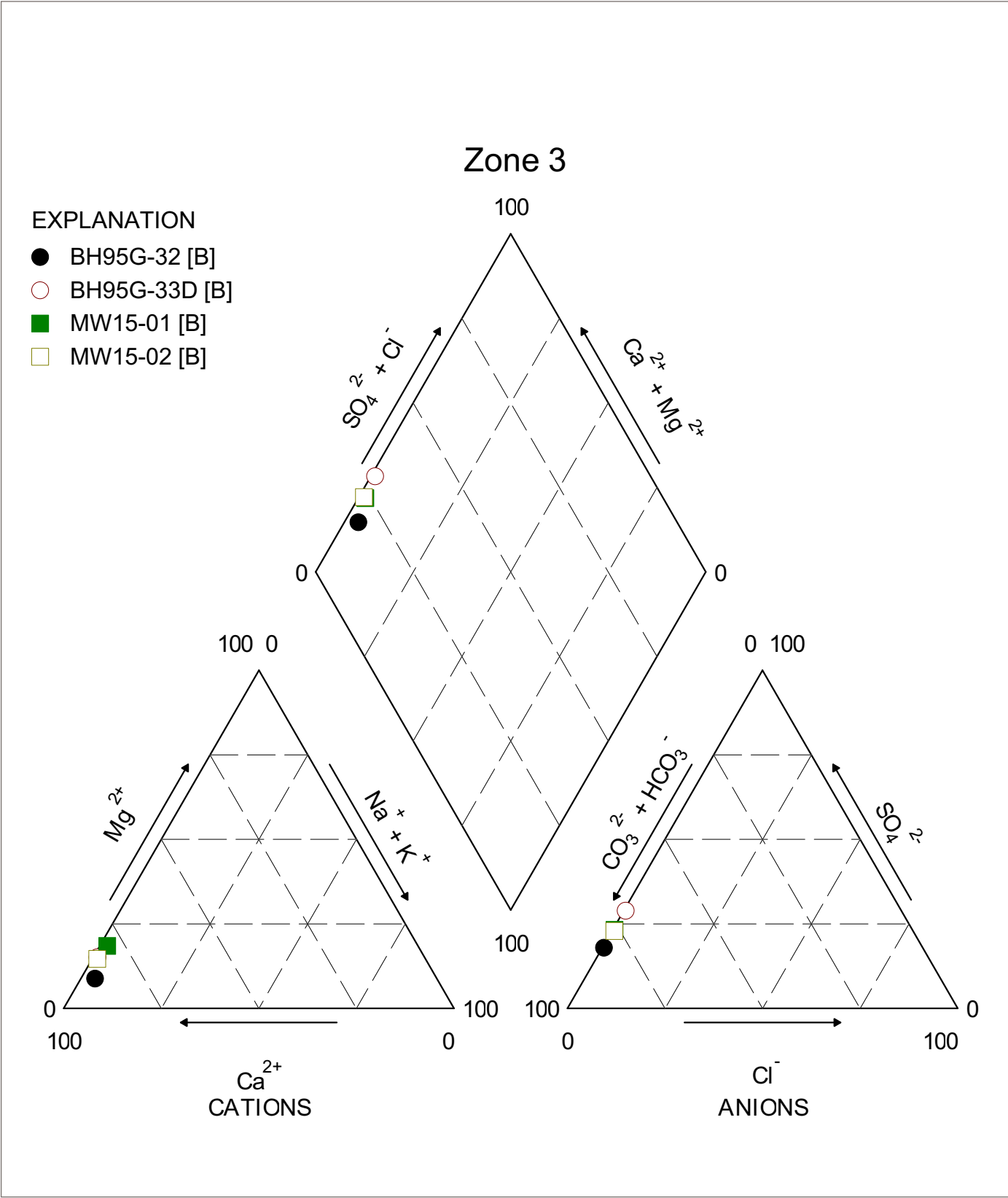
**Piper Plot  
Zone 2**



PROJECT NO. ENVMIN03071-01	DWN AS	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

**Figure 8b**

STATUS  
ISSUED FOR USE



CLIENT



**Baseline Hydrogeology Assessment  
Kudz Ze Kayah Project, Yukon**

**Piper Plot  
Zone 3**



PROJECT NO. ENVMIN03071-01	DWN AS	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

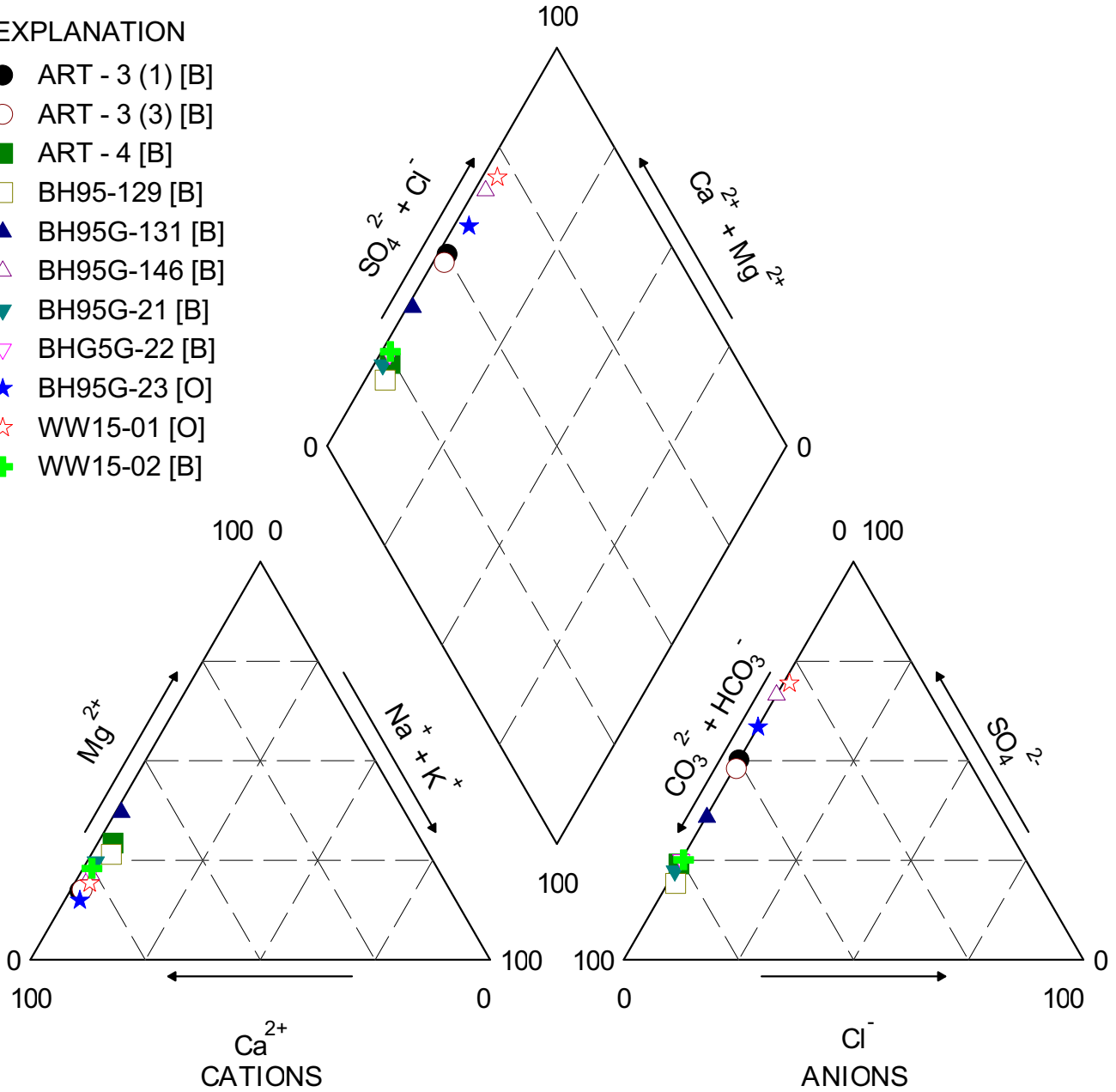
**Figure 8c**

STATUS  
ISSUED FOR USE

# Zone 4a

## EXPLANATION

- ART - 3 (1) [B]
- ART - 3 (3) [B]
- ART - 4 [B]
- BH95-129 [B]
- ▲ BH95G-131 [B]
- △ BH95G-146 [B]
- ▼ BH95G-21 [B]
- ▽ BHG5G-22 [B]
- ★ BH95G-23 [O]
- ☆ WW15-01 [O]
- ✚ WW15-02 [B]



CLIENT



## Baseline Hydrogeology Assessment Kudz Ze Kayah Project, Yukon

### Piper Plot Zone 4a



PROJECT NO. ENVMIN03071-01	DWN AS	CKD SK	APVD SK	REV 0
OFFICE EBA-WHSE	DATE June 23, 2016			

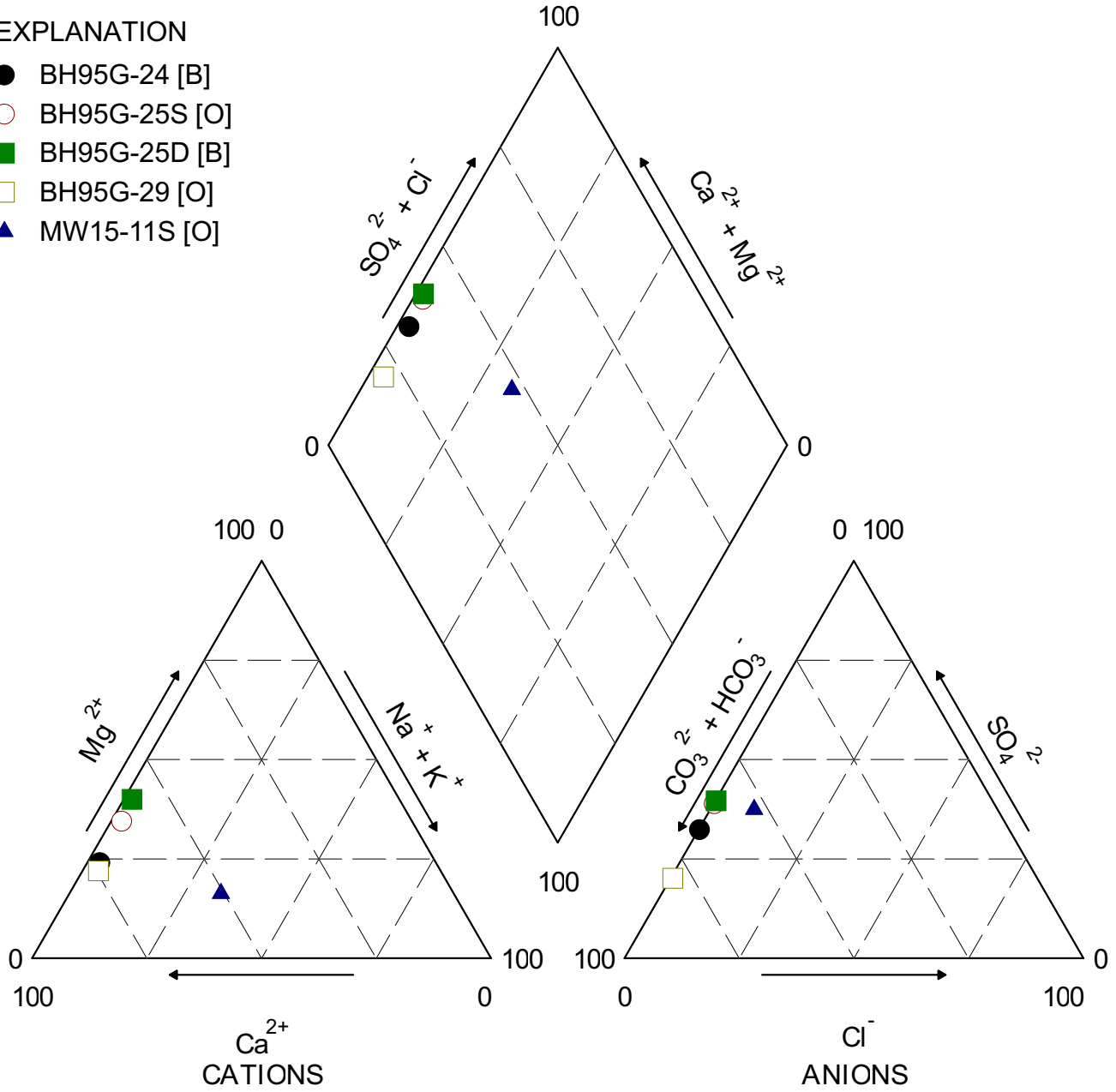
Figure 8d

STATUS  
ISSUED FOR USE

# Zone 4b

## EXPLANATION

- BH95G-24 [B]
- BH95G-25S [O]
- BH95G-25D [B]
- BH95G-29 [O]
- ▲ MW15-11S [O]



CLIENT



## Baseline Hydrogeology Assessment Kudz Ze Kayah Project, Yukon

### Piper Plot Zone 4b



PROJECT NO.  
ENVMIN03071-01

DWN	CKD	APVD	REV
AS	SK	SK	0

OFFICE  
EBA-WHSE

DATE  
June 23, 2016

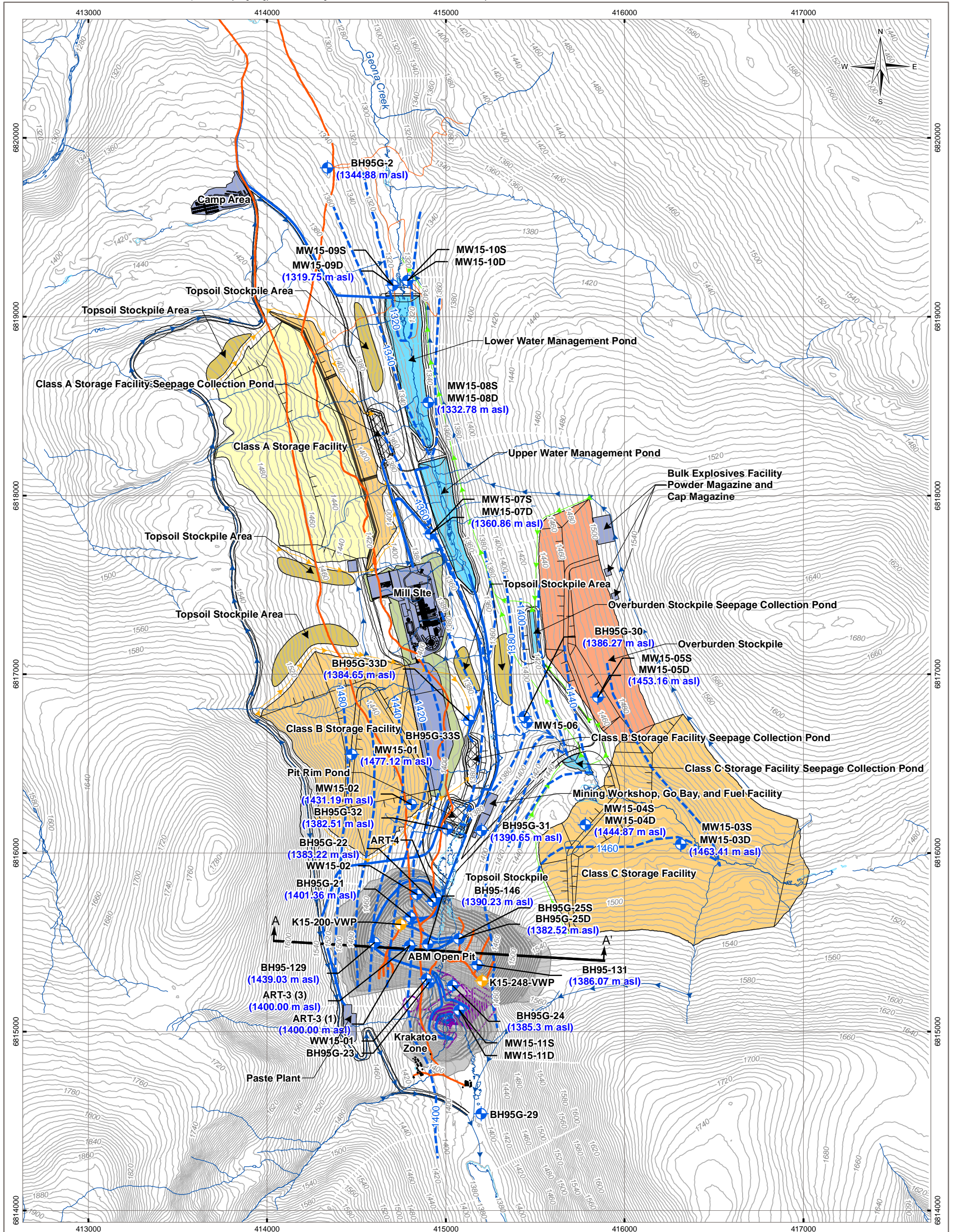
Figure 8e

STATUS  
ISSUED FOR USE









**LEGEND**

- Monitoring Well
- Vibrating Wire Piezometer
- Bedrock Groundwater Elevation Contour (m asl)
- Cross Section
- Contour (5 m)
- Existing Road
- Existing Trail
- Existing Building/Structure
- Watercourse/Waterbody
- Wetland Extent

**Proposed Infrastructure**

- Proposed Road
- Dewatering Pipeline
- Diversion Ditch (Non Contact)
- Diversion Ditch (Contact Class A & B)
- Diversion Ditch (Contact Class C)
- Water
- Class A Storage Facility
- Class B & C Storage Facilities
- Overburden Stockpile
- Topsoil Stockpile
- Open Pit
- Reclaimed/Progressive Closure

- Seepage Collection Pond
- Other Facilities
- Underground Workings

**NOTES**  
 Base data provided by BMC Minerals (No. 1) Ltd. (Feb 2016)  
 Infrastructure from Knight Piesold (September 20, 2016)

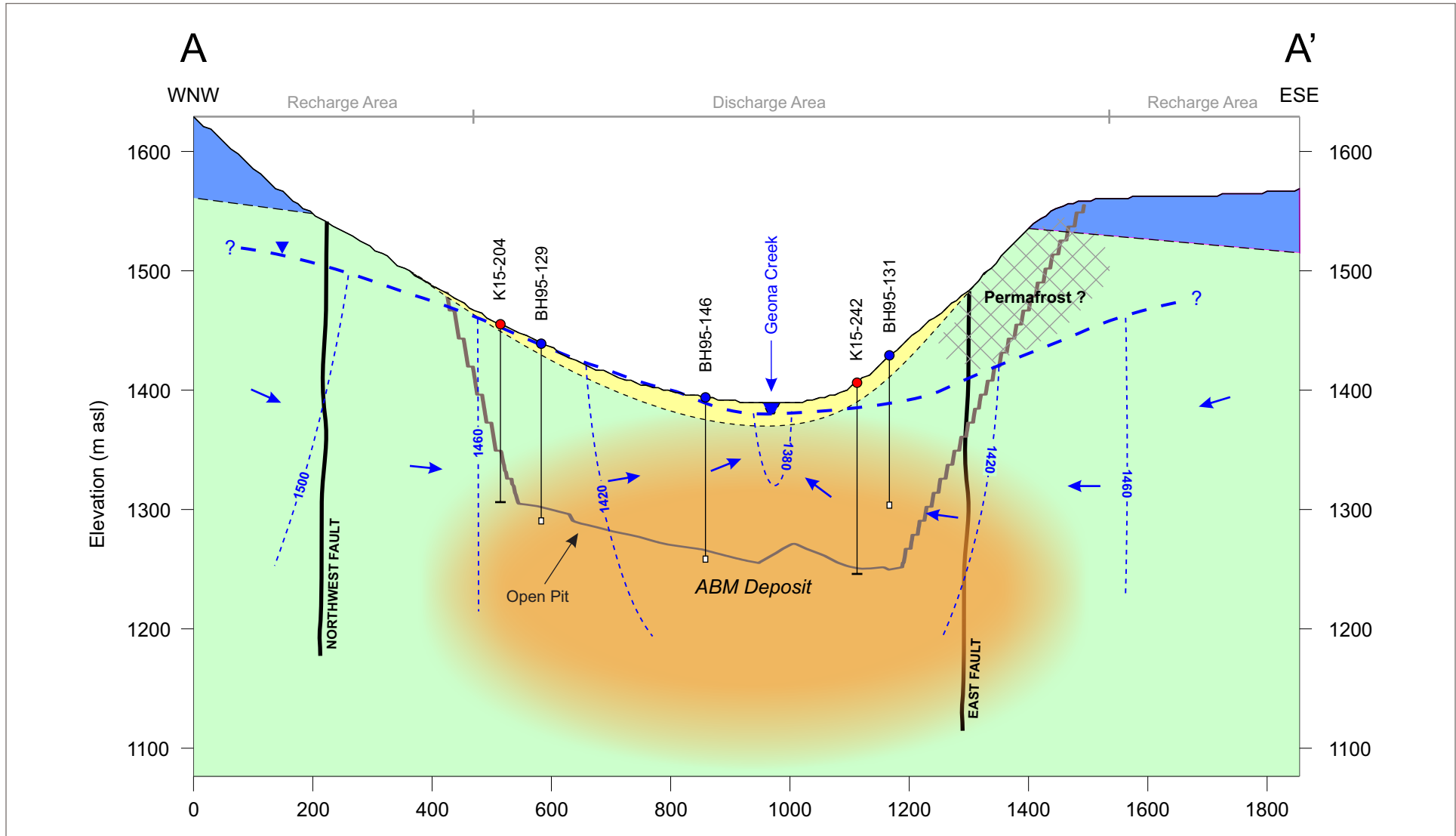
**STATUS**  
 ISSUED FOR USE

**BASELINE HYDROGEOLOGY ASSESSMENT, KUDZ ZE KAYAH, YK**

**Groundwater Contours  
 Bedrock Aquifer  
 (September 2015)**

<b>PROJECTION</b> UTM Zone 9	<b>DATUM</b> NAD83	<b>CLIENT</b> 
Scale: 1:20,000 400 200 0 400 Metres		
<b>FILE NO.</b> MIN03071-01_Figure10_GroundwaterBR.mxd	<b>PROJECT NO.</b> ENVMIN03071-01	<b>REV</b> 1
<b>OFFICE</b> TlEBA-VANC	<b>DATE</b> October 12, 2016	<b>Figure 10</b>





**LEGEND**

- Overburden
- Felsic volcanics
- Carbonaceous phyllite
- Mineral deposit

- Drill hole with packer tests
- Monitoring well
- Groundwater Table
- Inferred Groundwater Equipotential Contour (m asl)
- Groundwater Flow Direction

STATUS  
ISSUED FOR USE

CLIENT



**BASELINE HYDROGEOLOGY ASSESSMENT,  
KUDZ ZE KAYAH, YK**

**Hydrogeological Cross Section A - A'**

PROJECT NO. ENVMIN03071-01	DWN SK	CKD GR	APVD SK	REV 0	<b>Figure 11</b>
OFFICE EBA-WHSE	DATE June 23, 2016				

# APPENDIX A

## TETRA TECH'S GENERAL CONDITIONS

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# GENERAL CONDITIONS

## GEOENVIRONMENTAL REPORT

---

This report incorporates and is subject to these "General Conditions".

---

### 1.1 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

This report and the assessments and recommendations contained in it are intended for the sole use of TETRA TECH's client. TETRA TECH does not accept any responsibility for the accuracy of any of the data, the analysis or the recommendations contained or referenced in the report when the report is used or relied upon by any party other than TETRA TECH's Client unless otherwise authorized in writing by TETRA TECH. Any unauthorized use of the report is at the sole risk of the user.

This report is subject to copyright and shall not be reproduced either wholly or in part without the prior, written permission of TETRA TECH. Additional copies of the report, if required, may be obtained upon request.

### 1.2 ALTERNATE REPORT FORMAT

Where TETRA TECH submits both electronic file and hard copy versions of reports, drawings and other project-related documents and deliverables (collectively termed TETRA TECH's instruments of professional service); only the signed and/or sealed versions shall be considered final and legally binding. The original signed and/or sealed version archived by TETRA TECH shall be deemed to be the original for the Project.

Both electronic file and hard copy versions of TETRA TECH's instruments of professional service shall not, under any circumstances, no matter who owns or uses them, be altered by any party except TETRA TECH. The Client warrants that TETRA TECH's instruments of professional service will be used only and exactly as submitted by TETRA TECH.

Electronic files submitted by TETRA TECH have been prepared and submitted using specific software and hardware systems. TETRA TECH makes no representation about the compatibility of these files with the Client's current or future software and hardware systems.

### 1.3 NOTIFICATION OF AUTHORITIES

In certain instances, the discovery of hazardous substances or conditions and materials may require that regulatory agencies and other persons be informed and the client agrees that notification to such bodies or persons as required may be done by TETRA TECH in its reasonably exercised discretion.

### 1.4 INFORMATION PROVIDED TO TETRA TECH BY OTHERS

During the performance of the work and the preparation of the report, TETRA TECH may rely on information provided by persons other than the Client. While TETRA TECH endeavours to verify the accuracy of such information when instructed to do so by the Client, TETRA TECH accepts no responsibility for the accuracy or the reliability of such information which may affect the report.

# APPENDIX B

## WELL LOGS

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- Appendix B1 Monitoring well logs
- Appendix B2 Test well logs, particle size distribution, and development records
- Appendix B3 Well logs for VWP observation wells and exploration drill holes with packer testing data

# BMC Minerals (No. 1) Ltd.

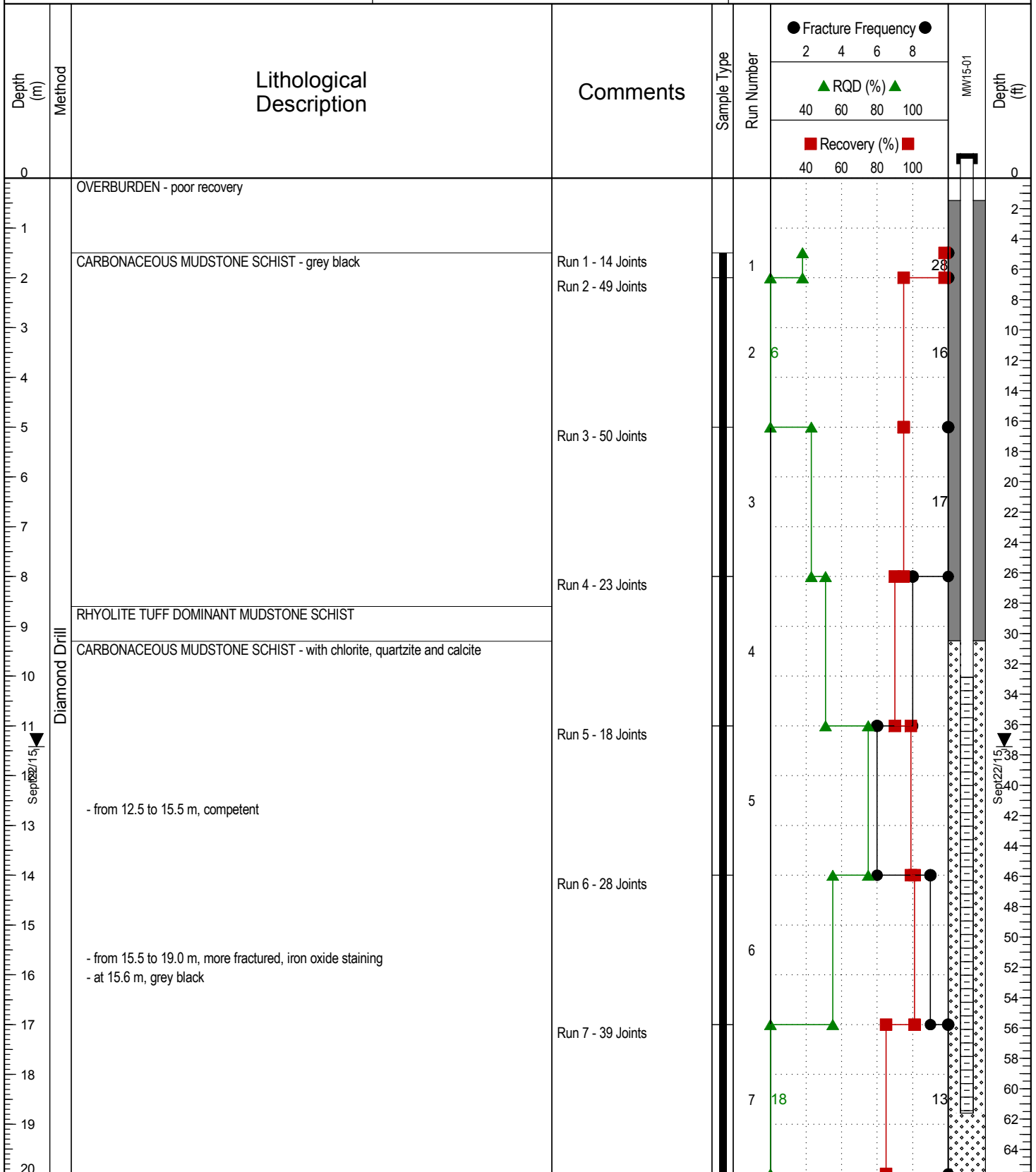
# Borehole No: MW15-01

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 20 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 11

Logged By: KRR/ER

Completion Date: 2015 August 11

Reviewed By: SK

Page 1 of 2

**BMC Minerals (No. 1) Ltd.**

**Borehole No: MW15-01**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon

Depth (m)	Method	Lithological Description	Comments	Sample Type	Run Number	● Fracture Frequency ●				MW15-01	Depth (ft)
						2	4	6	8		
						▲ RQD (%) ▲					
						40	60	80	100		
						■ Recovery (%) ■					
						40	60	80	100		
20		END OF BOREHOLE (20.00 metres) water - 9.58 metres on August 19, 2015 - 11.42 metres on September 22, 2015 Monitoring well installed to 18.78 metres Pipe stickup = 1.29 metres									66
21											68
22											70
23											72
24											74
25											76
26											78
27											80
28											82
29											84
30											86
31											88
32											90
33											92
34											94
35											96
36											98
37											100
38											102
39											104
40											106
											108
											110
											112
											114
											116
											118
											120
											122
											124
											126
											128
											130



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 20 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 11

Logged By: KRR/ER

Completion Date: 2015 August 11

Reviewed By: SK

Page 2 of 2

# BMC Minerals (No. 1) Ltd.

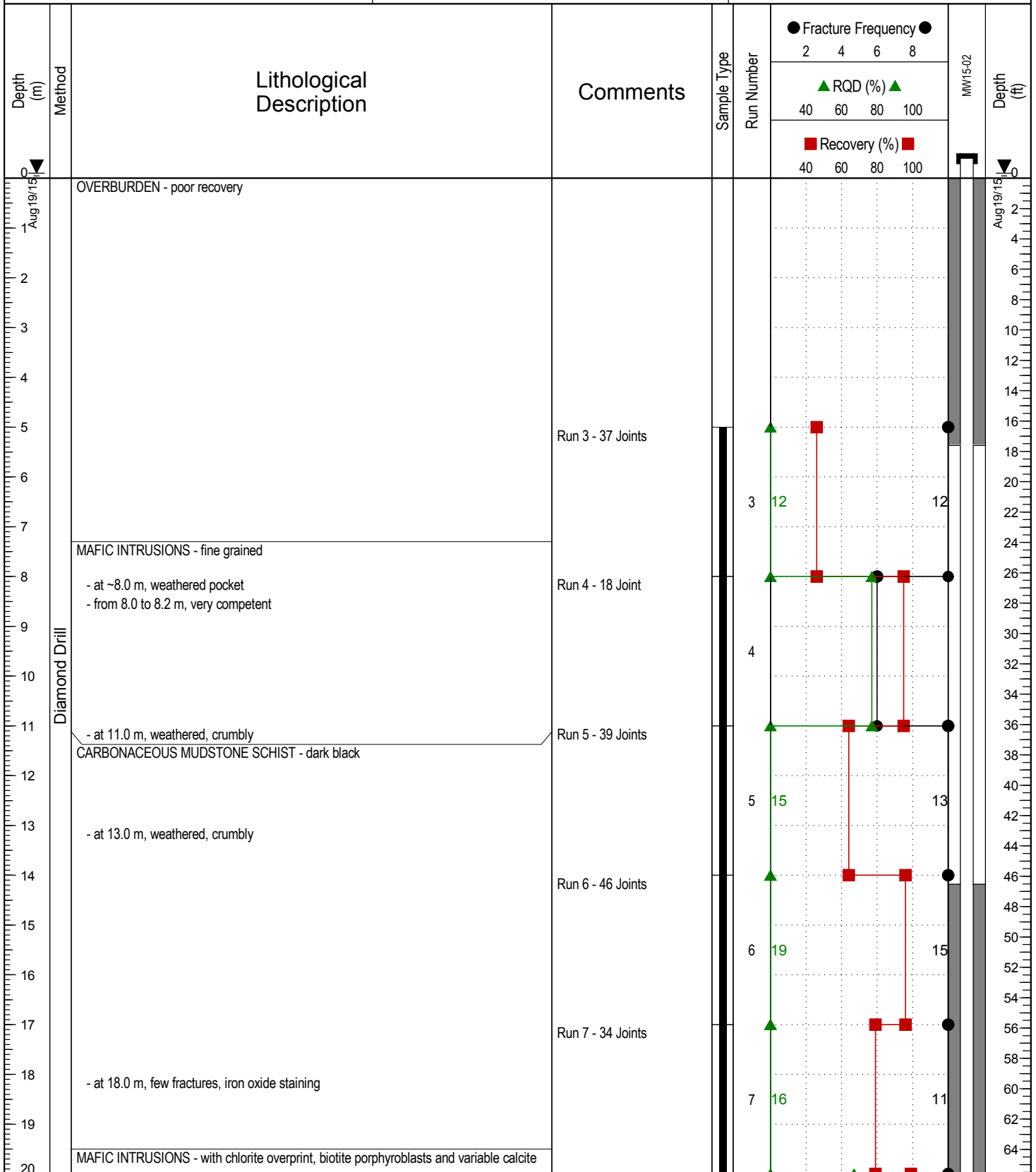
# Borehole No: MW15-02

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



Contractor: Geotech Drilling

Completion Depth: 32 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 12

Logged By: KRR/ER

Completion Date: 2015 August 12

Reviewed By: SK

Page 1 of 2

**BMC Minerals (No. 1) Ltd.**

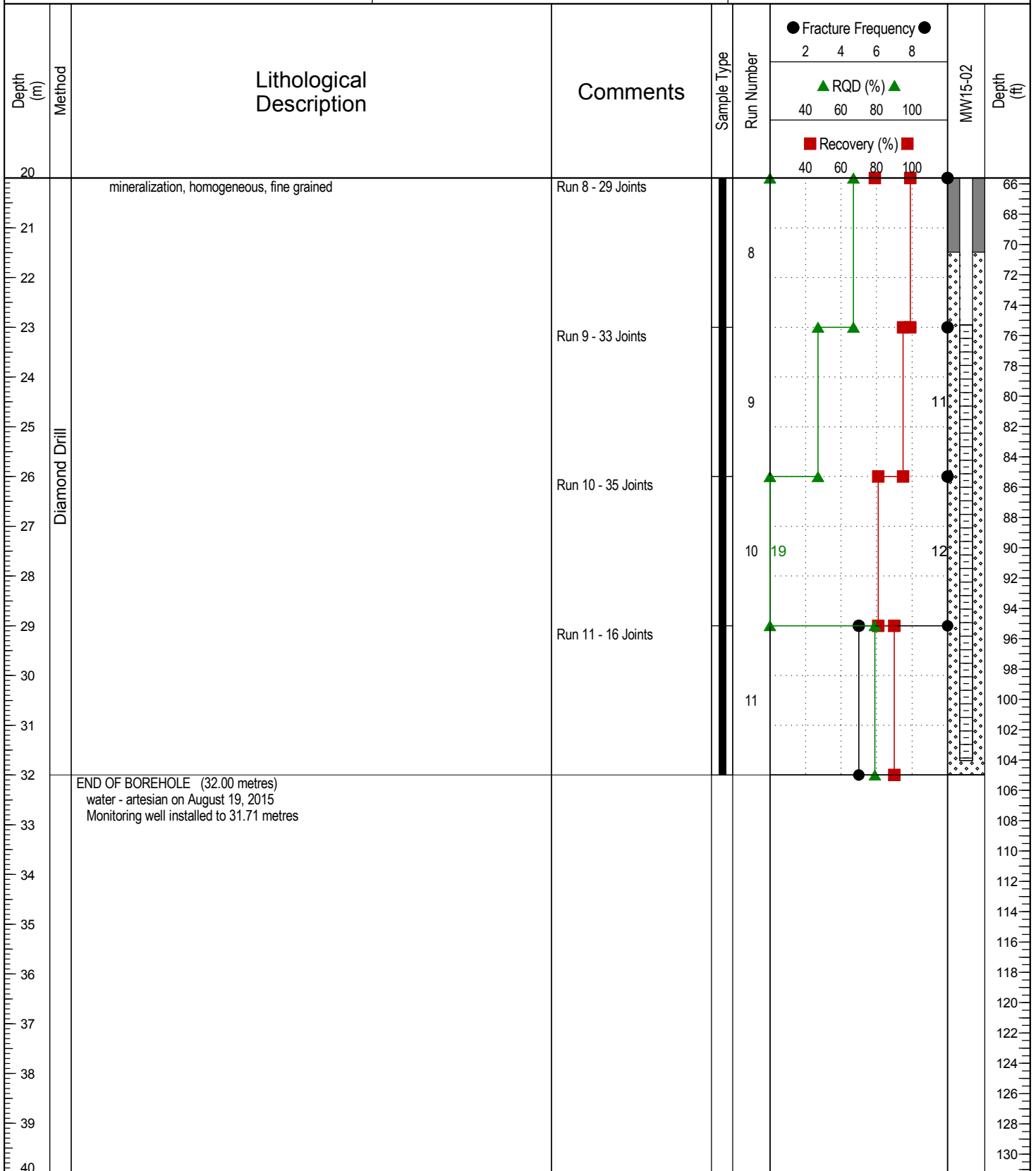
**Borehole No: MW15-02**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 32 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 12

Logged By: KRR/ER

Completion Date: 2015 August 12

Reviewed By: SK

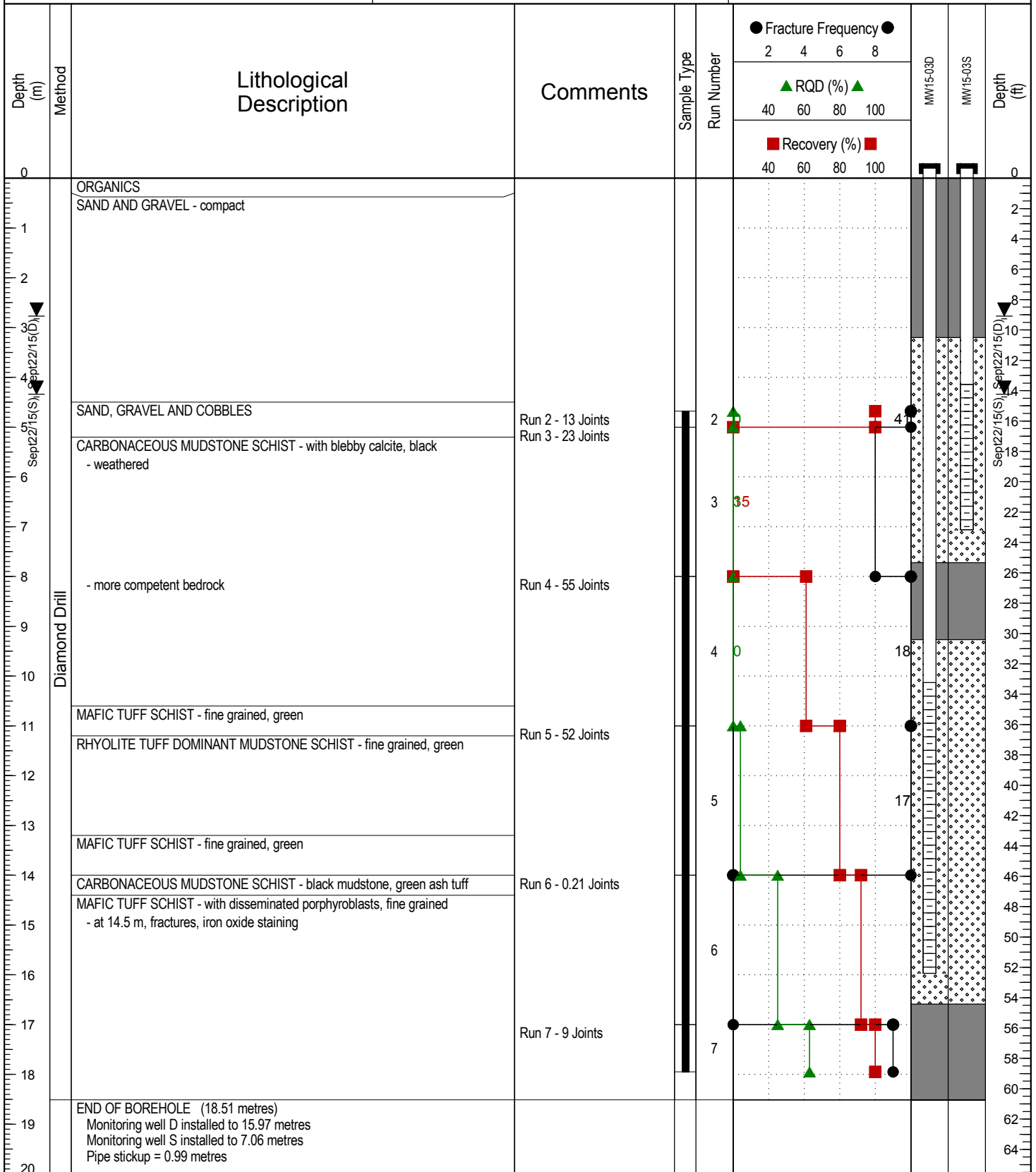
Page 2 of 2

# BMC Minerals (No. 1) Ltd.

# Borehole No: MW15-03

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01



**TETRA TECH EBA**

Contractor: Geotech Drilling  
 Drilling Rig Type: Diamond Drill  
 Logged By: KRR/ER  
 Reviewed By: SK

Completion Depth: 18.51 m  
 Start Date: 2015 August 17  
 Completion Date: 2015 August 17  
 Page 1 of 2

**BMC Minerals (No. 1) Ltd.**

**Borehole No: MW15-03**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon

Depth (m)	Method	Lithological Description	Comments	Sample Type	Run Number	Fracture Frequency ●		MW15-03D	MW15-03S	Depth (ft)
						2	4			
						▲ RQD (%) ▲				
						■ Recovery (%) ■				
						40	60	80	100	
						40	60	80	100	
20		MW15-03D water - 2.77 metres on September 22, 2015 MW15-03S water - 4.34 metres on September 22, 2015								66
21										68
22										70
23										72
24										74
25										76
26										78
27										80
28										82
29										84
30										86
31										88
32										90
33										92
34										94
35										96
36										98
37										100
38										102
39										104
40										106
										108
										110
										112
										114
										116
										118
										120
										122
										124
										126
										128
										130



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 18.51 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 17

Logged By: KRR/ER

Completion Date: 2015 August 17

Reviewed By: SK

Page 2 of 2



# BMC Minerals (No. 1) Ltd.

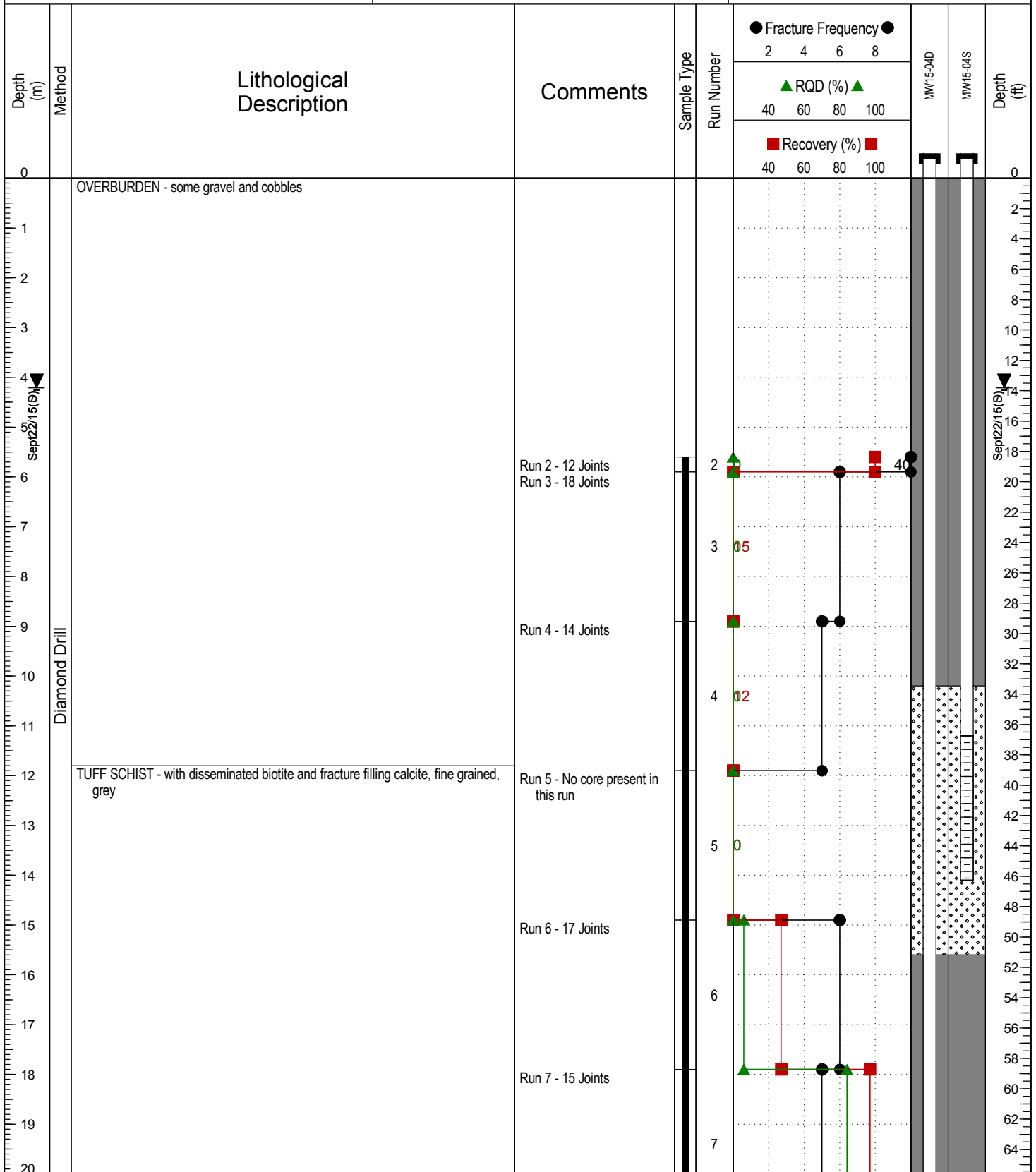
## Borehole No: MW15-04

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 33 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 15

Logged By: KRR/ER

Completion Date: 2015 August 16

Reviewed By: SK

Page 1 of 2

# BMC Minerals (No. 1) Ltd.

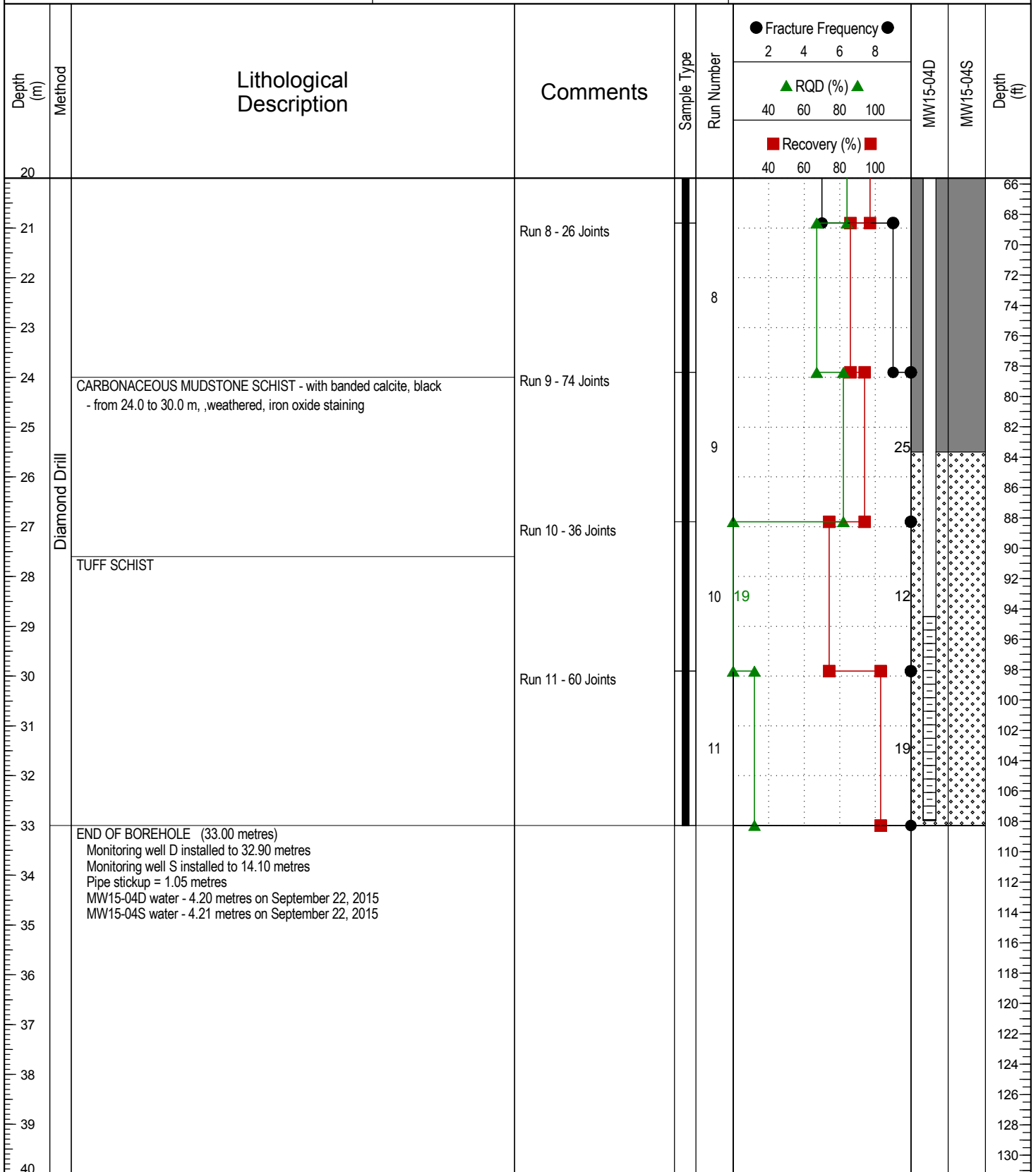
# Borehole No: MW15-04

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 33 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 15

Logged By: KRR/ER

Completion Date: 2015 August 16

Reviewed By: SK

Page 2 of 2

# BMC Minerals (No. 1) Ltd.

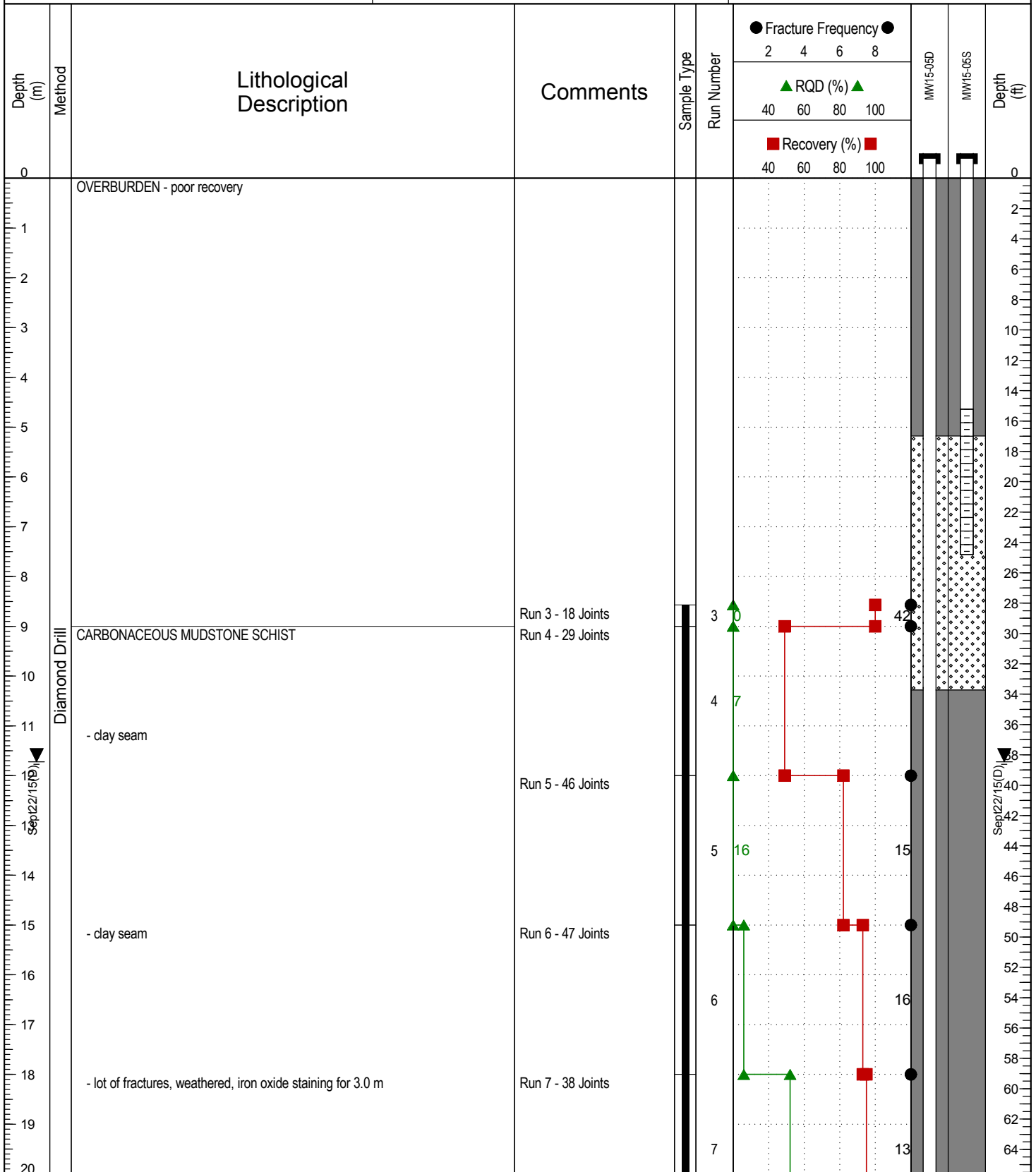
## Borehole No: MW15-05

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 30 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 14

Logged By: KRR/ER

Completion Date: 2015 August 14

Reviewed By: SK

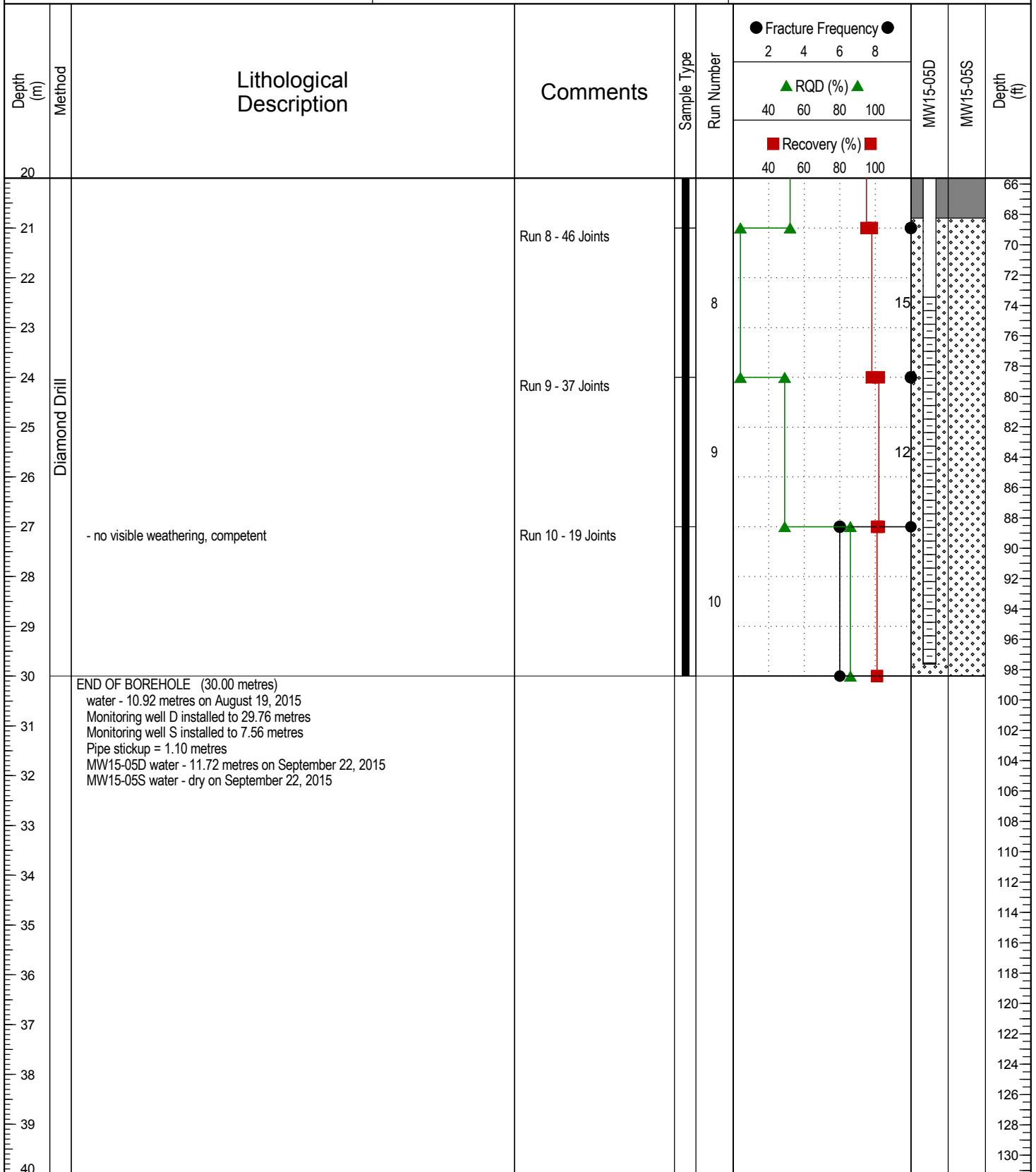
Page 1 of 2

**BMC Minerals (No. 1) Ltd.**

**Borehole No: MW15-05**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01



Contractor: Geotech Drilling	Completion Depth: 30 m
Drilling Rig Type: Diamond Drill	Start Date: 2015 August 14
Logged By: KRR/ER	Completion Date: 2015 August 14
Reviewed By: SK	Page 2 of 2

**BMC Minerals (No. 1) Ltd.**

**Borehole No: MW15-06**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon

Depth (m) ▼	Method	Lithological Description	Comments	Run Number	MW15-06	Depth (ft) ▼
0 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20	Diamond Drill	ORGANICS SAND - loose	Pipe stickup = 1.07 metres		MW15-06	0 2 4 6 8 10 12 14 16 18 20 22 24 26 28 30 32 34 36 38 40 42 44 46 48 50 52 54 56 58 60 62 64
		END OF BOREHOLE (9.70 metres) Monitoring well installed to 9.40 metres Pipe stickup = 1.07 metres MW15-06 water - artesian on September 22, 2015				



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 9.7 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 14

Logged By: KRR/ER

Completion Date: 2015 August 15

Reviewed By: SK

Page 1 of 1

# BMC Minerals (No. 1) Ltd.

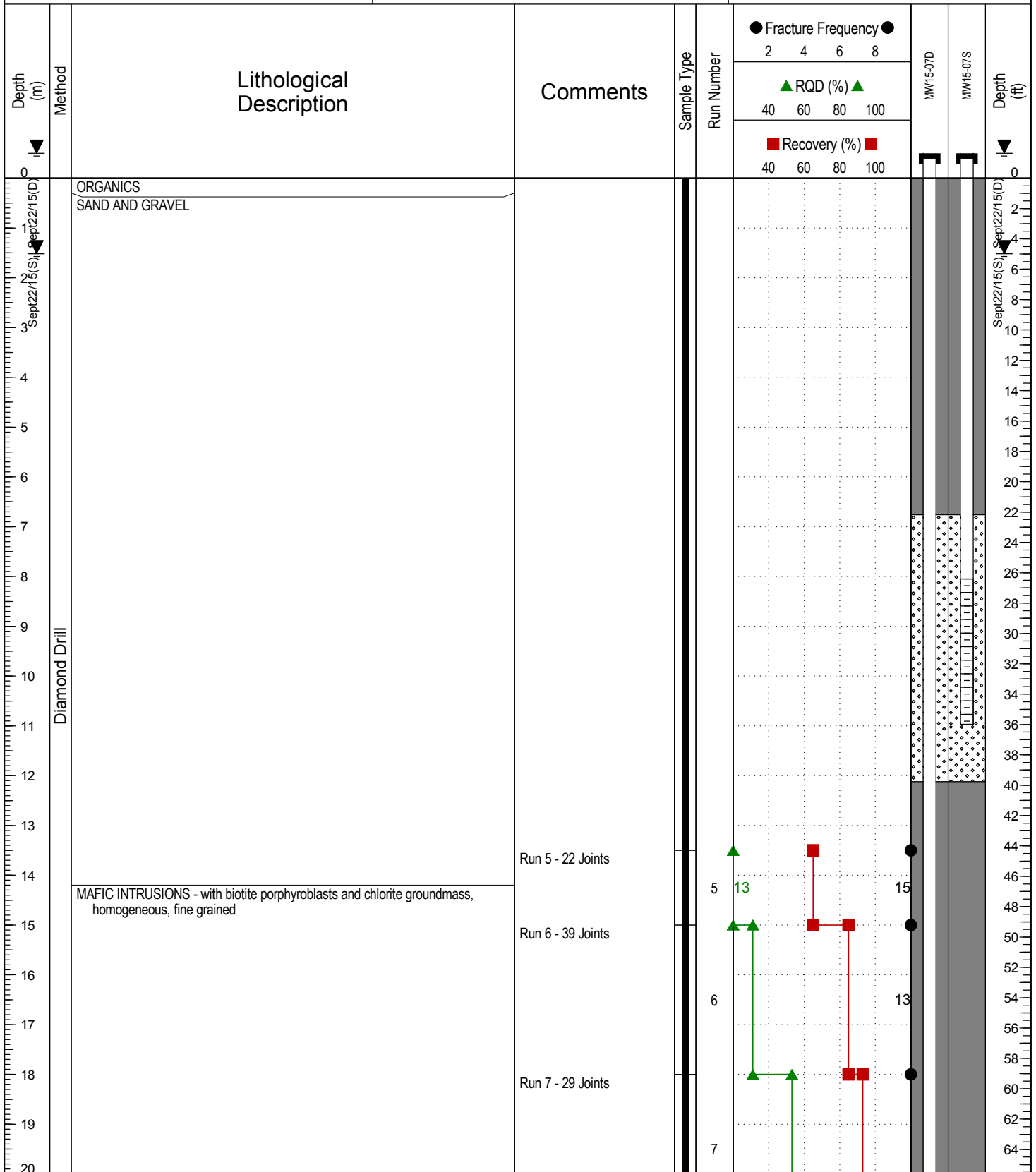
# Borehole No: MW15-07

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



Contractor: Geotech Drilling

Completion Depth: 33 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 18

Logged By: KRR/ER

Completion Date: 2015 August 18

Reviewed By: SK

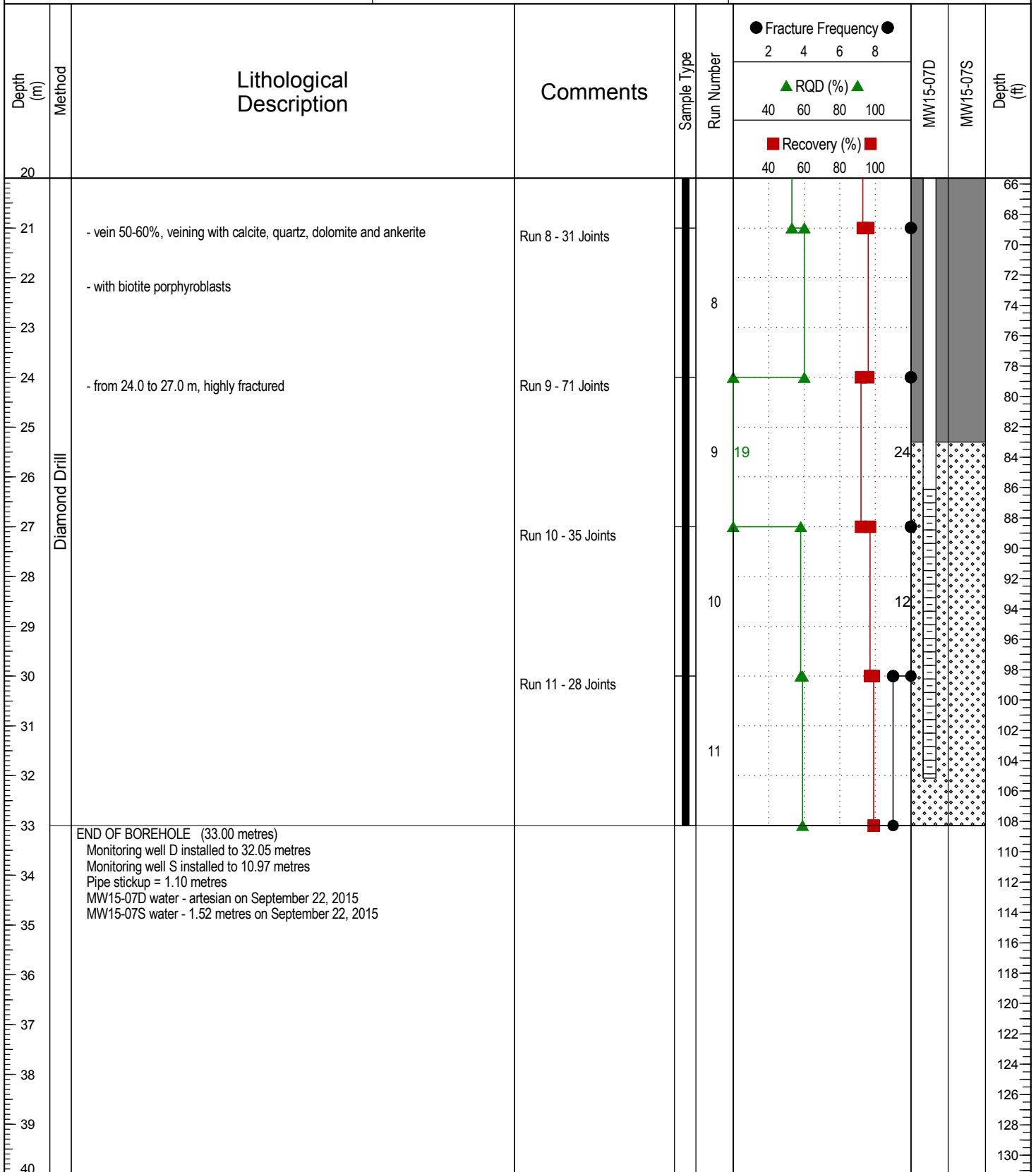
Page 1 of 2

# BMC Minerals (No. 1) Ltd.

# Borehole No: MW15-07

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01



TETRA TECH EBA

Contractor: Geotech Drilling

Drilling Rig Type: Diamond Drill

Logged By: KRR/ER

Reviewed By: SK

Completion Depth: 33 m

Start Date: 2015 August 18

Completion Date: 2015 August 18

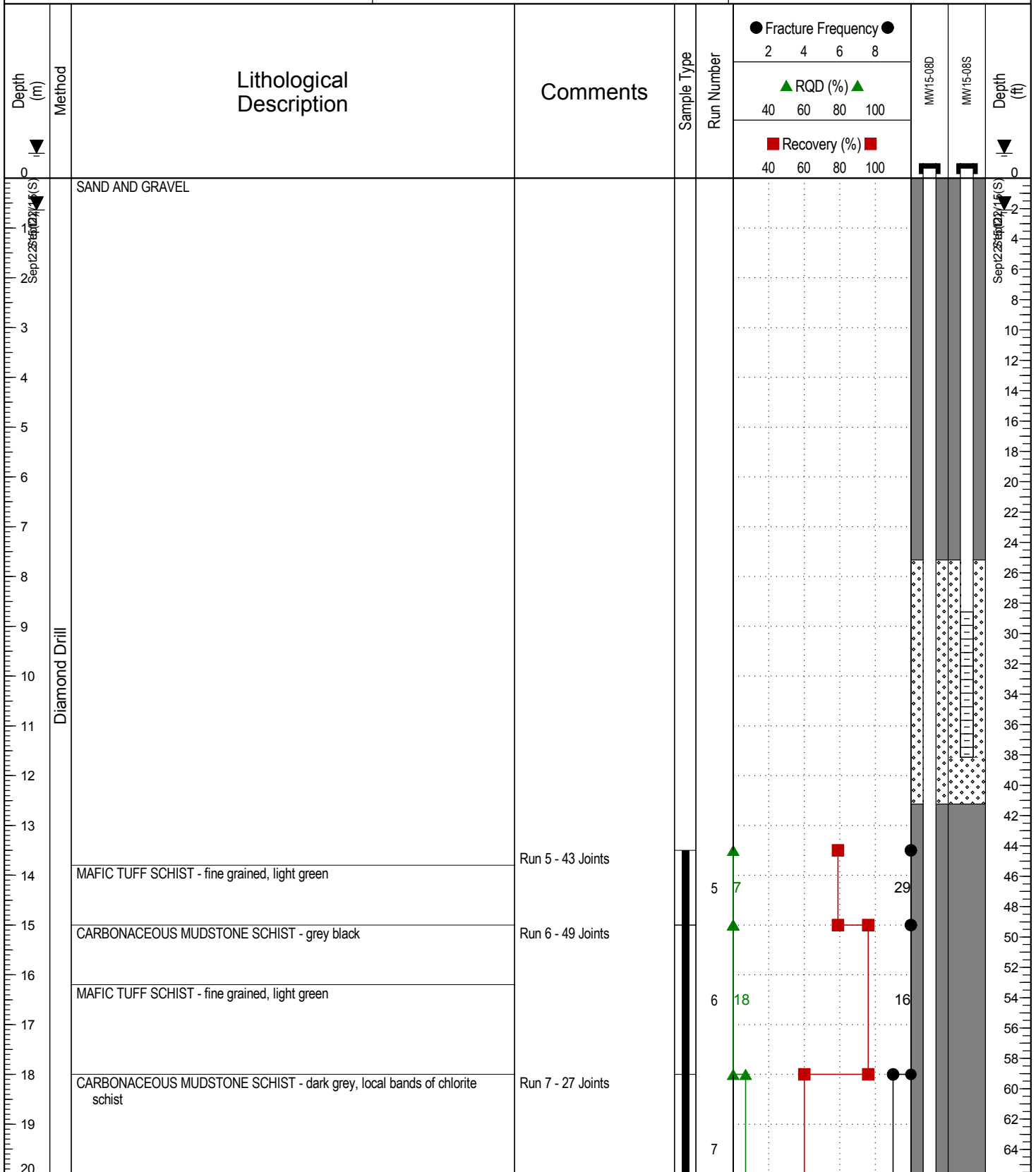
Page 2 of 2

# BMC Minerals (No. 1) Ltd.

# Borehole No: MW15-08

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01



Contractor: Geotech Drilling

Drilling Rig Type: Diamond Drill

Logged By: KRR/ER

Reviewed By: SK

Completion Depth: 36 m

Start Date: 2015 August 12

Completion Date: 2015 August 12

Page 1 of 2

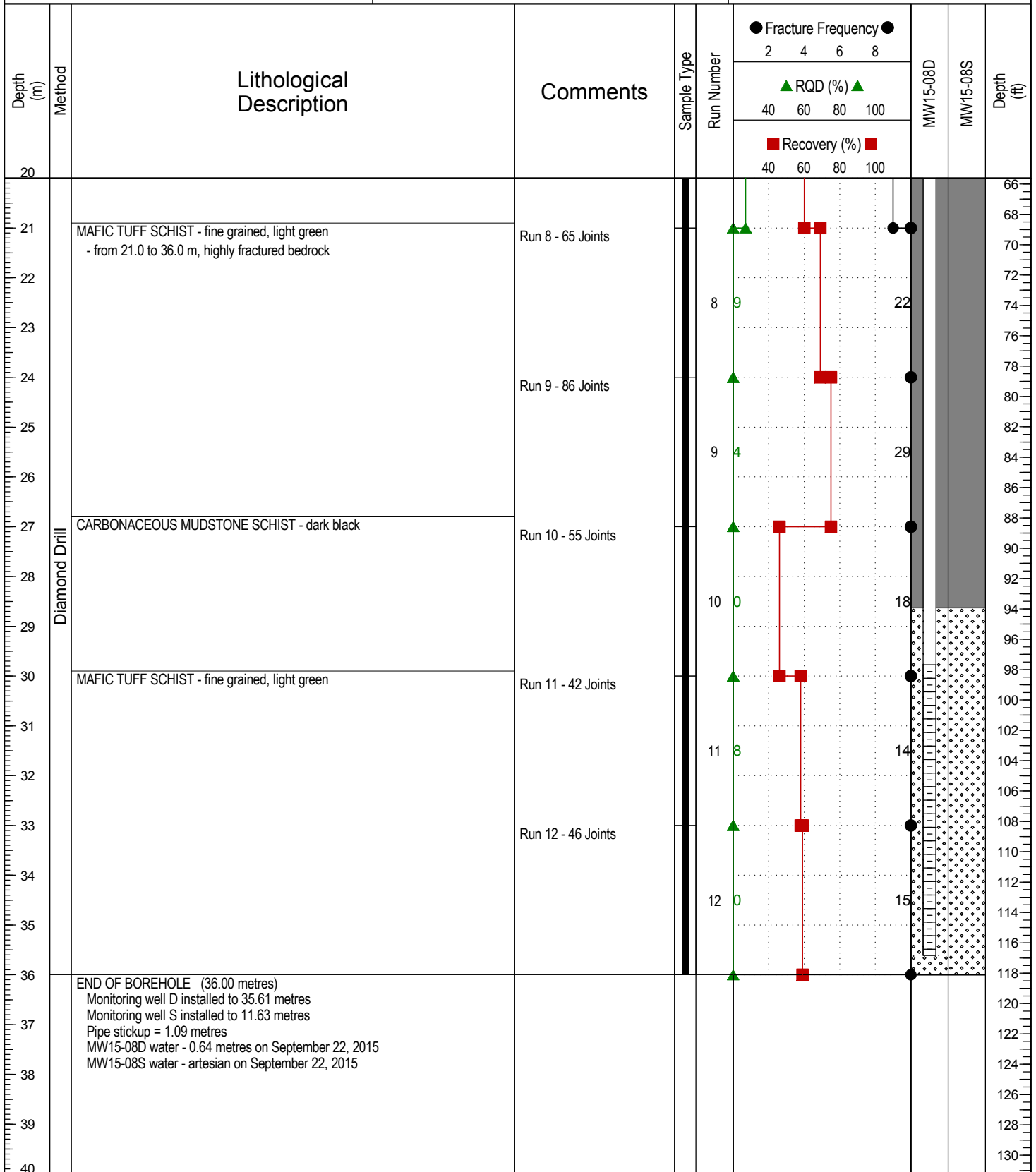


**BMC Minerals (No. 1) Ltd.**

**Borehole No: MW15-08**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01



Contractor: Geotech Drilling

Drilling Rig Type: Diamond Drill

Logged By: KRR/ER

Reviewed By: SK

Completion Depth: 36 m

Start Date: 2015 August 12

Completion Date: 2015 August 12

Page 2 of 2

**BMC Minerals (No. 1) Ltd.**

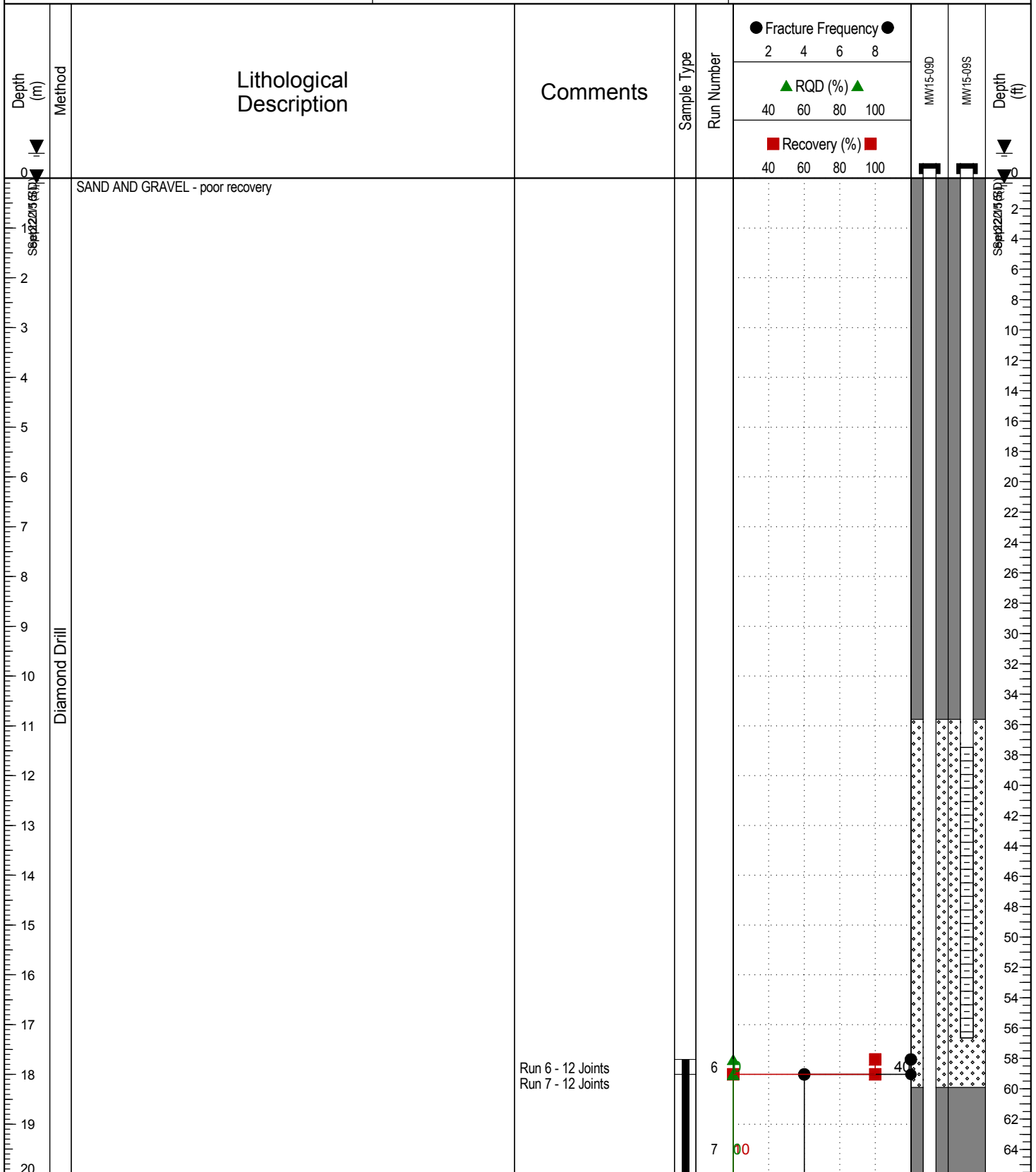
**Borehole No: MW15-09**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



Run 6 - 12 Joints  
Run 7 - 12 Joints



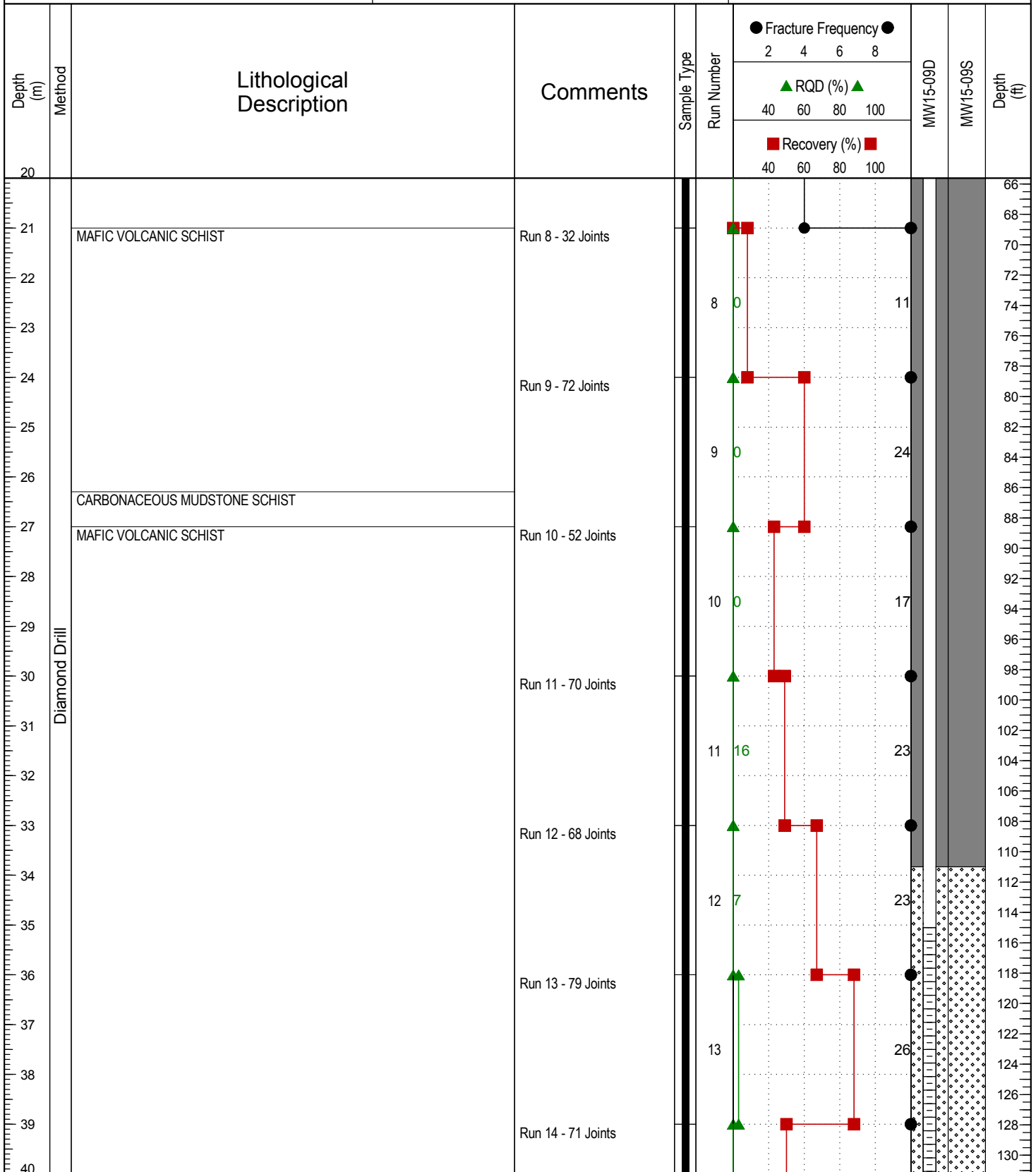
Contractor: Geotech Drilling	Completion Depth: 42 m
Drilling Rig Type: Diamond Drill	Start Date: 2015 August 10
Logged By: KRR/ER	Completion Date: 2015 August 10
Reviewed By: SK	Page 1 of 3

# BMC Minerals (No. 1) Ltd.

# Borehole No: MW15-09

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01



Contractor: Geotech Drilling

Drilling Rig Type: Diamond Drill

Logged By: KRR/ER

Reviewed By: SK

Completion Depth: 42 m

Start Date: 2015 August 10

Completion Date: 2015 August 10

Page 2 of 3

**BMC Minerals (No. 1) Ltd.**

**Borehole No: MW15-09**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon

Depth (m)	Method	Lithological Description	Comments	Sample Type	Run Number	Fracture Frequency ●		MW15-09D	MW15-09S	Depth (ft)
						2	4 6 8			
						▲ RQD (%) ▲				
						■ Recovery (%) ■				
						40 60 80 100	40 60 80 100			
40	Diamond Drill	END OF BOREHOLE (42.00 metres) Monitoring well D installed to 40.89 metres Monitoring well S installed to 17.27 metre Pipe stickup = 0.58 metres MW15-09D water - artesian on September 22, 2015 MW15-09S water - 0.1 metres on September 22, 2015			14	9		24		132
41										134
42										136
43										138
44										140
45										142
46										144
47										146
48										148
49										150
50										152
51										154
52										156
53										158
54										160
55										162
56										164
57	166									
58	168									
59	170									
60	172									
	174									
	176									
	178									
	180									
	182									
	184									
	186									
	188									
	190									
	192									
	194									
	196									



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 42 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 10

Logged By: KRR/ER

Completion Date: 2015 August 10

Reviewed By: SK

Page 3 of 3

# BMC Minerals (No. 1) Ltd.

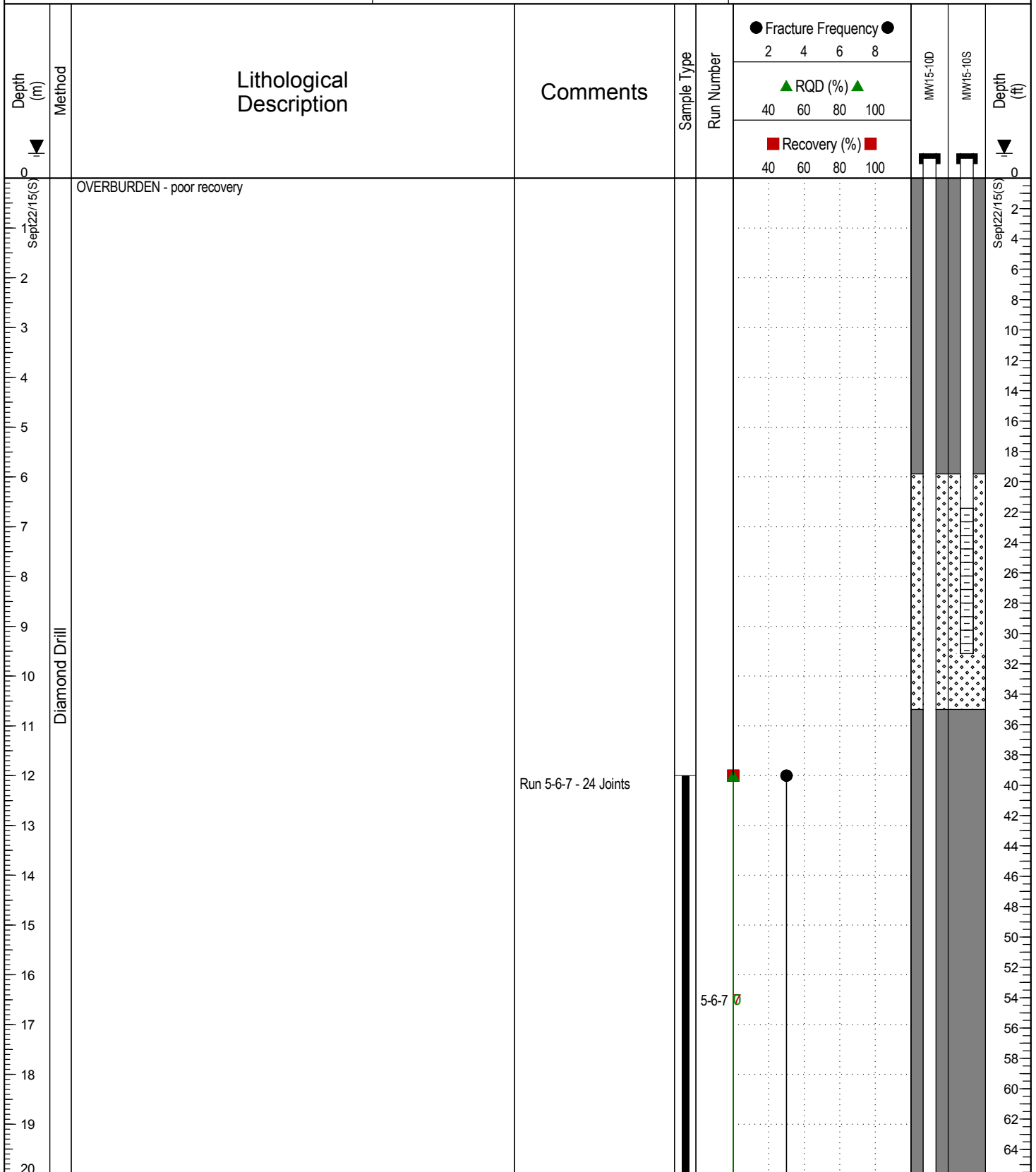
## Borehole No: MW15-10

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 36 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 11

Logged By: KRR/ER

Completion Date: 2015 August 1

Reviewed By: SK

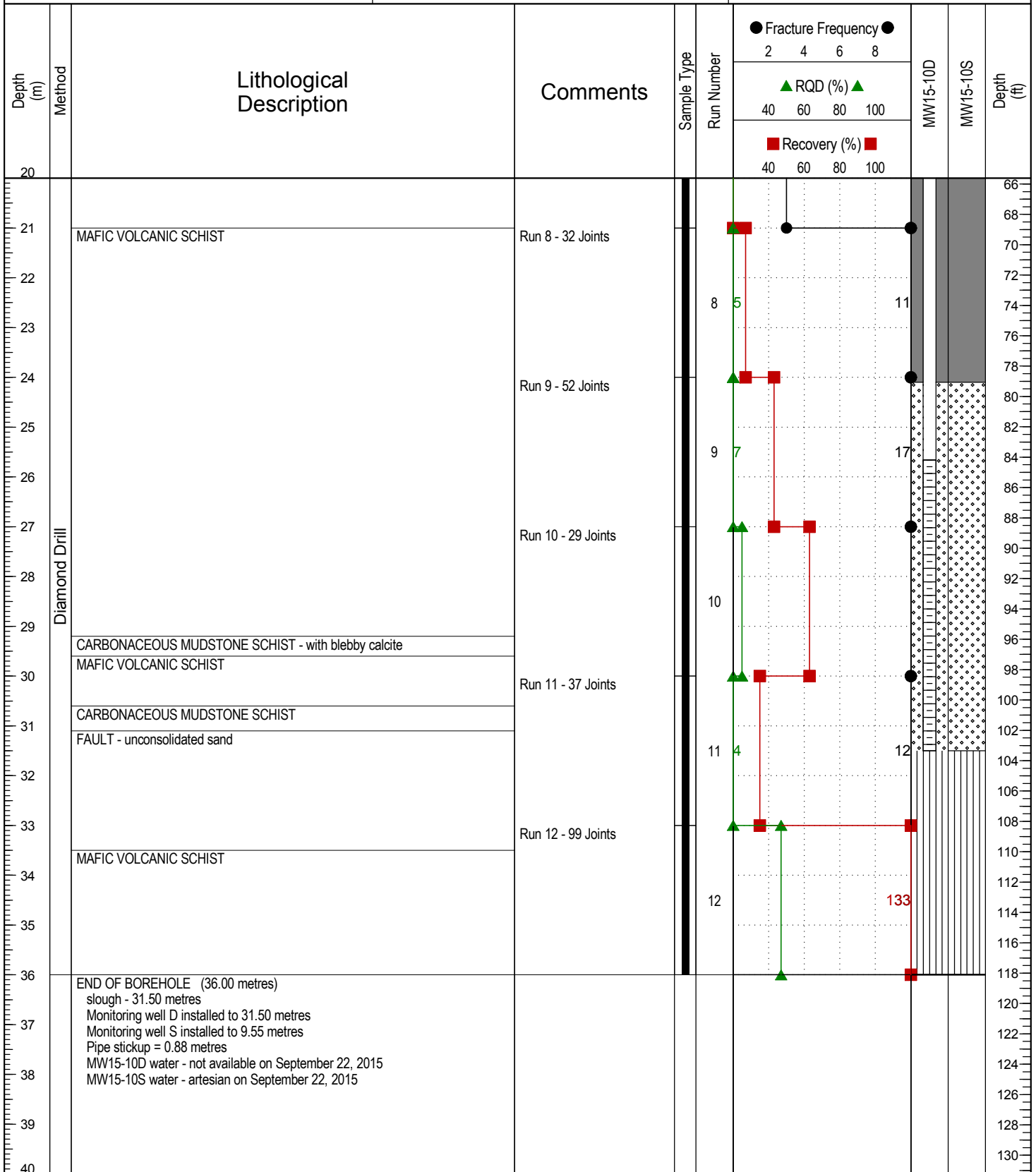
Page 1 of 2

# BMC Minerals (No. 1) Ltd.

# Borehole No: MW15-10

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01



Contractor: Geotech Drilling

Completion Depth: 36 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 August 11

Logged By: KRR/ER

Completion Date: 2015 August 1

Reviewed By: SK

Page 2 of 2

# BMC Minerals (No. 1) Ltd.

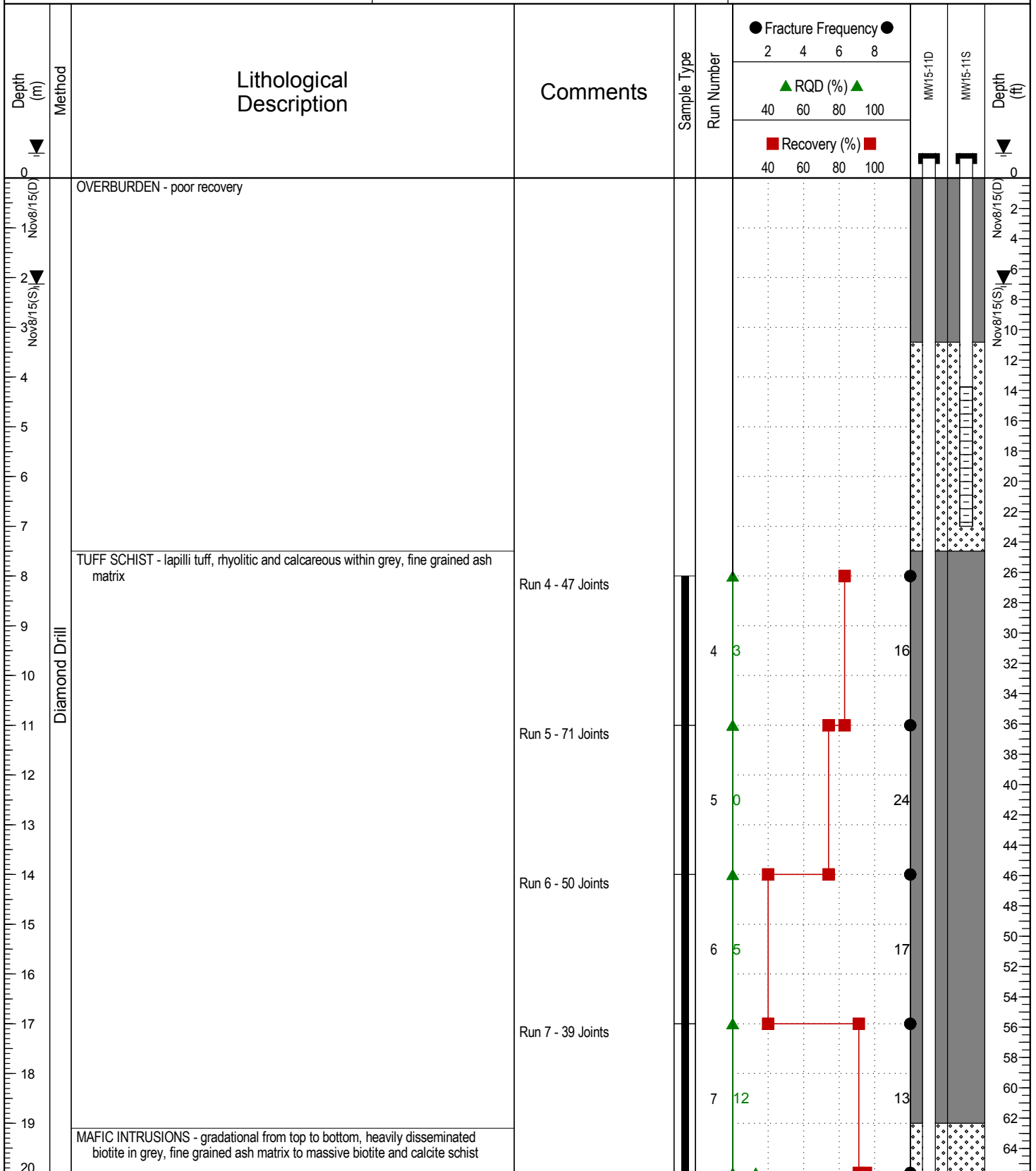
## Borehole No: MW15-11

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 35.5 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 November 6

Logged By: KRR/ER

Completion Date: 2015 November 7

Reviewed By: SK

Page 1 of 2

# BMC Minerals (No. 1) Ltd.

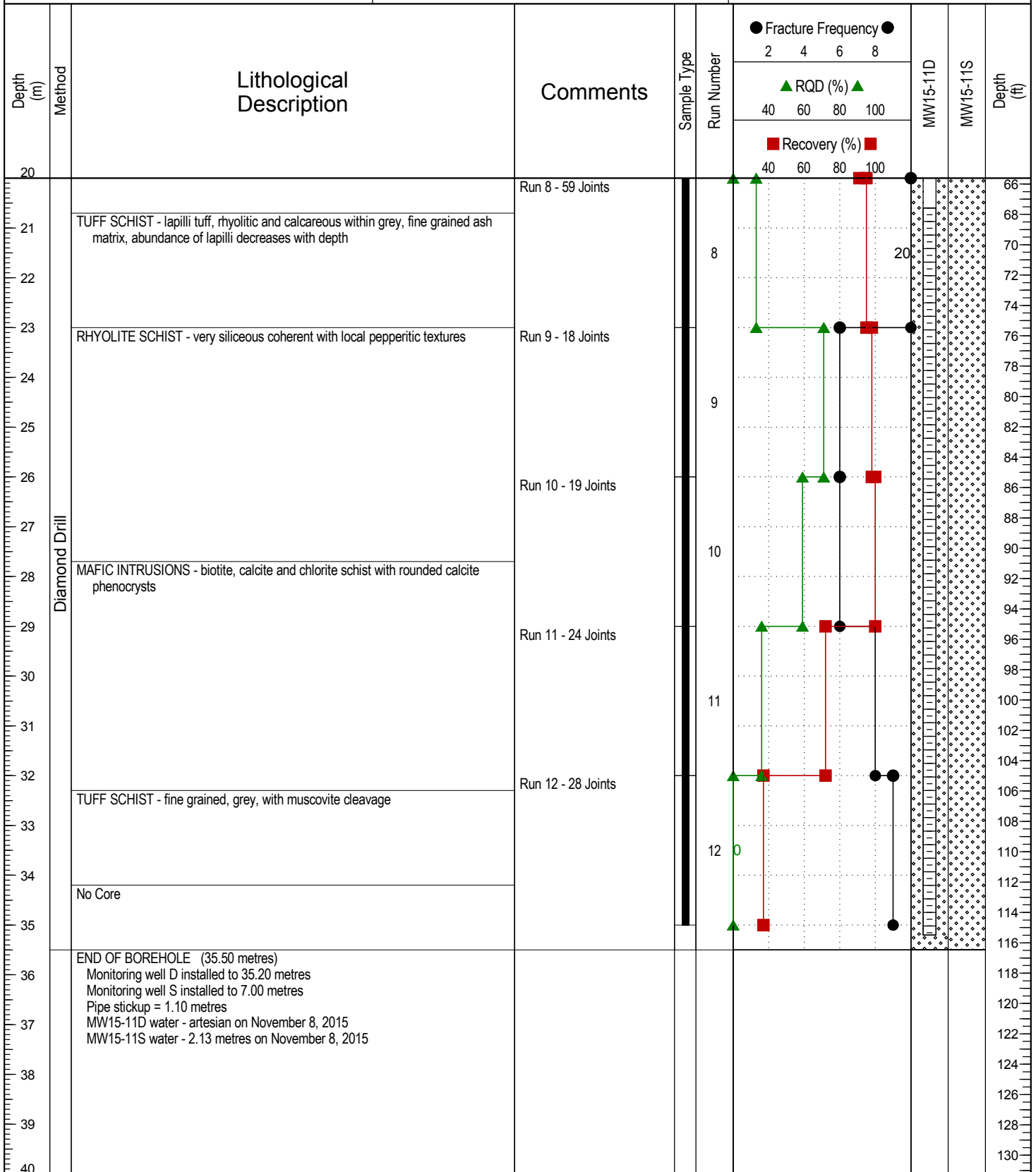
# Borehole No: MW15-11

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon



Contractor: Geotech Drilling

Completion Depth: 35.5 m

Drilling Rig Type: Diamond Drill

Start Date: 2015 November 6

Logged By: KRR/ER

Completion Date: 2015 November 7

Reviewed By: SK

Page 2 of 2



PROJECT: 952-1523

**RECORD OF BOREHOLE: BH95G-2**

SHEET 1 OF 2

LOCATION: Dam Site B, West Valley Wall

DRILLING DATE: May 17, 1995

DATUM: G.S.

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm/min)	FLUSH COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		NOTES TEST RESULTS
								CL-CLEAVAGE		J-JOINT		R-ROUGH		UE-UNEVEN		
								SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		
								VN-VEIN		S-SLICKENSIDED		PL-PLANAR		C-CURVED		
RECOVERY		R.Q.D. %		FRACT. INDEX PER 0.3m		DISCONTINUITY DATA		ROCK STR. (MPa)		WEATH. INDEX (w)						
TOTAL CORE %	SOLID CORE %	%	DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION	1-2	3-4	W1	W2	W3	W4						
0		Ground Surface		1360.00												
		Topsoil.		0.00												
				0.15												
1		Firm, wet, brown SILT/sandy SILT, little gravel, occasional boulder.		1358.48												
				1.52	1											
2		Firm to stiff, brownish grey, clayey SILT, little gravel, trace ice lenses.		1356.96												
				3.04	2											
3		Stiff, brownish grey, clayey SILT, little sand and gravel, occasional cobbles.		1355.13												
				4.87	3											
4					4											
5		<b>BEDROCK</b> Weak, weathered, fractured, laminated METASEDIMENTS. Some brown, stiff to firm clay, silt layers. (Clay/silt layers at 7.6 - 8.2m).		1351.78												
				8.22	5											
6		Moderately strong, slightly weathered, black, laminated METASEDIMENTS. Some quartz/calcite veins.		1349.03												
				10.97	6											
7		Highly fractured, weak, weathered, black METASEDIMENTS.		1346.90												
				13.10	7											
8		Moderately strong, slightly weathered, brown stained, laminated METASEDIMENTS. Some quartz veining.		1344.16												
				15.84	8											
9		Completely desintegrated METASEDIMENTS.		1343.55												
				16.45	9											
10		Moderately strong, slightly weathered METASEDIMENTS. Laminated 20 - 30 degrees.		1342.63												
				17.37	9											
11		Highly fractured shear zone, some voids.		1341.72												
				18.28	10											
12		Moderately strong, slightly weathered, black laminated METASEDIMENTS, some quartz veins, laminated at 20 - 30 degrees angle.														
					11											
13																
14																
15																
16																
17																
18																
19																
20																

DATA FORM: R. 1/16/95

DATA INPUT: June/95

DEPTH SCALE:  
1 to 100

CLIENT: Cominco  
**Golder Associates**

LOGGED: L.W.  
DATE: May 17, 1995  
CHECKED: M.D.

PROJECT: 952-1523

# RECORD OF BOREHOLE: BH95G-2

SHEET 2 OF 2

LOCATION: Dam Site B, West Valley Wall

DRILLING DATE: May 17, 1995

DATUM: G.S.

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		NOTES TEST RESULTS
								CL-CLEAVAGE		J-JOINT		R-ROUGH		UE-UNEVEN		
								SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		
								VN-VEIN		S-SLICKENSIDED		PL-PLANAR		C-CURVED		
RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA		ROCK STR. (MPa)	WEATHERING INDEX (W)									
TOTAL CORE %	SOLID CORE %			DIP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION											
20		CONTINUED FROM PREVIOUS PAGE														
21		Same as above.			11											Caved Material
21		End of Borehole.		1338.67 21.33												
22																
23																
24																
25																
26																
27																
28																
29																
30																
31																
32																
33																
34																
35																
36																
37																
38																
39																
40																

DEPTH SCALE:

CLIENT: Cominco

LOGGED: L.W.

1 to 100

Golder Associates

DATE: May 17, 1995

CHECKED: M.D.

PROJECT: 952-15231

# RECORD OF BOREHOLE: BH95G-21

SHEET 1 OF 1

LOCATION: 6815640N, 414802E, PIT AREA WEST

DRILLING DATE: Aug. 9, 1995

DATUM: NAD 83

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	FR-FRACTURE CL-CLEAVAGE SH-SHEAR VN-VEIN				F-FAULT J-JOINT P-POLISHED S-SLICKENSIDED				SM-SMOOTH R-ROUGH ST-STEPPED PL-PLANAR				FL-FLEXURED UE-UNEVEN W-WAVY C-CURVED				NOTES TEST RESULTS
								RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA				ROCK STR (MPa)	WEATHERING INDEX (W)							
								TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION					W1	W2	W3					
								80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	80	
0		Ground Surface		1402.74																				
		TOPSOIL		0.15																				
1		Compact to dense, moist, brown, silty fine SAND, some gravel, occasional cobble.			1																			
2				1400.74																				
				2.00																				
2					2																	Bentonite Seal		
3																								
4																								
5		Bedrock - moderately strong, slightly weathered light grey SCHIST.																						
6																								
7																								
8																								
9																								
10		End of Borehole		1392.68																				
				10.06																				

DATA INPUT: BAD-SEPT-95

DEPTH SCALE: 1 to 100

CLIENT: Cominco  
**Golder Associates**

LOGGED: L.P.  
DATE: Aug. 9, 1995  
CHECKED: C.J.C.

PROJECT: 952-1523I

# RECORD OF BOREHOLE: BH95G-22

SHEET 1 OF 1

LOCATION: 6815728N, 414928E, PIT AREA (CEN/NOR)

DRILLING DATE: Aug. 9, 1995

DATUM: NAD 83

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		NOTES TEST RESULTS
								CL-CLEAVAGE	SH-SHEAR	J-JOINT	P-POLISHED	R-ROUGH	ST-STEPPED	UE-UNEVEN	W-WAVY	
								FN-FEIN	FN-FEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED				
								RECOVERY		R.Q.D. %	DISCONTINUITY DATA		ROCK STR. (MPa)	WEATHERING INDEX (w)		
TOTAL CORE %	SOLID CORE %		DP w.r.t. CORE AXIS	TYPE AND SURFACE DESCRIPTION	1-1000	1-1000										
0		Ground Surface		1385.14												
1		Compact, moist, brown, sandy SILT, trace to some gravel, trace clay, occasional cobbles.		0.00	1											Bentonite Seal Aug. 26, 1995
2																
3		Compact to dense, moist to wet, brown, gravelly SAND to sandy GRAVEL, trace silt.		1382.55	2											Sand Pack 32mm dia. PVC Screen
4																
5		Bedrock - moderately strong, slightly weathered, grey-white SCHIST.		1380.57	3											Slough
6				4.57	4											
7																
8		End of Borehole		1377.87	6											
9																
10																
11																
12																
13																
14																
15																
16																
17																
18																
19																
20																

DATA INPUT: SEPT. 95

DEPTH SCALE:

CLIENT: Cominco

LOGGED: L.P.

DATE: Aug. 8/9, 1995

CHECKED: C.J.C.

1 to 100

### Golder Associates





PROJECT: 952-1523I

# RECORD OF BOREHOLE: BH95G-24

SHEET 1 OF 1

LOCATION: 6815257N, 415038E, PIT AREA (SOU.CEN.)

DRILLING DATE: Aug. 11, 1995

DATUM: NAD 83

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		NOTES TEST RESULTS
								CL-CLEAVAGE		J-JOINT		R-ROUGH		UE-UNEVEN		
								SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY		
								VN-VEIN		S-SLICKENSIDED		PL-PLANAR		C-CURVED		
RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA		ROCK STR. (MPa)	WEATH- ERING INDEX (w									
TOTAL CORE %	SOLID CORE %			DP W.P.L. CORE AXIS	TYPE AND SURFACE DESCRIPTION		W1	W2	W3	W4						
0		Ground Surface		1385.33 0.00												
1		Compact to very dense, moist brown-grey SAND, some silt to silty SAND, some gravel, occasional cobbles and boulders.			1											Aug. 25 1995  Bentonite Seal
2	2															
3	3															
4		Dense to very dense, moist, grey, silty SAND to SAND, some silt, some gravel, occasional cobbles and boulders. (TILL-LIKE)		1380.30 5.03												Sand Pack
5	4															
6		Brown, gravelly SAND to sandy GRAVEL, trace to some silt.		1378.47 6.86												32mm dia. PVC Screen
7	5															
8		Bedrock - weathered to slightly weathered, weak to moderately strong black-white SCHIST.		1376.80 8.53												
9	6															
10		End of Borehole		1375.58 9.75												

DATA FORM: R-100

SEPT. 95

DEPTH SCALE:  
1 to 100

CLIENT: Cominco  
**Golder Associates**

LOGGED: L.P.  
DATE: Aug. 11, 1995  
CHECKED: C.J.C.



PROJECT: 952-15231

**RECORD OF BOREHOLE: BH95G-29**

SHEET 1 OF 1

LOCATION: 6814542N, 415198E, SW. WASTE DUMP

DRILLING DATE: Aug. 17&18, 1995

DATUM: NAD 83

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH COLOUR % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		NOTES TEST RESULTS
								CL-CLEAVAGE		J-JOINT		R-ROUGH		UE-UNEVEN		
								SH-SHEAR		P-POLISHED		ST-STEPED		W-WAVY		
0		Ground Surface		1391.68												
		Soft, black TOPSOIL.		0.00												
				1391.22												Aug. 26 1995 Native Backfill
1				0.46	1											
2																
3																
4		Compact to dense, moist to wet, brown SAND, some gravel, trace to some silt, to silty SAND, some gravel, occasional cobbles to boulders.														
5																
6																
7																
8																
9				1383.45												
10				8.23												
11																
12																
13		Dense to very dense, moist, grey SAND, some gravel to SAND and GRAVEL, trace to some silt, cobbles and boulders. (TILL-LIKE)														
14																
15																
16																
17																
18																
19		Felsic to intermediate Lapilli Tuff quartz sericite chlorine and biotite SCHIST, grey green.		1373.28												
		End of Borehole		18.40												
				1372.48												
20				19.20												

DATA FORM: R-66

SEPT. 95  
DATA INPUT

DEPTH SCALE:

CLIENT: Cominco

LOGGED: L.P.

DATE: Aug. 17&18, 1995

CHECKED: C.J.C.

1 to 100

**Golder Associates**





PROJECT: 952-15231

**RECORD OF BOREHOLE: BH95G-31**

SHEET 1 OF 1

LOCATION: 6816127N, 415200E, NE WASTE DUMP

DRILLING DATE: Aug. 21, 1995

DATUM: NAD 83

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH % RETURN	FR-FRACTURE		F-FAULT			SM-SMOOTH		FL-FLEXURED		NOTES TEST RESULTS
							CL-CLEAVAGE	SH-SHEAR	J-JOINT	P-POLISHED	R-ROUGH	ST-STEPPED	UE-UNEVEN	W-WAVY		
							VN-VEIN		S-SLICKENSIDED	PL-PLANAR	C-CURVED					
							RECOVERY		R.Q.D. %	DISCONTINUITY DATA		ROCK STR. (MPa)	WEATH- ERING INDEX (W)			
TOTAL CORE %	SOLID CORE %		DIP w.r.t CORE AXIS	TYPE AND SURFACE DESCRIPTION												
0	Ground Surface		1391.04													
1	Compact to dense, moist, brown SAND, some gravel, trace to some silt, occasional cobbles.		0.00	1												Aug. 26 1995
2			2												Bentonite Seal	
3			3													Sand Pack
4			4	1386.47												
5	Bedrock - thin interbeds of ARGILLITE and mafic tuff - mafic tuff to chlorite - calcite SCHIST +/- biotite.		4.57	5												
6			6													
7			7	1384.04												
8	Chlorite calcite SCHIST massive to calcite banded, minor cone breakage.		7.00	8												
9			9													
10	End of Borehole		1380.98	10												32mm dia. PVC Screen
11			10.06													
12																
13																
14																
15																
16																
17																
18																
19																
20																

DATA FORM: RC-95

DATA INPUT: SEPT. 95

DEPTH SCALE:  
1 to 100

CLIENT: Cominco  
**Golder Associates**

LOGGED: L.P.  
DATE: Aug. 21, 1995  
CHECKED: C.J.C.

PROJECT: 952-15231

# RECORD OF BOREHOLE: BH95G-32

SHEET 1 OF 1

LOCATION: 6816133N, 415009E, NW WASTE DUMP

DRILLING DATE: Aug. 22/23, 1995

DATUM: NAD 83

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (mm/min)	FLUSH	COLOUR	% RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		NOTES TEST RESULTS			
									CL-CLEAVAGE	SH-SHEAR	J-JOINT	P-POLISHED	R-ROUGH	ST-STEPPED	UE-UNEVEN	W-WAVY				
									VN-VEIN	S-SLICKENSIDED	PL-PLANAR	C-CURVED								
RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA		ROCK STR. (MPa)	WEATHERING INDEX (w)													
TOTAL CORE %	SOLID CORE %			TYPE AND SURFACE DESCRIPTION	DP w.r.t. CORE AXIS															
0	Ground Surface		1385.85																	
1	Compact to dense, brown SAND, some gravel, trace to some silt, occasional cobbles.		0.00	1																
2																				
3																				
4																				
5																				
6	Dense to very dense, grey SAND and GRAVEL, trace to some silt, occasional cobbles.		1380.15	6																
7																				
8																				
9																				
10	Bedrock - biotite porphyry dyke matrix.		1376.79	10																
11																				
12																				
13	Quartz vein inclusions of mafic volcanic Biotite SCHIST.		1374.85	11																
14																				
15	Chlorite SCHIST with disseminated biotite and calcite.		1373.15	12																
16																				
17	End of Borehole		1370.70	13																
18			16.15																	

DATA FORM: ROCKMVS

DATA INPUT: BAD SEPT 95

DEPTH SCALE:

1 to 100

CLIENT: Cominco

Golder Associates

LOGGED: L.P.

DATE: Aug. 22/23, 1995

CHECKED: C.J.C.

Bentonite Seal

Aug. 26, 1995

Sand Pack

32mm dia. PVC Screen

WC = 3.5%

J,PL & I  
S-R

J,PL,S

J/B,PL,S  
R

B/PL,R

B/RL-1/R

PROJECT: 952-1523I

# RECORD OF BOREHOLE: BH95G-33

SHEET 1 OF 1

LOCATION: 6816743N, 415130E, NW WASTE DUMP

DRILLING DATE: Aug. 24, 1995

DATUM: NAD 83

INCLINATION: -90 AZIMUTH:

DRILL RIG: Boyles Brothers - Rotary

DRILLING CONTRACTOR: D.J. Drilling



DEPTH SCALE METRES	DRILLING RECORD	DESCRIPTION	SYMBOLIC LOG	ELEV. DEPTH (m)	RUN No.	PENETRATION RATE (m/min)	FLUSH % RETURN	FR-FRACTURE		F-FAULT		SM-SMOOTH		FL-FLEXURED		NOTES TEST RESULTS		
								CL-CLEAVAGE		J-JOINT		R-ROUGH		UE-UNEVEN				
								SH-SHEAR		P-POLISHED		ST-STEPPED		W-WAVY				
								VN-VEIN		S-SLICKENSIDED		PL-PLANAR		C-CURVED				
RECOVERY		R.Q.D. %	FRACT. INDEX PER 0.3m	DISCONTINUITY DATA		ROCK STR. (MPa)	WEATH- ERING INDEX (w											
TOTAL CORE %	SOLID CORE %			DP W.F.L. CORE AXES	TYPE AND SURFACE DESCRIPTION		1 2 3 4	1 2 3 4										
0		Ground Surface		1389.72														
1		Compact, dry to moist, light brown, silty SAND to SAND, some silt, some gravel, occasional cobbles.		0.00													Bentonite Seal	
2			1															
3			2															Sand Pack
4			3															32mm dia. PVC Screen
5		Compact to dense, moist, light brown SAND, some gravel to sandy GRAVEL, trace to some silt, occasional cobbles.		1.52														Shallow (dry)
6			4															Deep
7			5															Bentonite Seal
8			6															
9		Bedrock - chlorite calcite SCHIST with possible tuff fragments, strong foliation but competent core pieces >20 cm, 10 cm Argillite at 11.8m.		7.32														
10			7															Sand Pack
11			8															32mm dia. PVC Pipe
12			9															
13		End of Borehole		1376.62														
14				13.10														

DATA FORM: F-103

DATA INPL. SEPT 95

DEPTH SCALE:  
1 to 100

CLIENT: Cominco

**Golder Associates**

LOGGED: L.P.  
DATE: Aug. 24, 1995  
CHECKED: C.J.C.



PROJECT: 952-1523

# RECORD OF BOREHOLE BH95-129

SHEET 1 OF 1

LOCATION: Kudz-Ze-Kayah

BORING DATE: May 12, 1995

DATUM: G.S.

SAMPLER HAMMER, 63.5kg; DROP, 760mm



DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m		HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	WATER CONTENT, PERCENT Wp		
0		Ground Surface		0.00							
		Casing - Overburden		4.90							32mm dia. PVC pipe
10		Schist									Backfill
20											
30											
40		Mafic Dyke		72.10							75.7mm dia. hole
50											
60		Schist									Bentonite seal
70											
80											
90		Moderate Ore Envelope Alteration		123.30							Sand pack
100		Schist		128.60							
110		Strong Ore Envelope Alteration/Sulphide Rock.		130.70							
120		Schist		140.80							
130		Schist									32mm dia. PVC screen
140											
150		End of Hole		160.00							

DATA INPUT July 95

DEPTH SCALE  
1 to 1000

Golder Associates

LOGGED: M.D.  
CHECKED: M.D.

PROJECT: 952-1523

# RECORD OF BOREHOLE BH95-131

SHEET 1 OF 1

LOCATION: Kudz-Ze-Kayah

BORING DATE: May 13, 1995

DATUM: G.S.

SAMPLER HAMMER, 63.5kg; DROP, 760mm



DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES			DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s	ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER	TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa		
0		Ground Surface		0.00						
10		Casing - Overburden		10.00						32mm dia. PVC pipe
20		Schist								Backfill
30										
40										
50										
60		Schist								75.7mm dia. hole
70										
80										
88.90		Siliceous Argillite		88.90						Bentonite seal
99.10		Schist		99.10						
116.70		Massive Sulphide Rock		116.70						Sand pack 32mm dia. PVC screen
128.00		Schist		128.00						
130		End of Hole		128.00						

DATA INPUT: w/1 July 95

DEPTH SCALE

1 to 1000

Golder Associates

LOGGED: M.D.

CHECKED: M.D.

PROJECT: 952-1523

# RECORD OF BOREHOLE BH95-146

SHEET 1 OF 1

LOCATION: Kudz-Ze-Kayah

BORING DATE: May 21, 1995

DATUM: G.S.

SAMPLER HAMMER, 63.5kg; DROP, 760mm



DEPTH SCALE METRES	BORING METHOD	SOIL PROFILE		SAMPLES		DYNAMIC PENETRATION RESISTANCE, BLOWS/0.3m	HYDRAULIC CONDUCTIVITY, k, cm/s		ADDITIONAL LAB. TESTING	PIEZOMETER OR STANDPIPE INSTALLATION
		DESCRIPTION	STRATA PLOT	ELEV. DEPTH (m)	NUMBER TYPE	BLOWS/0.3m	SHEAR STRENGTH Cu, kPa	WATER CONTENT, PERCENT Wp		
0		Ground Surface		0.00						
		Casing - Overburden		3.70						
10		Schist								32mm dia. PVC pipe
20										Drilling Bentonite Mud seal
30		Sulphides.		35.30						
40					38.70					
50		Schist								
60										
70		Pyrite/Pyrrhotite.		71.30						76.2mm dia. hole
80					79.20					
90		Schist		81.50						Bentonite seal
100										
110		Pyrite/Pyrrhotite/Biotite.								
120										
130		Schist		124.70						
		Massive Sulphides.		127.00						
		Schist.		132.30						
140		End of Hole		138.70						Sand pack 32mm dia. PVC screen

DATA INPUT: w/ July '95

DEPTH SCALE

1 to 1000

Golder Associates

LOGGED: M.D.

CHECKED: M.D.

**BMC Minerals (No. 1) Ltd.**

**Borehole No: WW15-01**

Project: KZK Hydrogeological Assessment

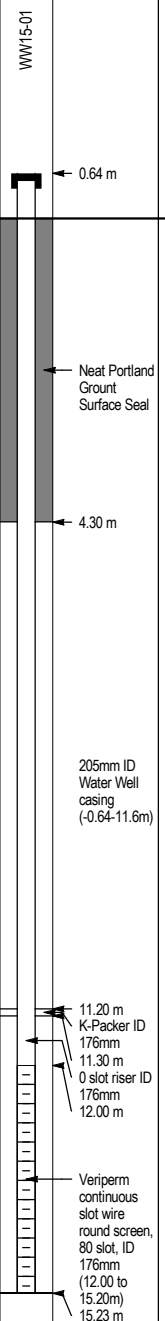
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon

UTM: 414895 E; 6815770 N; Z 9

Depth (m)	Method	Soil Description	Notes and Comments	Depth (ft)
0				0
0 - 4.30		SAND AND GRAVEL (FILL) - trace silt, occasional cobbles and boulders, poorly graded, dry, light brown, subangular to subrounded gravel		0 - 14
4.30 - 11.23	Tricone	GRAVEL - some sand, trace fine sand and silt, poorly graded, moist, dark brown, medium to coarse sand, subangular to subrounded gravel		14 - 37
11.23 - 15.23	Tricone	SAND AND GRAVEL - some silt, well graded, damp, light brown to grey, fine to coarse sand		37 - 50
15.23		- very wet, grey brown, black and white. medium to coarse sand, angular gravel		50
15.23 - 15.23		SAND - trace silt and fine sand, trace gravel, uniformly graded, very wet, grey brown black and white, medium to coarse sand		50 - 50
15.23 - 15.23		SAND AND GRAVEL - trace silt and fine sand, well graded, very wet, white brown and grey, angular to subangular gravel		50 - 50
15.23		END OF BOREHOLE (15.23 metres) - contact with top of bedrock water - 4.60 metres on October 4, 2015 Well installed to 15.23 metres		50



**TETRA TECH EBA**

Contractor: Midnight Sun Drilling  
 Drilling Rig Type: Air Rotary  
 Logged By: AJS  
 Reviewed By: SK

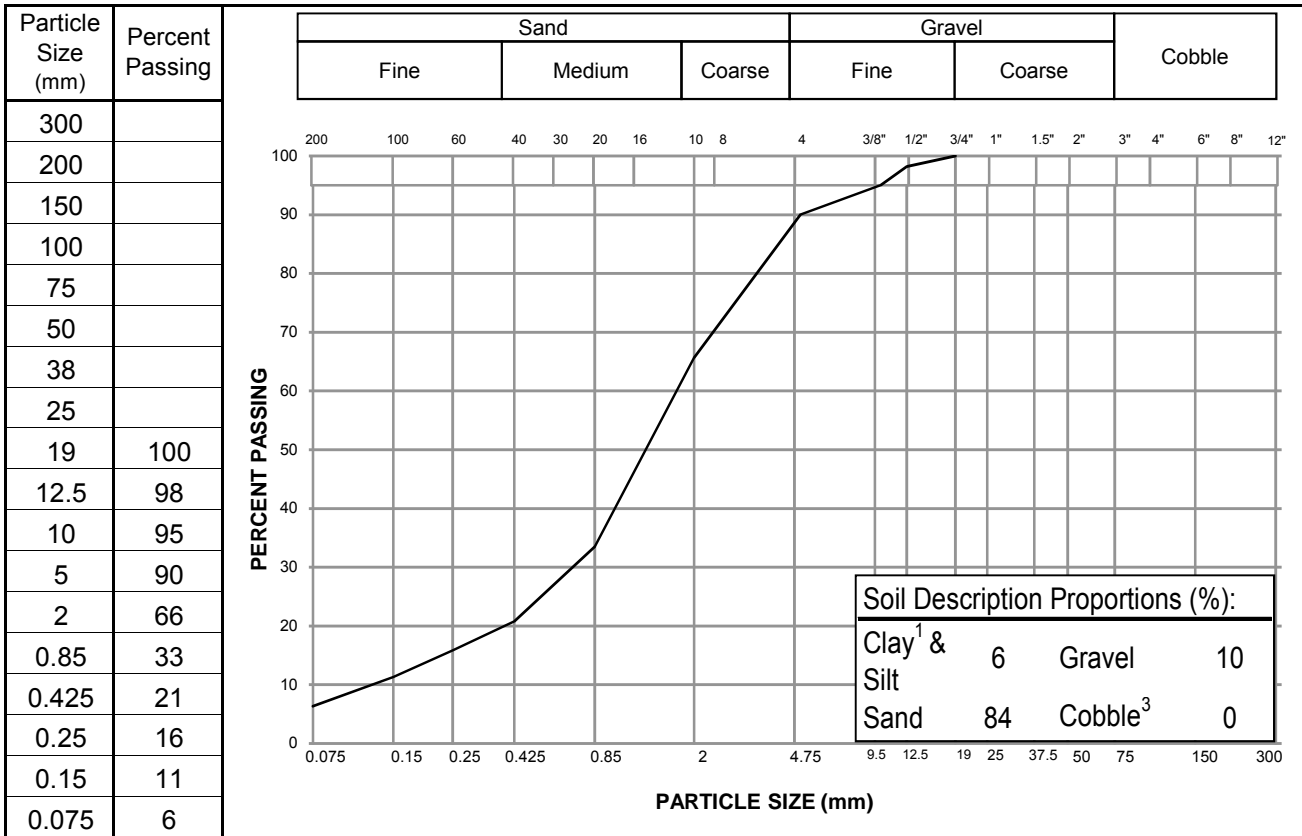
Completion Depth: 15.23 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 August 2  
 Page 1 of 1



# PARTICLE SIZE ANALYSIS REPORT

ASTM D422, C136 & C117

Project:	Kudz Ze Kyah	Sample No.:	1
Project No.:	ENVMIN03071	Material Type:	Sand
Site:	Kudz Ze Kyah	Sample Loc.:	WW15-01
Client:	BMC	Sample Depth:	12.2 m (40 ft) bg
Client Rep.:		Sampling Method:	Drilled with air rotary, from
Date Tested:	August 1, 2015	By:	AJS
		Date sampled:	August 1, 2015
Soil Description <sup>2</sup> :	SAND (med to coarse), trace silt, fine sand, gravel	Sampled By:	Name REDACTED
		USC Classification:	Cu: 13.8 Cc: 2.3
Moisture Content:	-100.0%		



Notes: <sup>1</sup> The upper clay size of 2 um, per the Canadian Foundation Engineering Manual  
<sup>2</sup> The description is visually based & subject to EBA description protocols  
<sup>3</sup> If cobbles are present, sampling procedure may not meet ASTM C702 & D75

Specification: \_\_\_\_\_

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Reviewed By: SK

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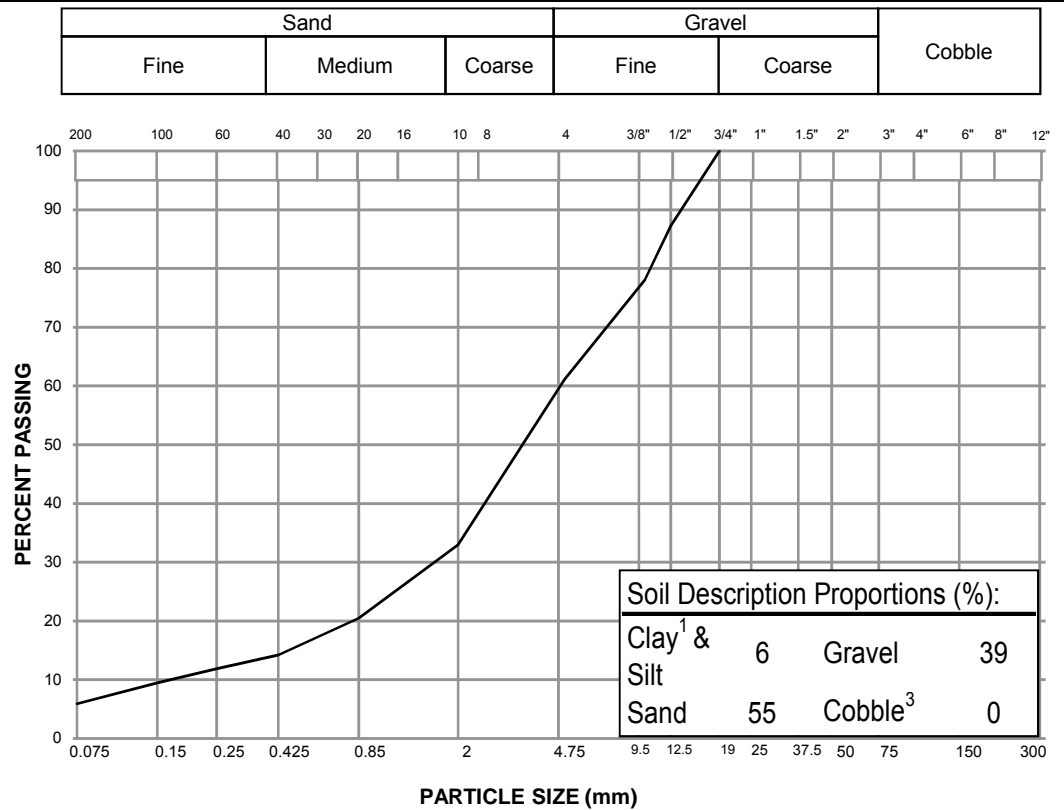


# PARTICLE SIZE ANALYSIS REPORT

ASTM D422, C136 & C117

Project:	Kudz Ze Kyah	Sample No.:	2
Project No.:	ENVMIN07071	Material Type:	
Site:	Kudz Ze Kyah	Sample Loc.:	WW15-01
Client:	BMC	Sample Depth:	14 m (46 ft) bg
Client Rep.:		Sampling Method:	Drilled with air rotary, from
Date Tested:	August 1, 2015	By:	AJS
		Date sampled:	August 1, 2015
Soil Description <sup>2</sup> :	SAND (med to coarse) and GRAVEL, tra	Sampled By:	Name REDACTED
		USC Classification:	Cu: 28.5
Moisture Content:	-100.0%		Cc: 3.6

Particle Size (mm)	Percent Passing
300	
200	
150	
100	
75	
50	
38	
25	
19	100
12.5	87
10	78
5	61
2	33
0.85	20
0.425	14
0.25	12
0.15	9
0.075	6



Notes: <sup>1</sup> The upper clay size of 2 um, per the Canadian Foundation Engineering Manual  
<sup>2</sup> The description is visually based & subject to EBA description protocols  
<sup>3</sup> If cobbles are present, sampling procedure may not meet ASTM C702 & D75

Specification: \_\_\_\_\_

Remarks: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

Reviewed By: SK

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**Site:** Kudz Ze Kyah  
**Job No.:** ENVMIN03071  
**Well ID:** WW15-01  
**Date:** August 1 & 2, 2015  
**Development Method:** Jetting and air lifting

**Development Record**

Date	Time	Time Spent Developing (min)	Estimated Purge Rate During Development (US GPM)	Total Volume Purged During Development (gal)	Total Volume Purged During Development (L)	Turbidity (estimated tablespoons sand in 5 gal pail)	Notes
1 Aug, 2015	16:45	0	250	0	0	-	commence development
	16:47	2	250	500	1893	7 - 8	
	16:55	10	250	2500	9464	1	
	17:03	18	250	4500	17034	6	moved down screen
	17:10	25	250	6250	23659	-	halted development due to water blowing out around casing. Welded three HQ drill rods to the casing to relieve pressure
	17:40	25	250	6250	23659	-	re-commenced development
	17:45	30	250	7500	28391	2	
	17:58	43	250	10750	40693	1.5	
	18:20	65	250	16250	61513	2	
	18:30	75	250	18750	70976	-	halted development, end of day
2 Aug, 2015	8:27	75	250	18750	70976	-	re-commenced development
	8:30	78	250	19500	73815	2	
	8:45	93	250	23250	88011	0.3	up high in screen
	9:20	128	250	32000	121133	0.5	
	9:35	143	250	35750	135328	0.3	
	9:55	163	250	40750	154255	0.2	
	9:57	165	250	41250	156148	-	Halted development - sump was almost full and in danger of overflowing.

Notes: Did not surge during development as driller worried about pressure blowing water to surface outside of the casing.

# BMC Minerals (No. 1) Ltd.

## Borehole No: WW15-02

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon

UTM: 414843 E; 6815770 N; Z 9

Depth (m) ▼	Method	Soil Description	Notes and Comments	Depth (ft) ▼
0				0
1	Tricone	SAND AND SILT - some gravel, completely weathered schist, poorly graded, dry, loose, brown		2
2				4
3		SCHIST - highly weathered, dry, weak, light brown, iron staining in fractures		6
4		- light brown to grey		8
5		- soft, light brown		10
6				12
7				14
8		- some quartz, slightly weathered, light grey		16
9				18
10				20
11				22
12	DHH			24
13		- water observed flowing into borehole (@~0.3 L/s) following removal of drill rods		26
14				28
15				30
16				32
17				34
18				36
19				38
20				40



**TETRA TECH EBA**

Contractor: Midnight Sun Drilling

Completion Depth: 38.1 m

Drilling Rig Type: Air Rotary

Start Date: 2015 July 30

Logged By: AJS

Completion Date: 2015 July 30

Reviewed By: SK

Page 1 of 2

**BMC Minerals (No. 1) Ltd.**

**Borehole No: WW15-02**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Yukon

UTM: 414843 E; 6815770 N; Z 9

Depth (m)	Method	Soil Description	Notes and Comments	WW15-02	Depth (ft)
20					66
21		- damp, grey			68
22					70
23					72
24		- water in returns			74
25					76
26		- fresh, dark grey			78
27					80
28					82
29	DHH				84
30					86
31					88
32					90
33					92
34					94
35					96
36					98
37					100
38					102
39					104
40					106
					108
					110
					112
					114
					116
					118
					120
					122
					124
					126
					128
					130
		END OF BOREHOLE (38.10 metres) water - 0.84 metres above ground on October 3, 2015 PVC liner installed from 0.76 to 3.81 metres Note: Open hole from 3.4 to 38.1 metres			

← 22.90 m

Screen, 20 slot, schedule 40 PVC, 152mm OD, 133mm ID

← 35.00 m

Solid casing, schedule 40 PVC 152mm OD, 133mm ID

← 38.10 m



Contractor: Midnight Sun Drilling

Completion Depth: 38.1 m

Drilling Rig Type: Air Rotary

Start Date: 2015 July 30

Logged By: AJS

Completion Date: 2015 July 30

Reviewed By: SK

Page 2 of 2

**Site:** Kudz Ze Kyah  
**Job No.:** ENVMIN03071  
**Well ID:** WW15-02  
**Date:** 30-Jul-15  
**Development Method:** Jetting and air lifting

**Development Record**

Date	Time	Time Spent Developing (min)	Estimated Purge Rate During Development (US GPM)	Total Volume Purged During Development (gal)	Total Volume Purged During Development (L)	Turbidity (estimated tablespoons sand in 5 gal pail)	Notes
30 July, 2015	16:35	0	25	0	0	-	commence development
	16:36	1	25	25	95	4	
	16:42	7	25	175	662	1	
	16:51	16	25	400	1514	0.3	
	17:00	25	25	625	2366	0.3	
	17:10	35	25	875	3312	0.3	cease development, turbidity below desired 0.5 tablespoons for approx 20 min

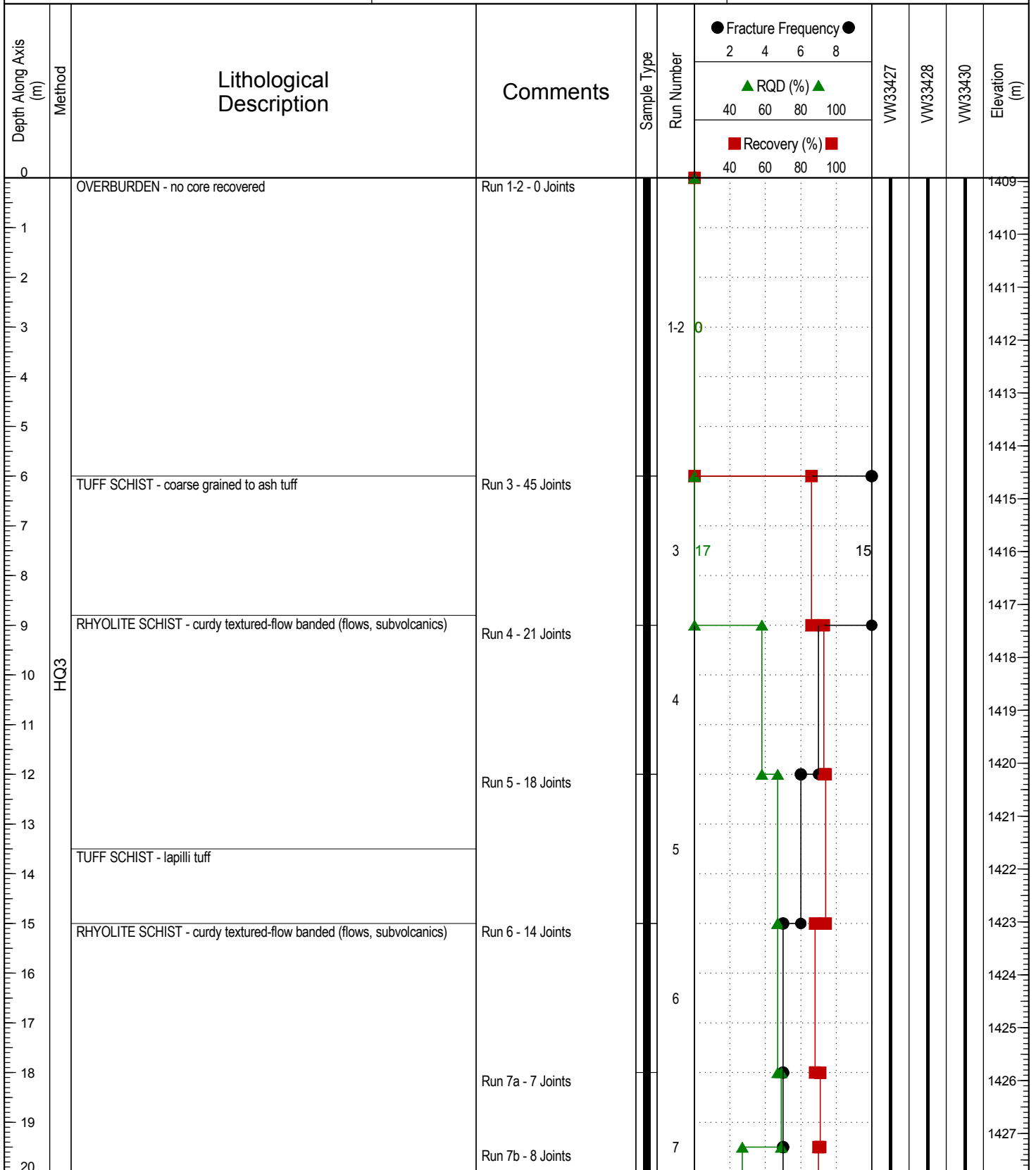
Notes: Did not surge during development as driller worried about pressure blowing water to surface outside of the casing.

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-200-VWP

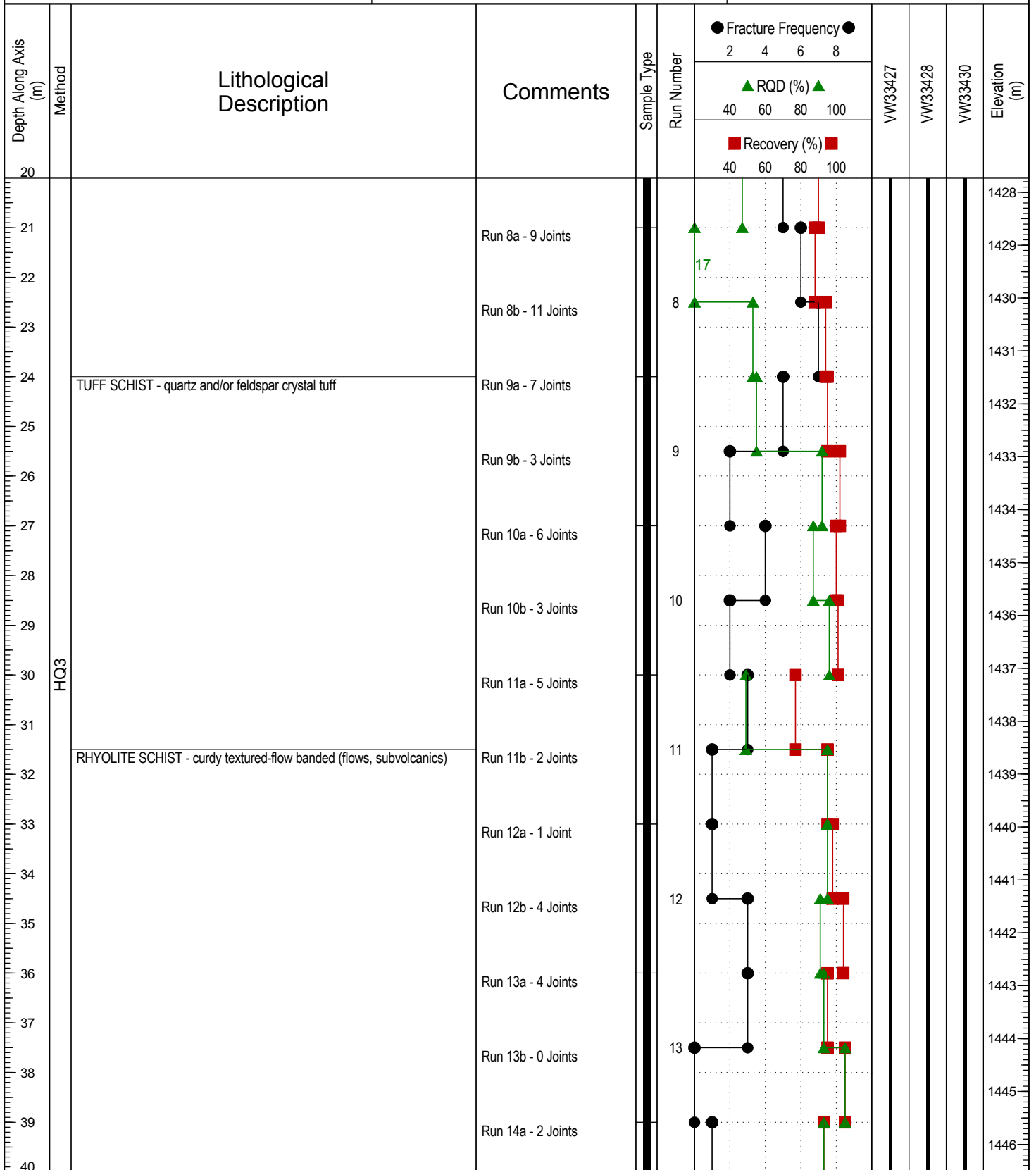
Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1408.934 m  
 UTM: 414748.527 E; 6815599.239 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 211.5 m  
 Start Date: 2015 July 30  
 Completion Date: 2015 August 3  
 Page 1 of 11



Contractor: Geotech Drilling

Completion Depth: 211.5 m

Drilling Rig Type: Hydracore

Start Date: 2015 July 30

Logged By: Client

Completion Date: 2015 August 3

Reviewed By: SK

Page 2 of 11

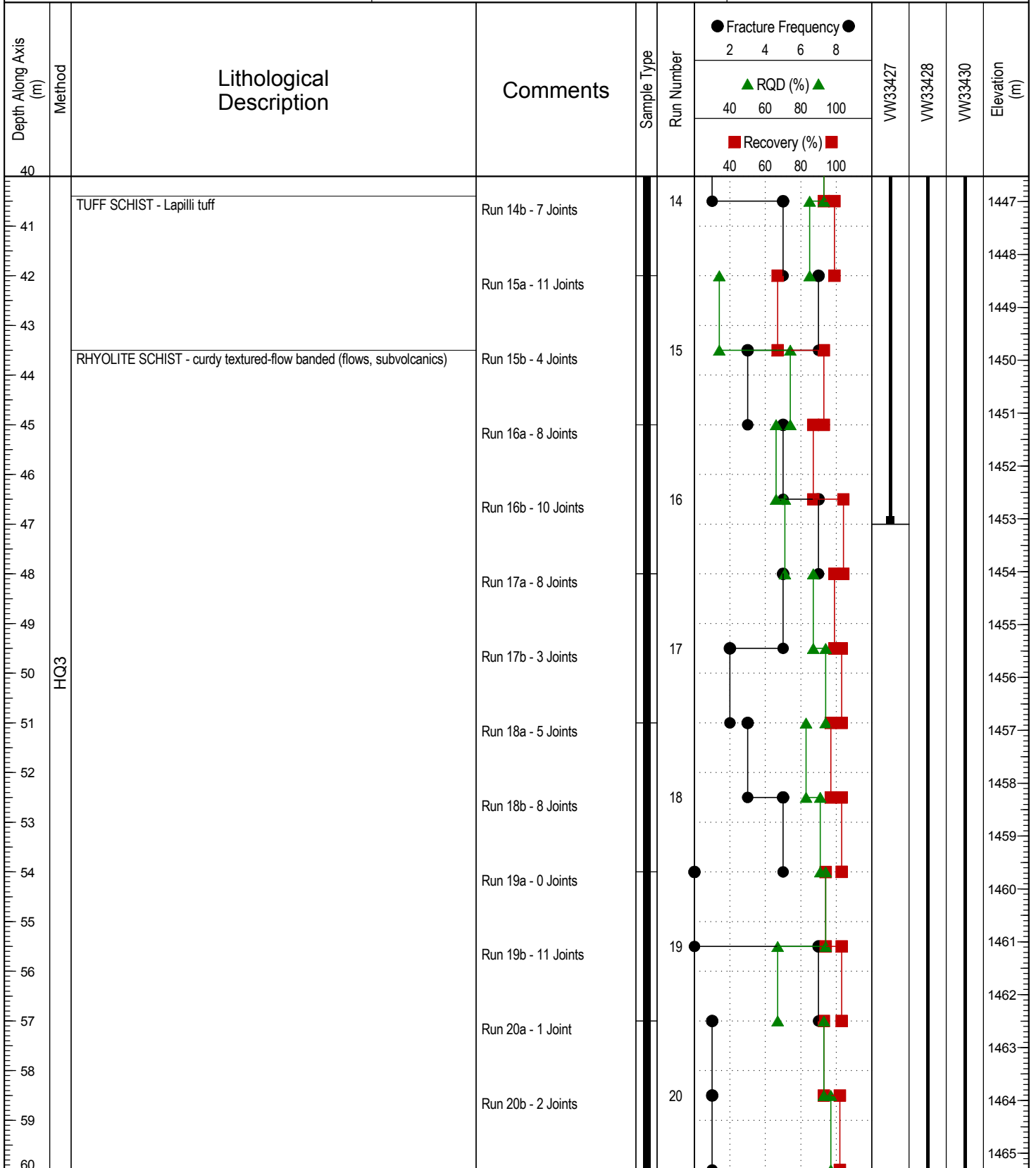


# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-200-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1408.934 m  
 UTM: 414748.527 E; 6815599.239 N; Z 9 NAD83

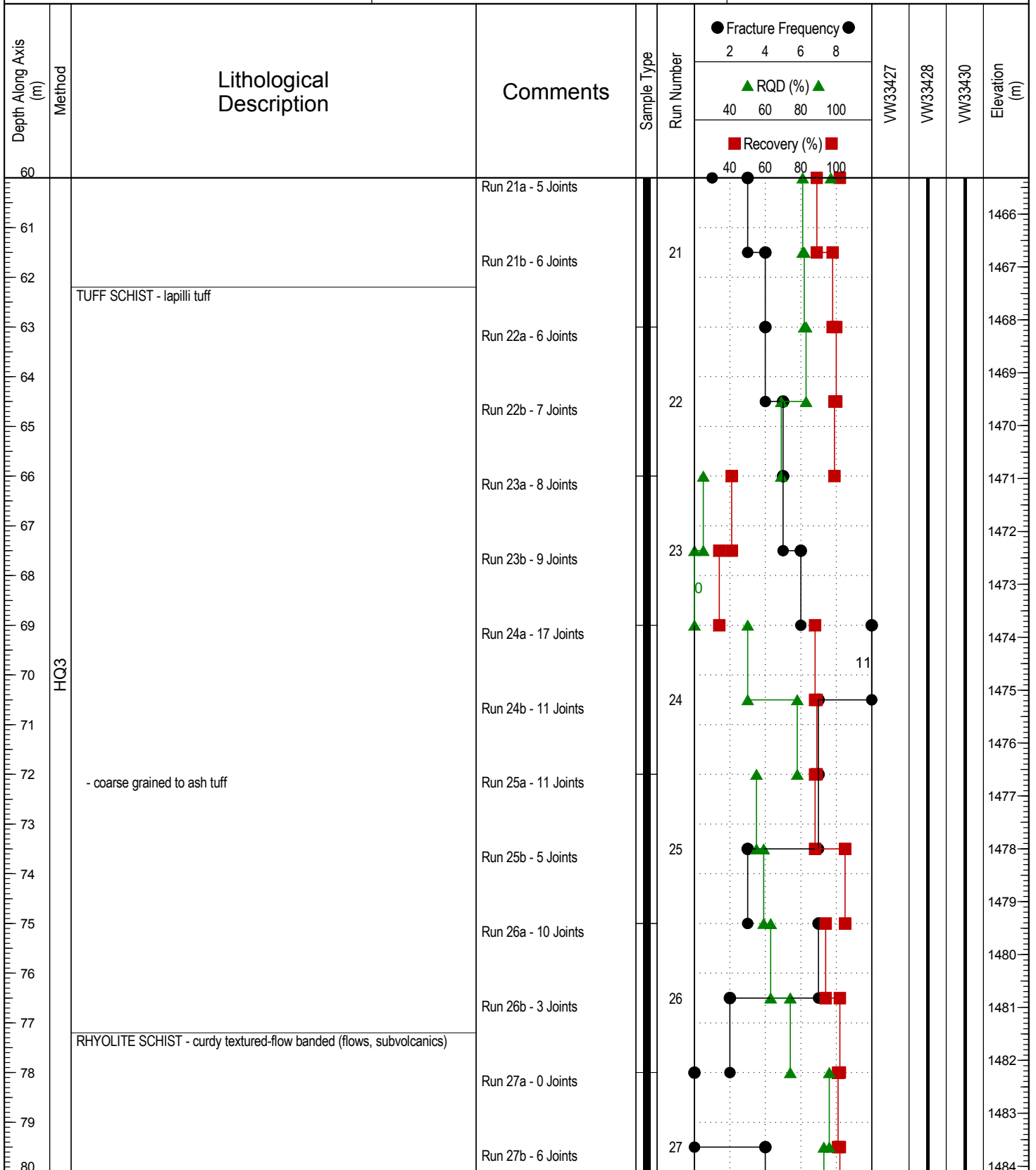


Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 211.5 m  
 Start Date: 2015 July 30  
 Completion Date: 2015 August 3  
 Page 3 of 11

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1408.934 m  
 UTM: 414748.527 E; 6815599.239 N; Z 9 NAD83



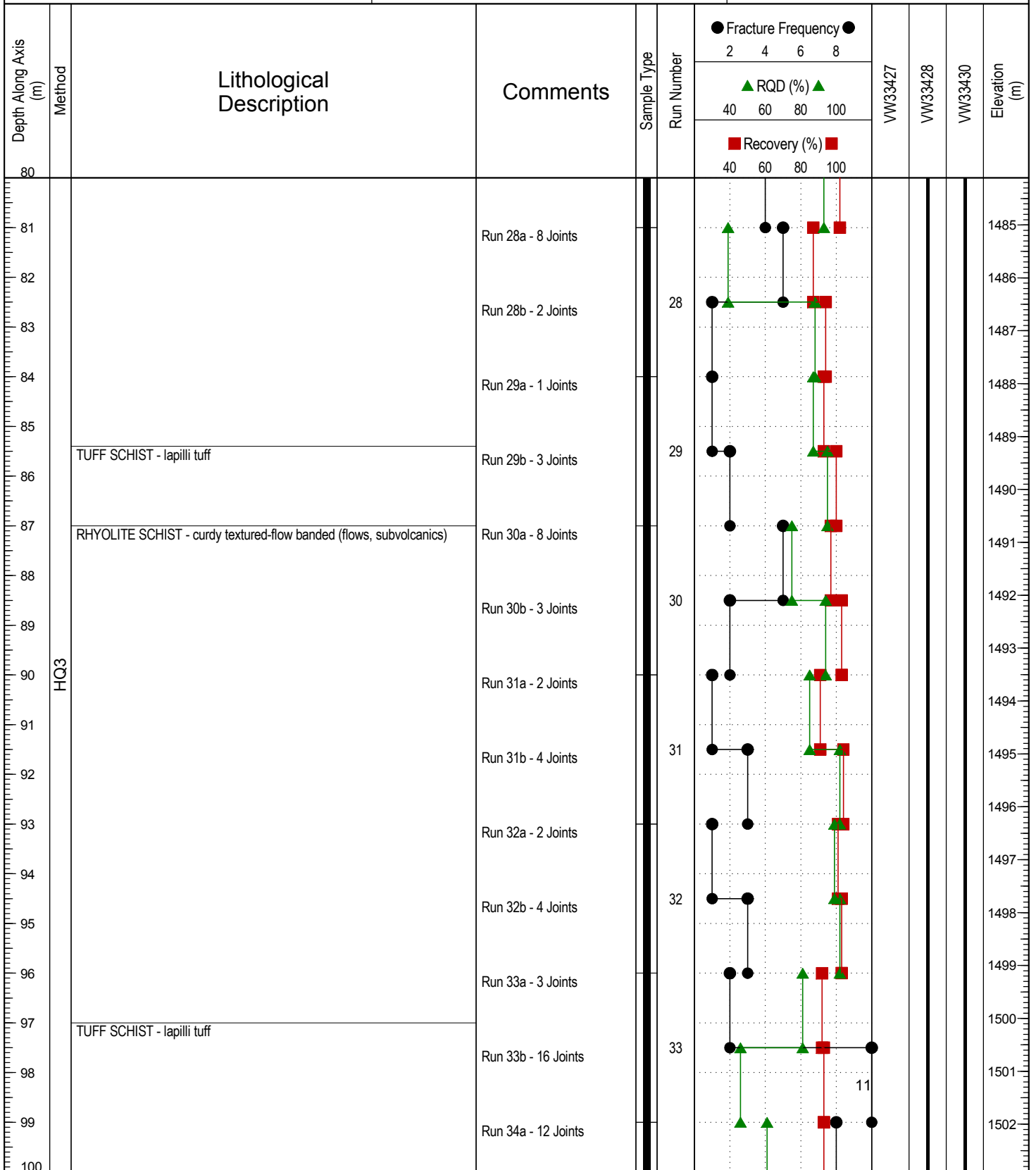
**TETRA TECH EBA**

Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 211.5 m  
 Start Date: 2015 July 30  
 Completion Date: 2015 August 3  
 Page 4 of 11

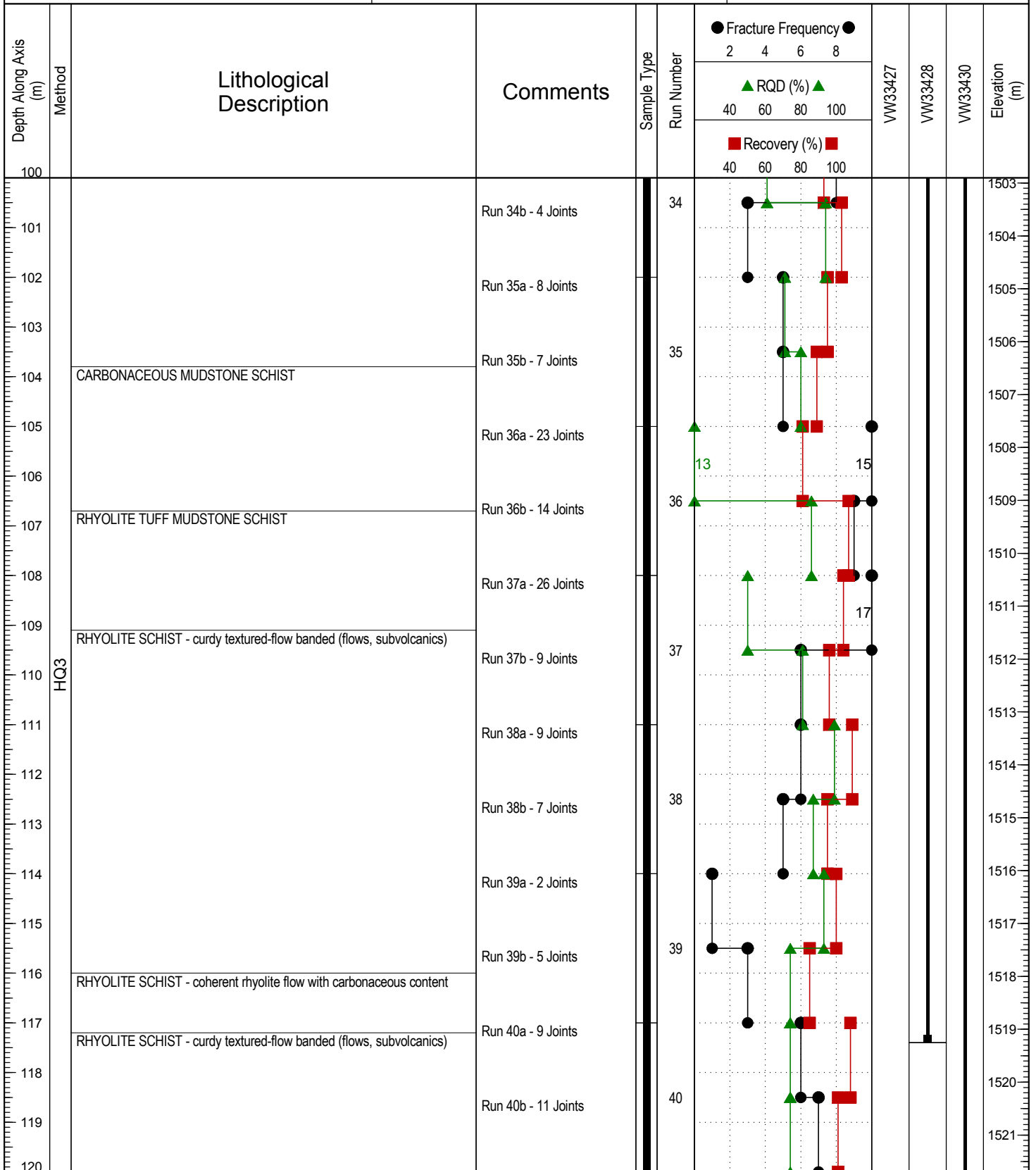
Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1408.934 m  
 UTM: 414748.527 E; 6815599.239 N; Z 9 NAD83



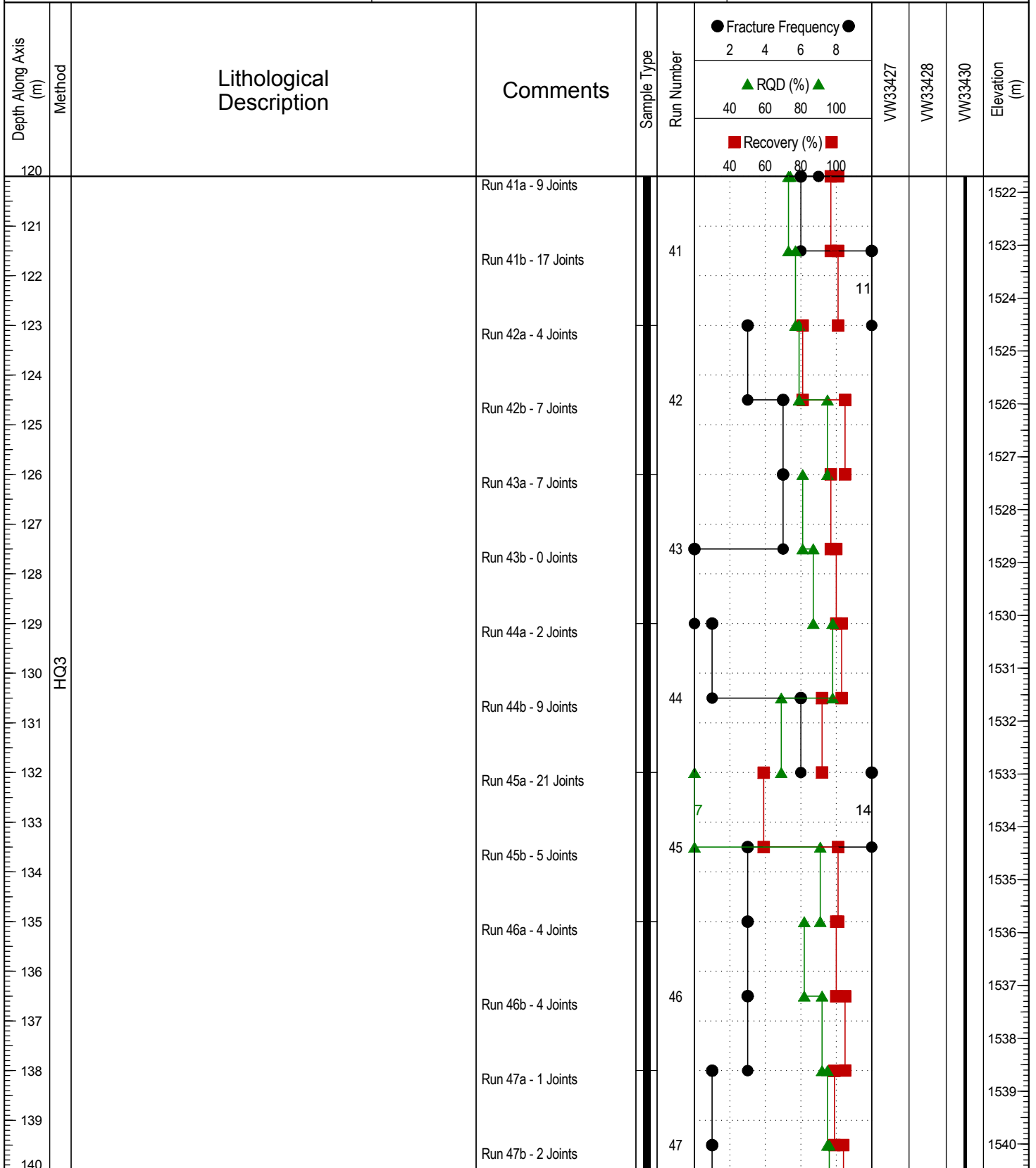
Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 211.5 m  
 Start Date: 2015 July 30  
 Completion Date: 2015 August 3  
 Page 5 of 11



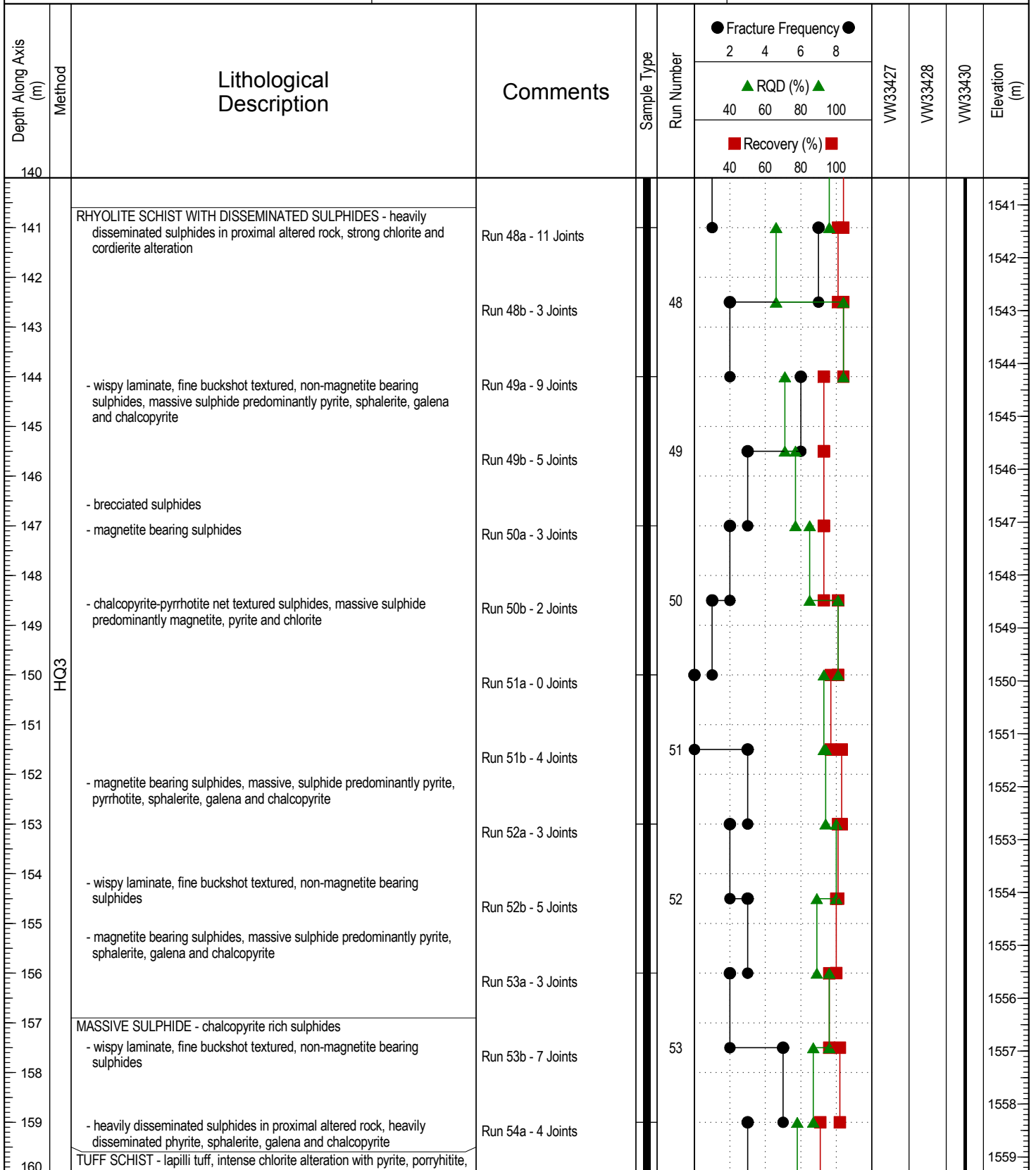
Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 211.5 m  
 Start Date: 2015 July 30  
 Completion Date: 2015 August 3  
 Page 6 of 11



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 211.5 m  
 Start Date: 2015 July 30  
 Completion Date: 2015 August 3  
 Page 7 of 11



**TETRA TECH EBA**

Contractor: Geotech Drilling

Drilling Rig Type: Hydracore

Logged By: Client

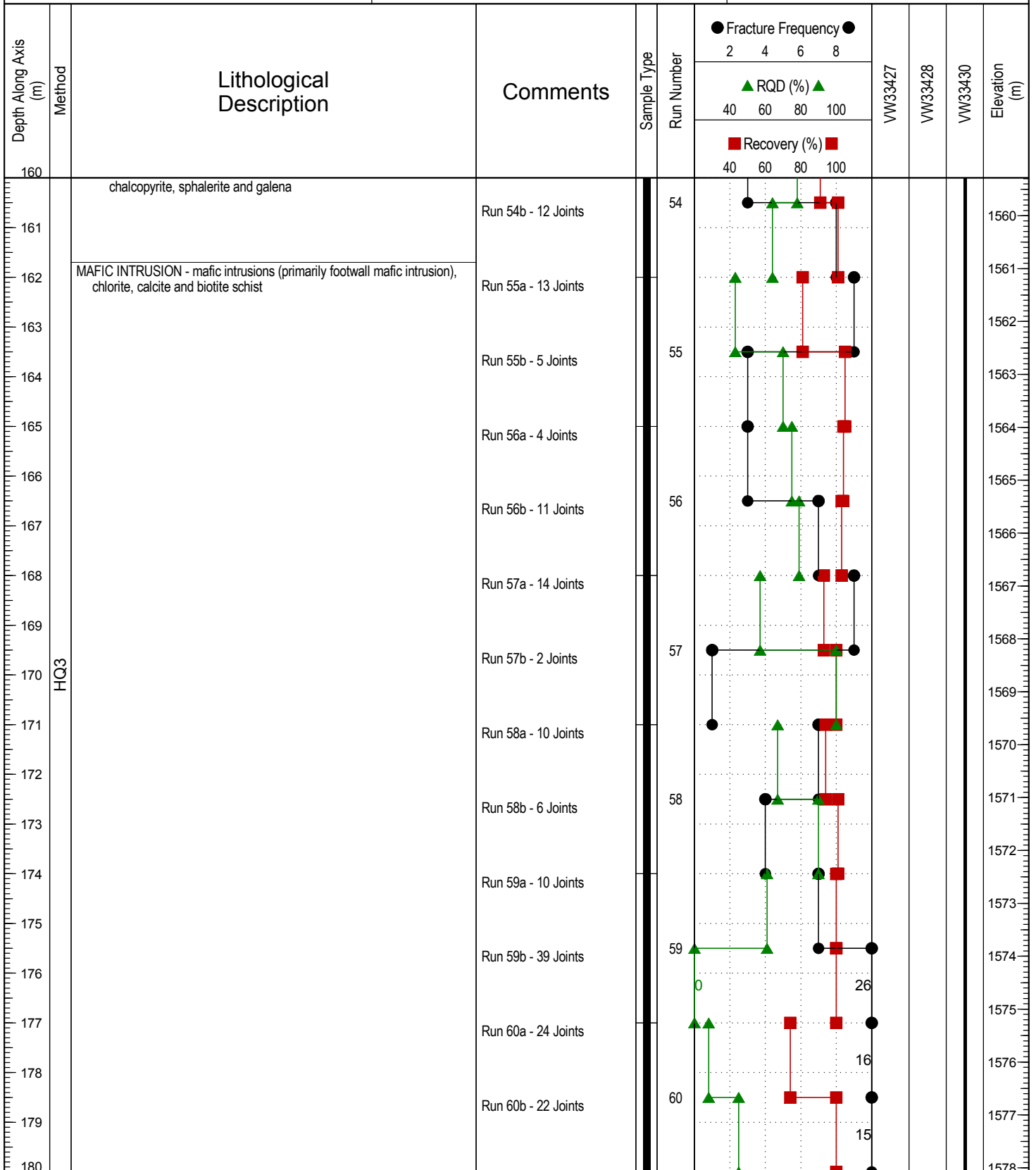
Reviewed By: SK

Completion Depth: 211.5 m

Start Date: 2015 July 30

Completion Date: 2015 August 3

Page 8 of 11



Contractor: Geotech Drilling

Completion Depth: 211.5 m

Drilling Rig Type: Hydracore

Start Date: 2015 July 30

Logged By: Client

Completion Date: 2015 August 3

Reviewed By: SK

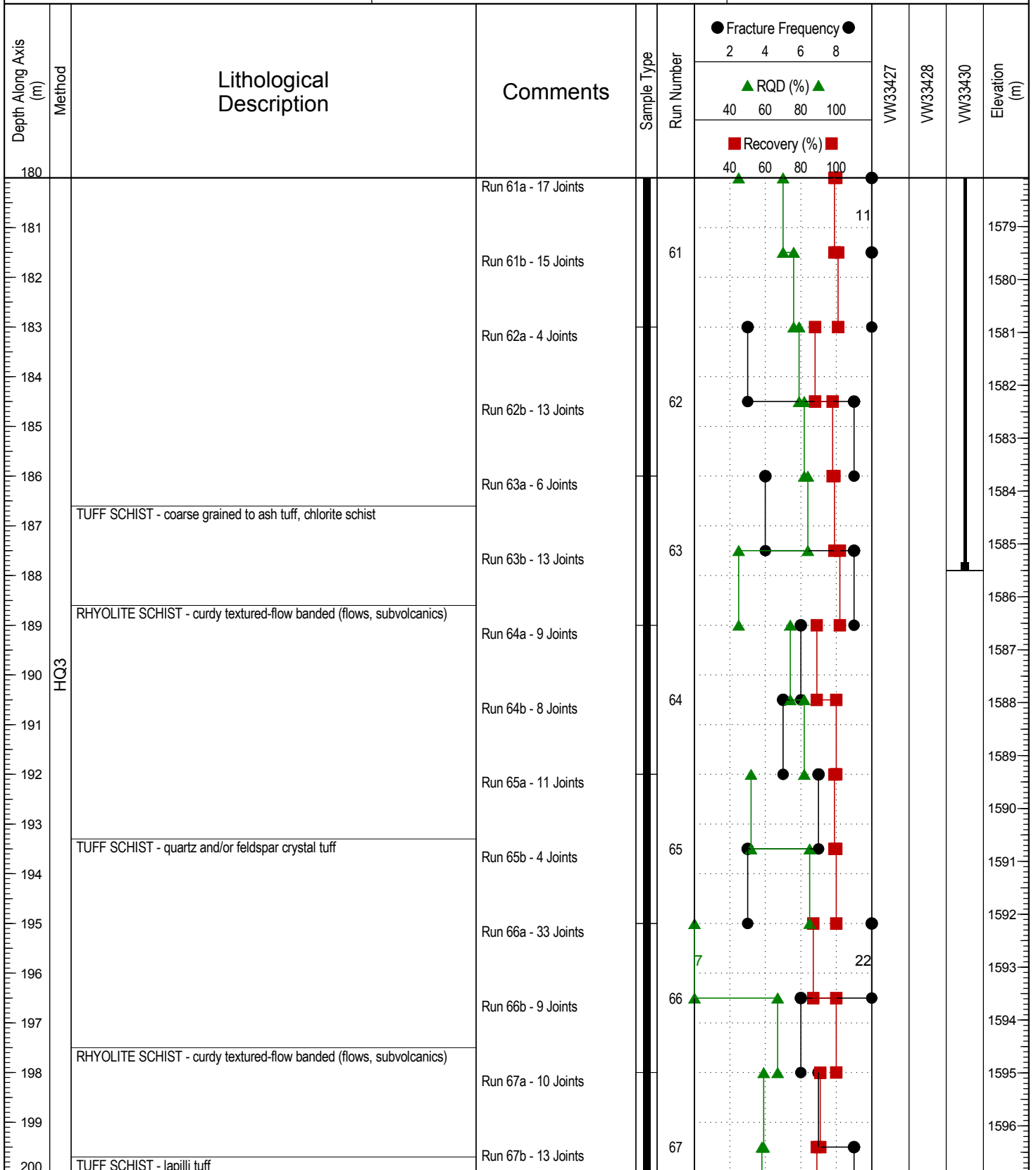
Page 9 of 11

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-200-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1408.934 m  
 UTM: 414748.527 E; 6815599.239 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 211.5 m  
 Start Date: 2015 July 30  
 Completion Date: 2015 August 3  
 Page 10 of 11

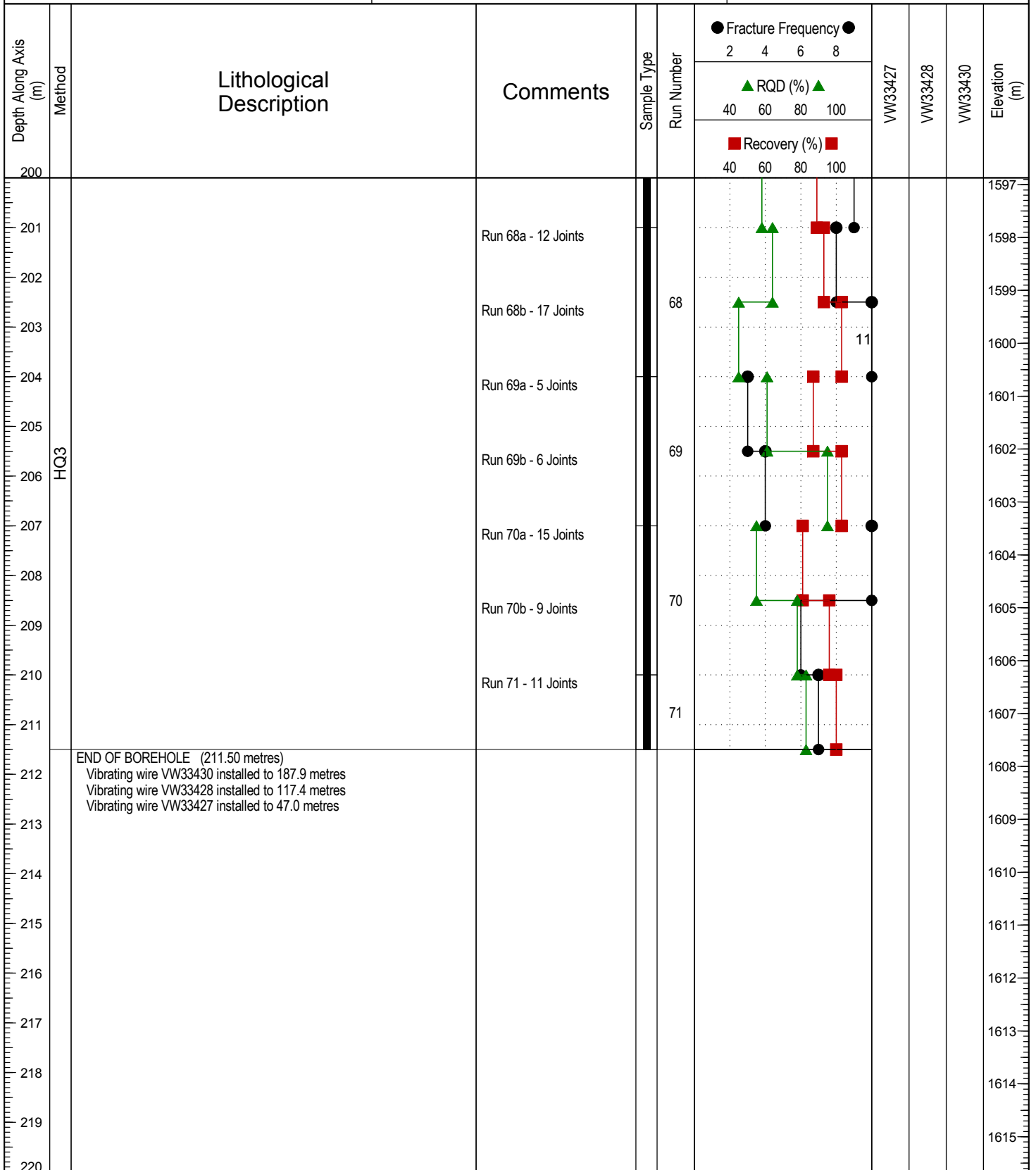


# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-200-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1408.934 m  
 UTM: 414748.527 E; 6815599.239 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 211.5 m  
 Start Date: 2015 July 30  
 Completion Date: 2015 August 3  
 Page 11 of 11

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-202

Project: KZK Hydrogeological Assessment

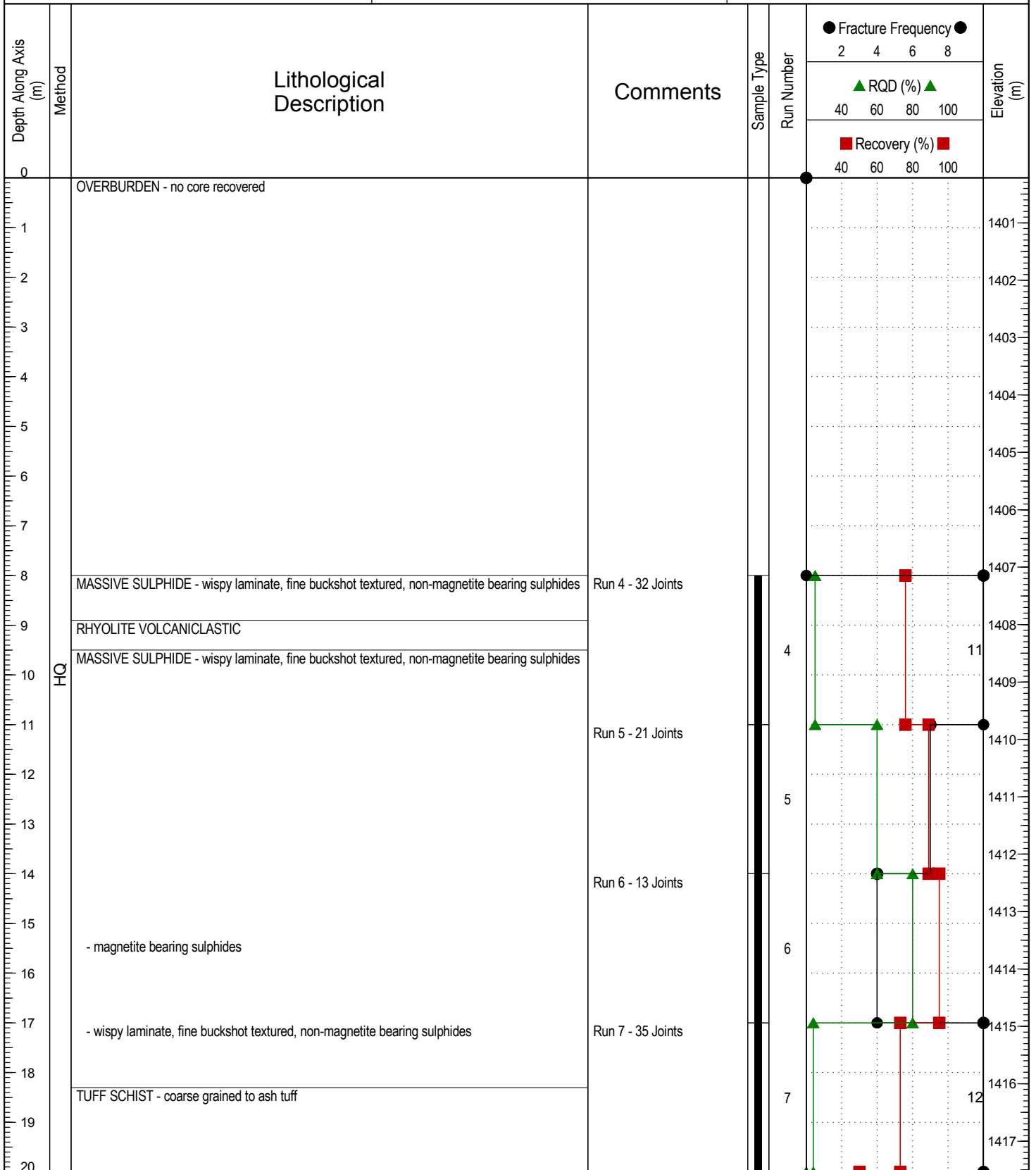
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.217 m

Yukon

UTM: 414795.491 E; 6815365.198 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 71 m

Drilling Rig Type: Zinex A5

Start Date: 2015 August 5

Logged By: Client

Completion Date: 2015 August 3

Reviewed By: SK

Page 1 of 4

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-202

Project: KZK Hydrogeological Assessment

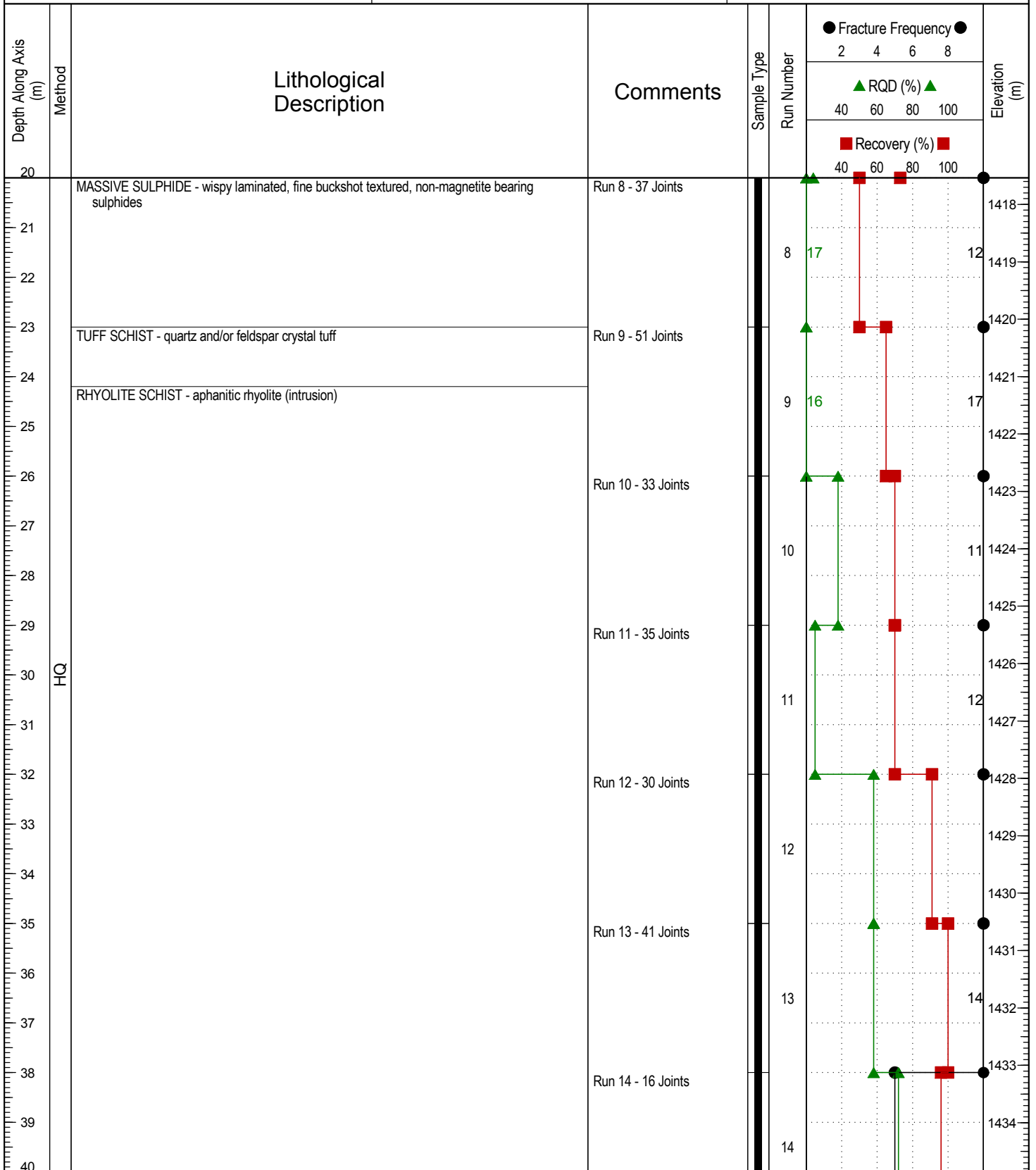
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.217 m

Yukon

UTM: 414795.491 E; 6815365.198 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 71 m

Drilling Rig Type: Zinex A5

Start Date: 2015 August 5

Logged By: Client

Completion Date: 2015 August 3

Reviewed By: SK

Page 2 of 4

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-202

Project: KZK Hydrogeological Assessment

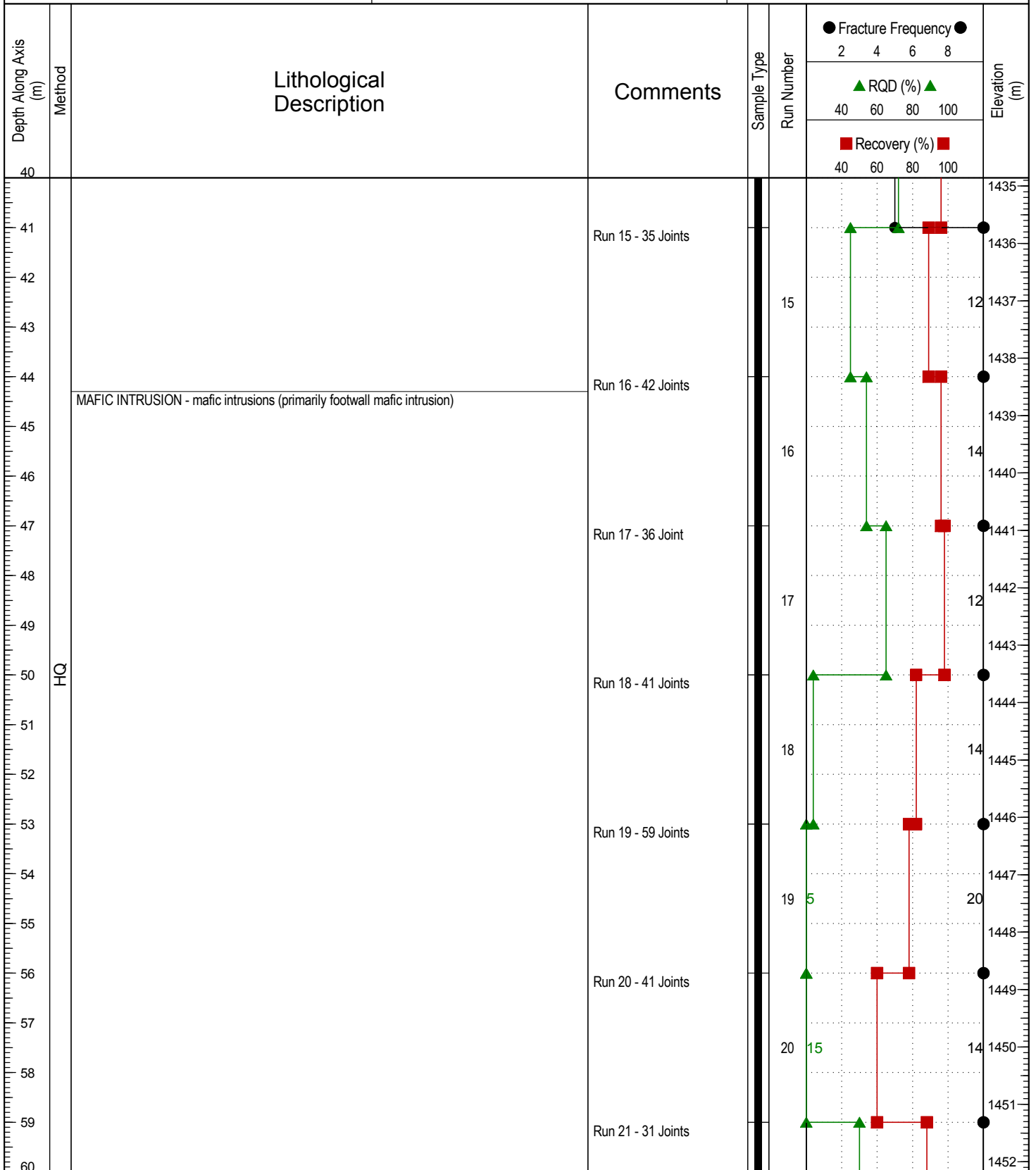
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.217 m

Yukon

UTM: 414795.491 E; 6815365.198 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 71 m

Drilling Rig Type: Zinex A5

Start Date: 2015 August 5

Logged By: Client

Completion Date: 2015 August 3

Reviewed By: SK

Page 3 of 4

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-202

Project: KZK Hydrogeological Assessment

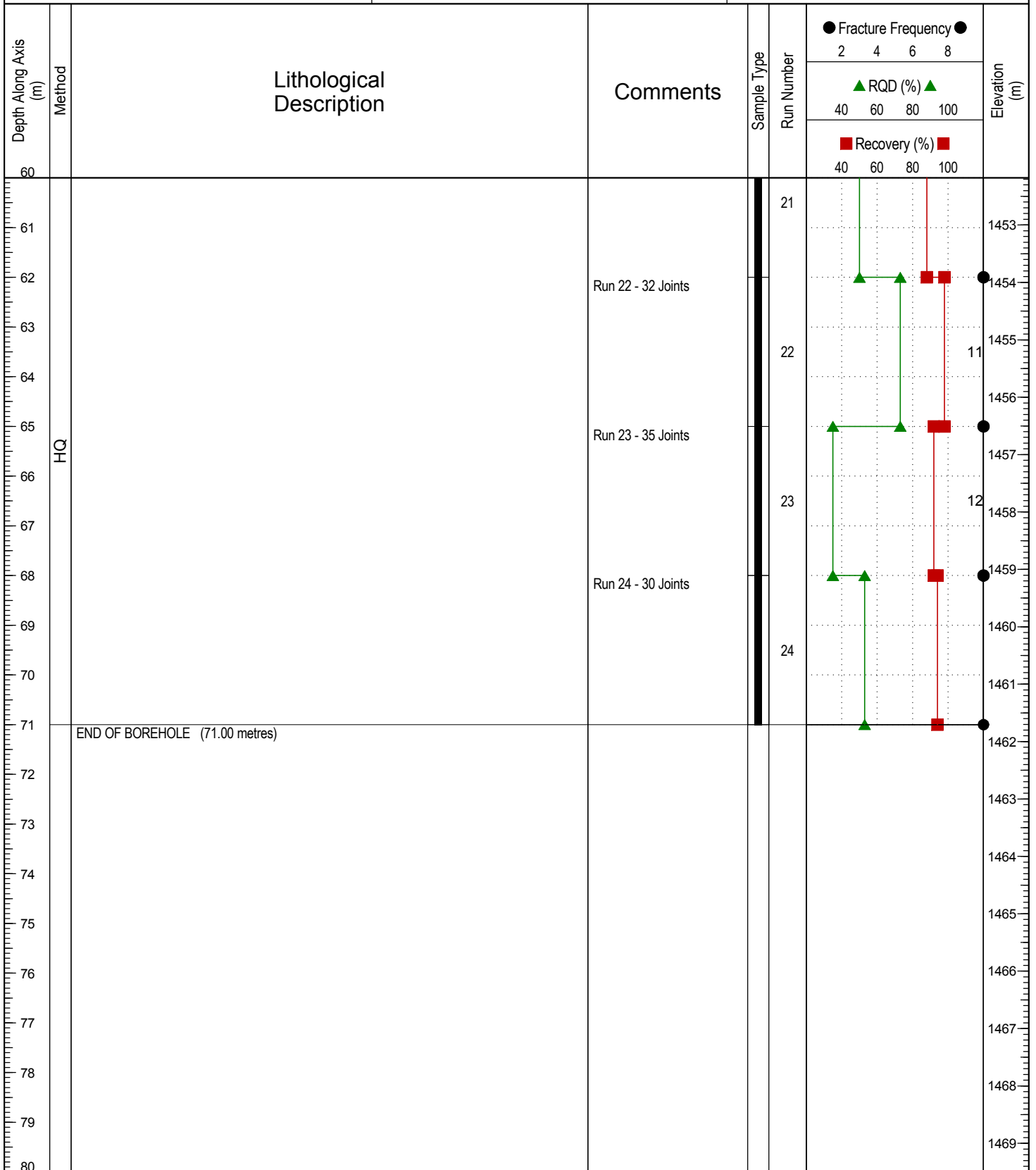
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.217 m

Yukon

UTM: 414795.491 E; 6815365.198 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 71 m

Drilling Rig Type: Zinex A5

Start Date: 2015 August 5

Logged By: Client

Completion Date: 2015 August 3

Reviewed By: SK

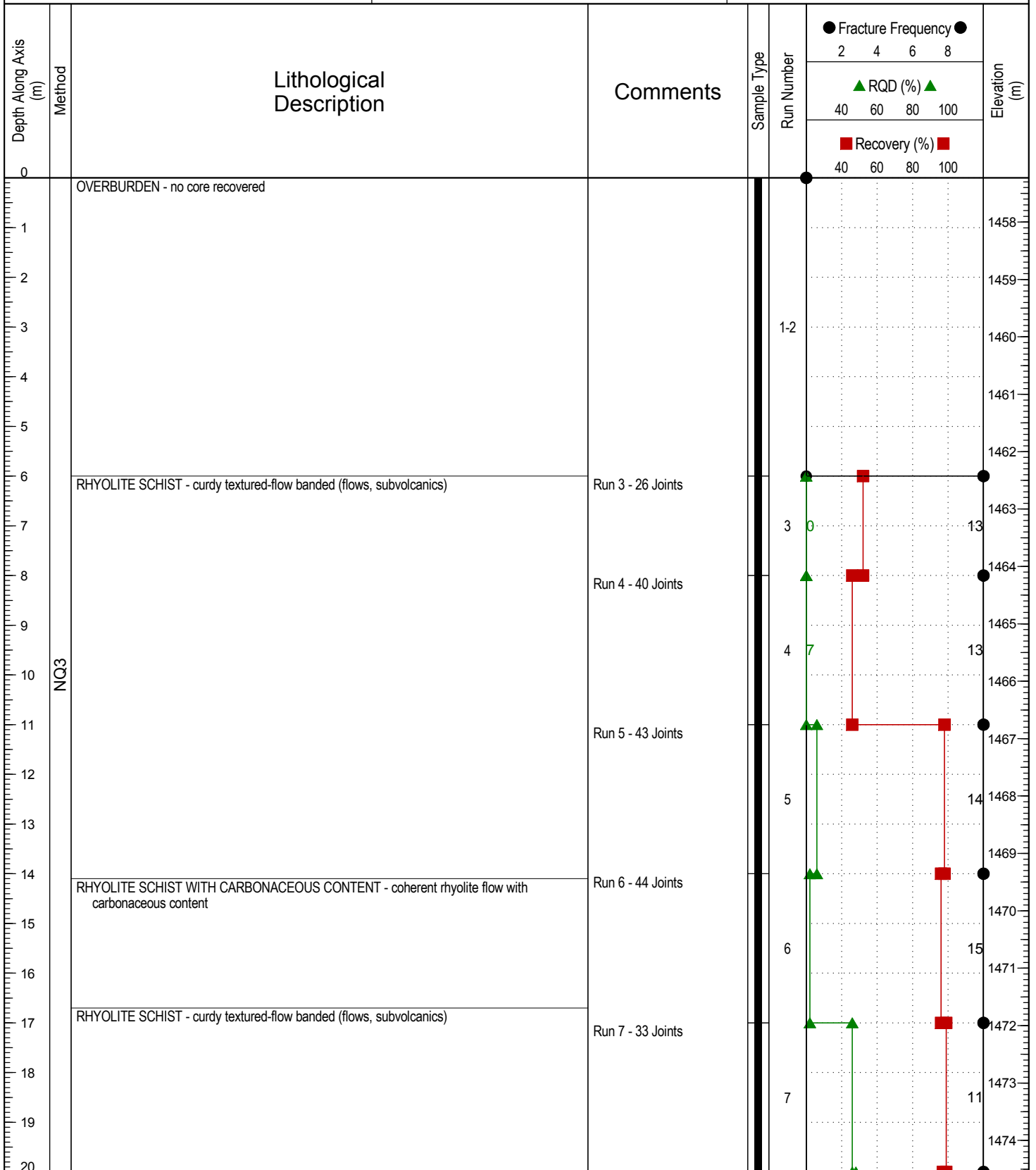
Page 4 of 4

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-204

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1457.23 m  
 UTM: 414549.469 E; 6815464.484 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 149 m  
 Start Date: 2015 August 8  
 Completion Date: 2015 August 8  
 Page 1 of 8

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-204

Project: KZK Hydrogeological Assessment

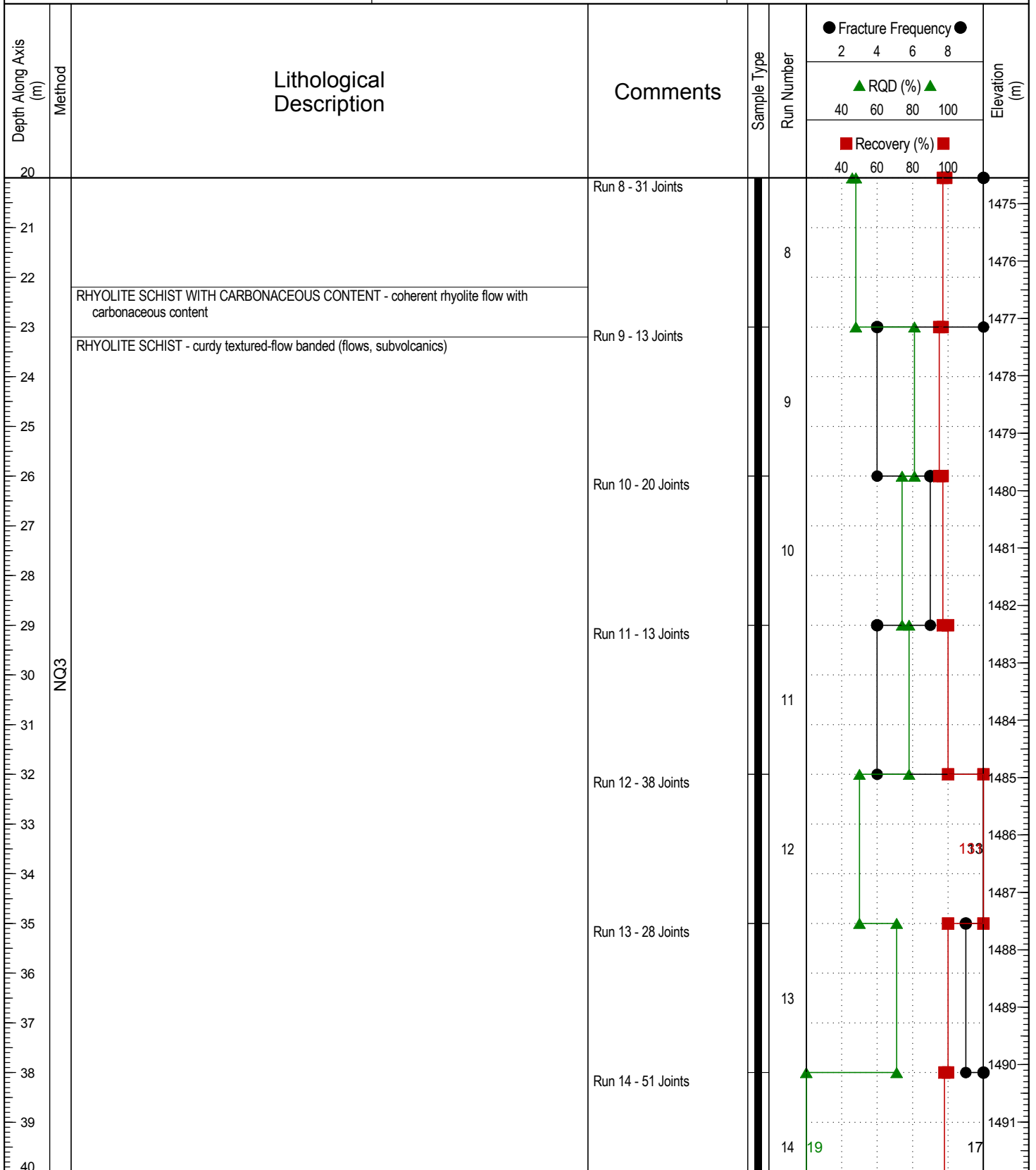
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1457.23 m

Yukon

UTM: 414549.469 E; 6815464.484 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 149 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 8

Logged By: Client

Completion Date: 2015 August 8

Reviewed By: SK

Page 2 of 8

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-204

Project: KZK Hydrogeological Assessment

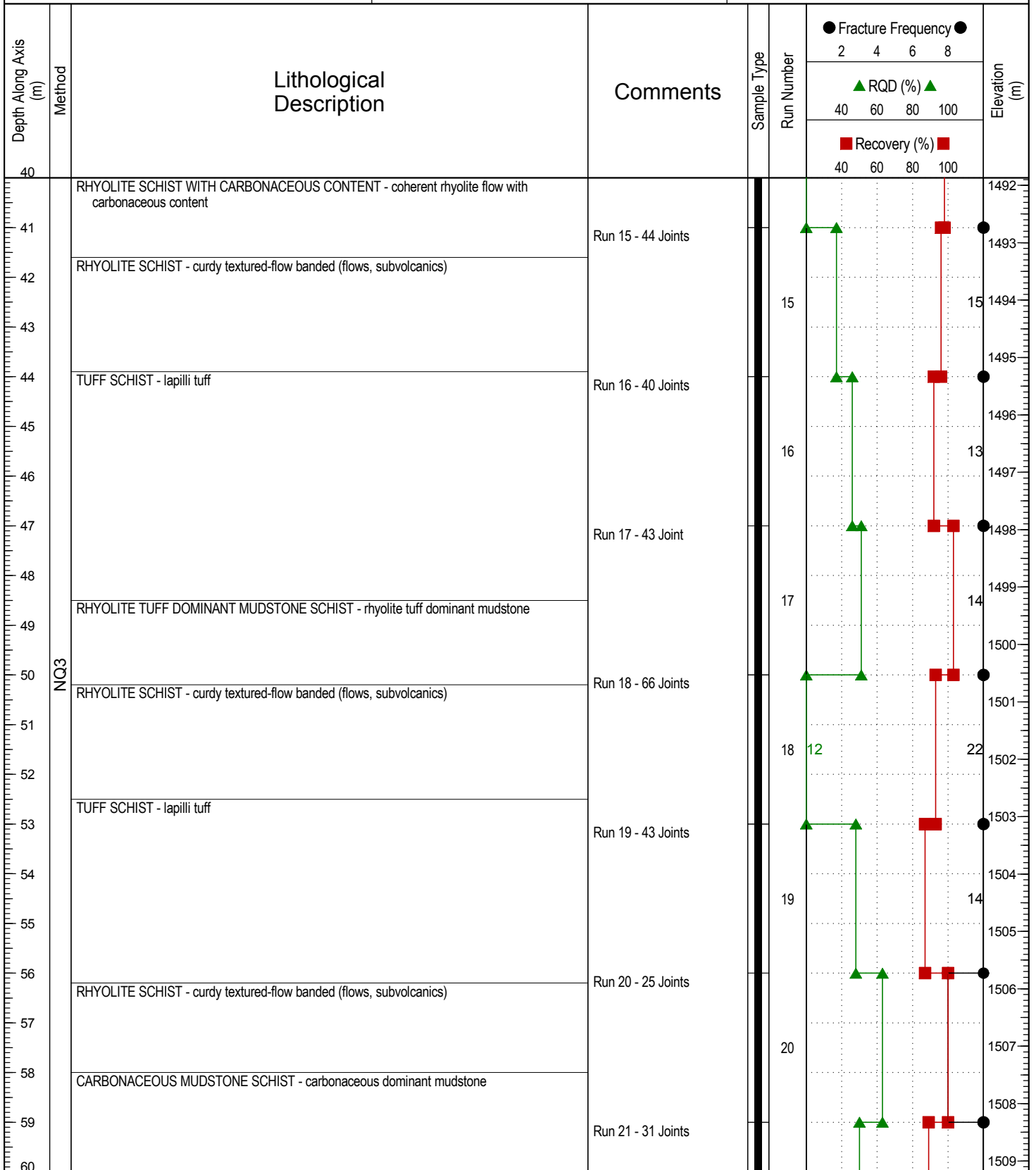
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1457.23 m

Yukon

UTM: 414549.469 E; 6815464.484 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 149 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 8

Logged By: Client

Completion Date: 2015 August 8

Reviewed By: SK

Page 3 of 8



# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-204

Project: KZK Hydrogeological Assessment

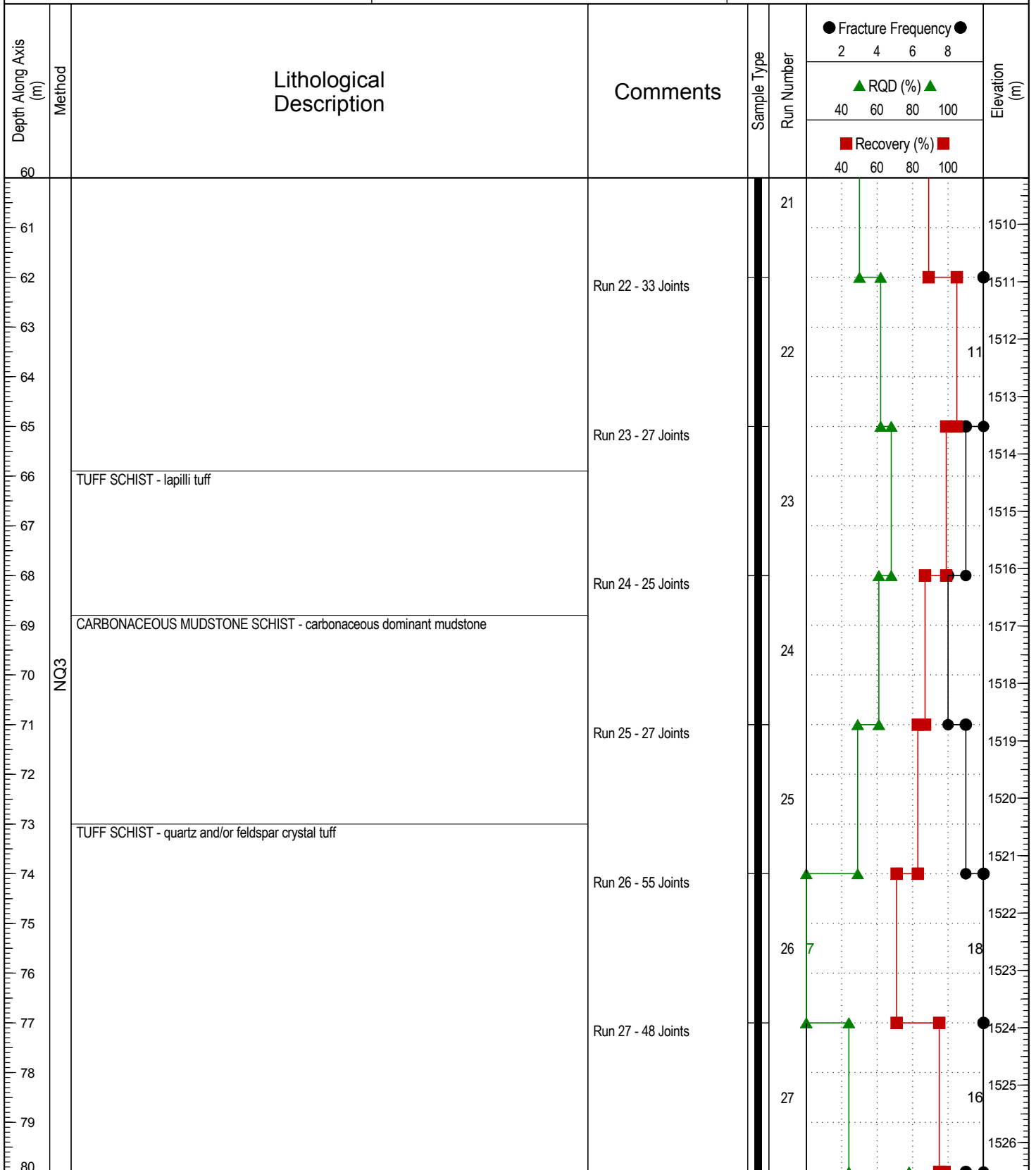
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1457.23 m

Yukon

UTM: 414549.469 E; 6815464.484 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 149 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 8

Logged By: Client

Completion Date: 2015 August 8

Reviewed By: SK

Page 4 of 8

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-204

Project: KZK Hydrogeological Assessment

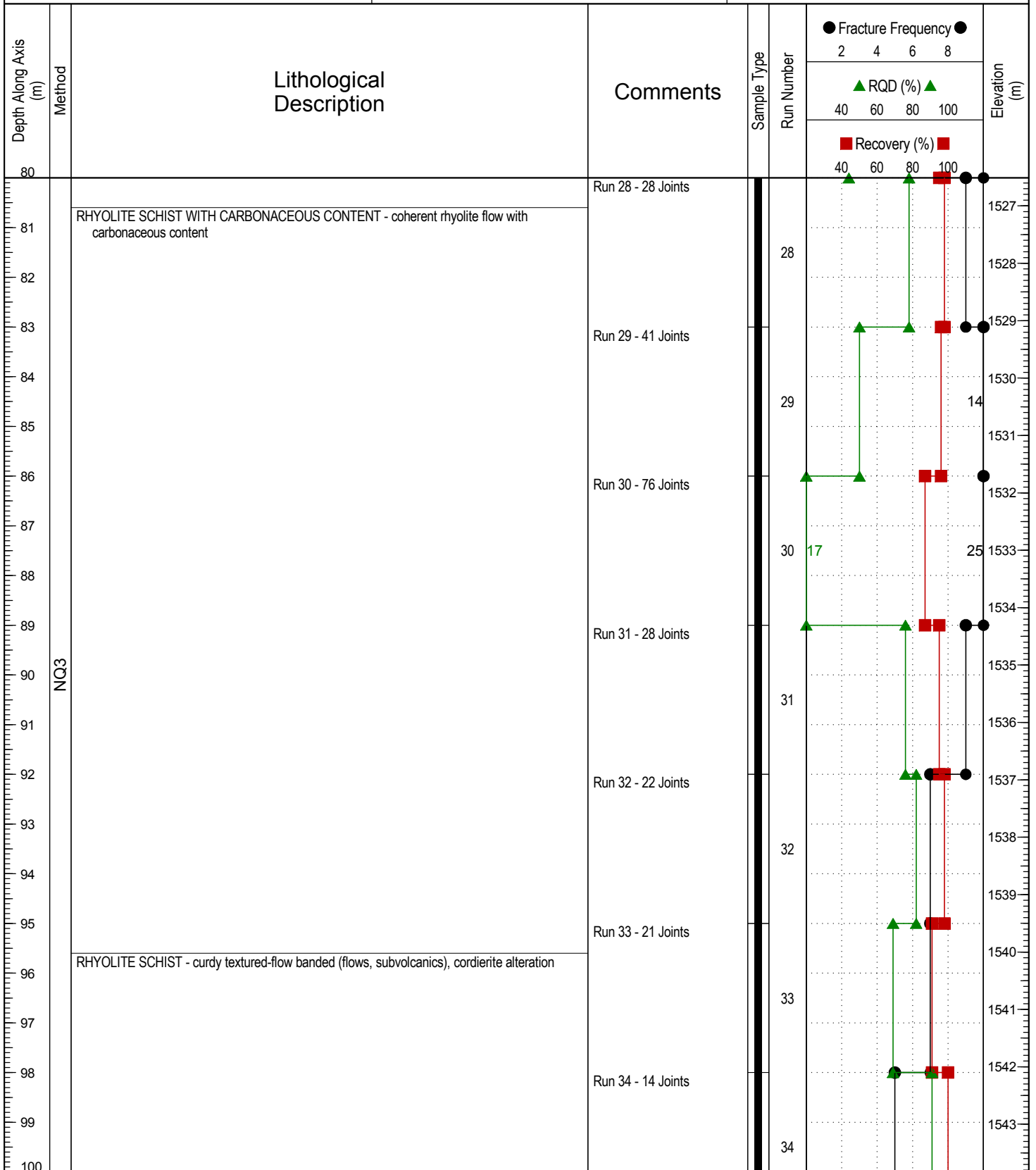
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1457.23 m

Yukon

UTM: 414549.469 E; 6815464.484 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 149 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 8

Logged By: Client

Completion Date: 2015 August 8

Reviewed By: SK

Page 5 of 8

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-204

Project: KZK Hydrogeological Assessment

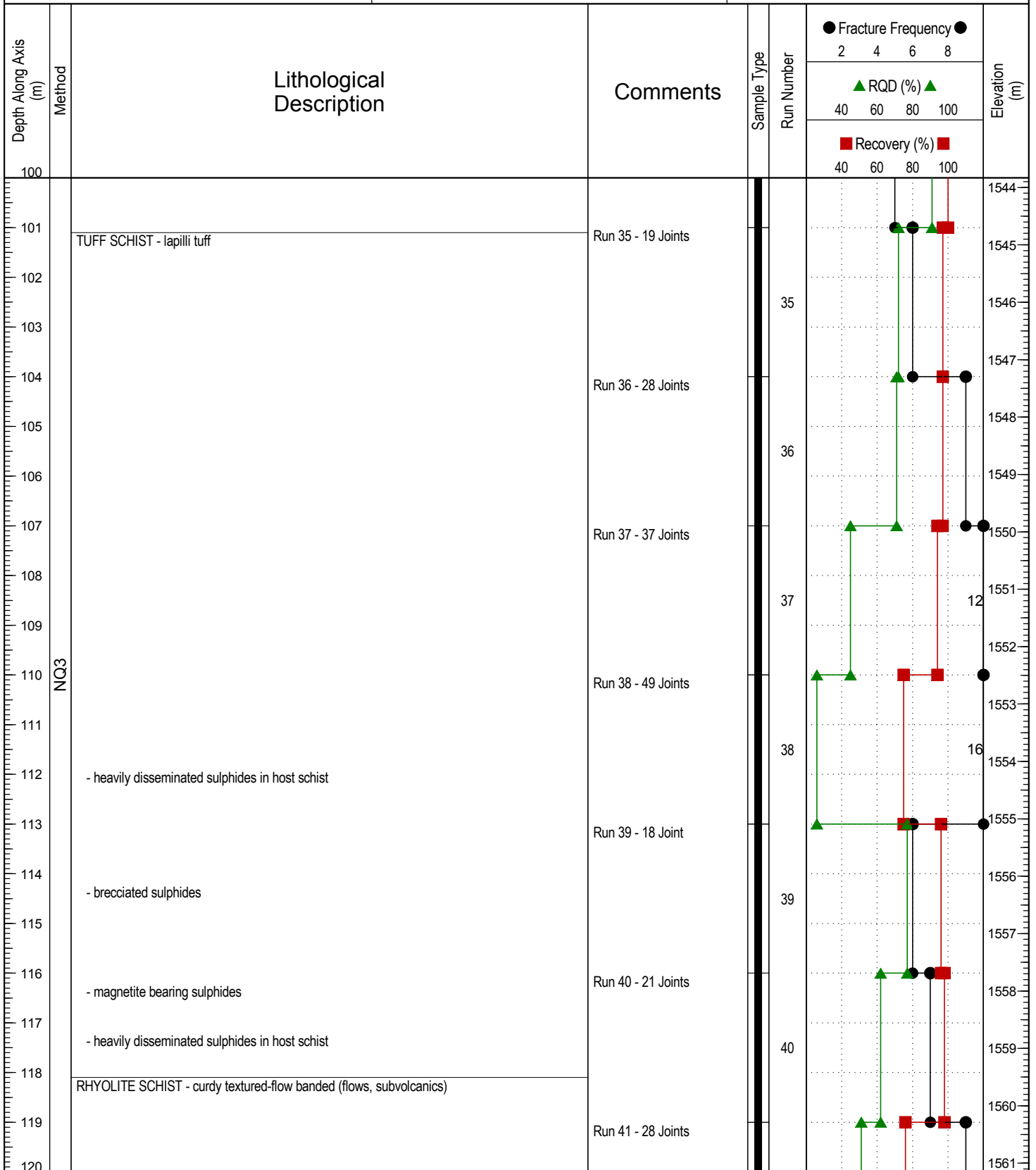
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1457.23 m

Yukon

UTM: 414549.469 E; 6815464.484 N; Z 9 NAD83



Contractor: Geotech Drilling

Completion Depth: 149 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 8

Logged By: Client

Completion Date: 2015 August 8

Reviewed By: SK

Page 6 of 8

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-204

Project: KZK Hydrogeological Assessment

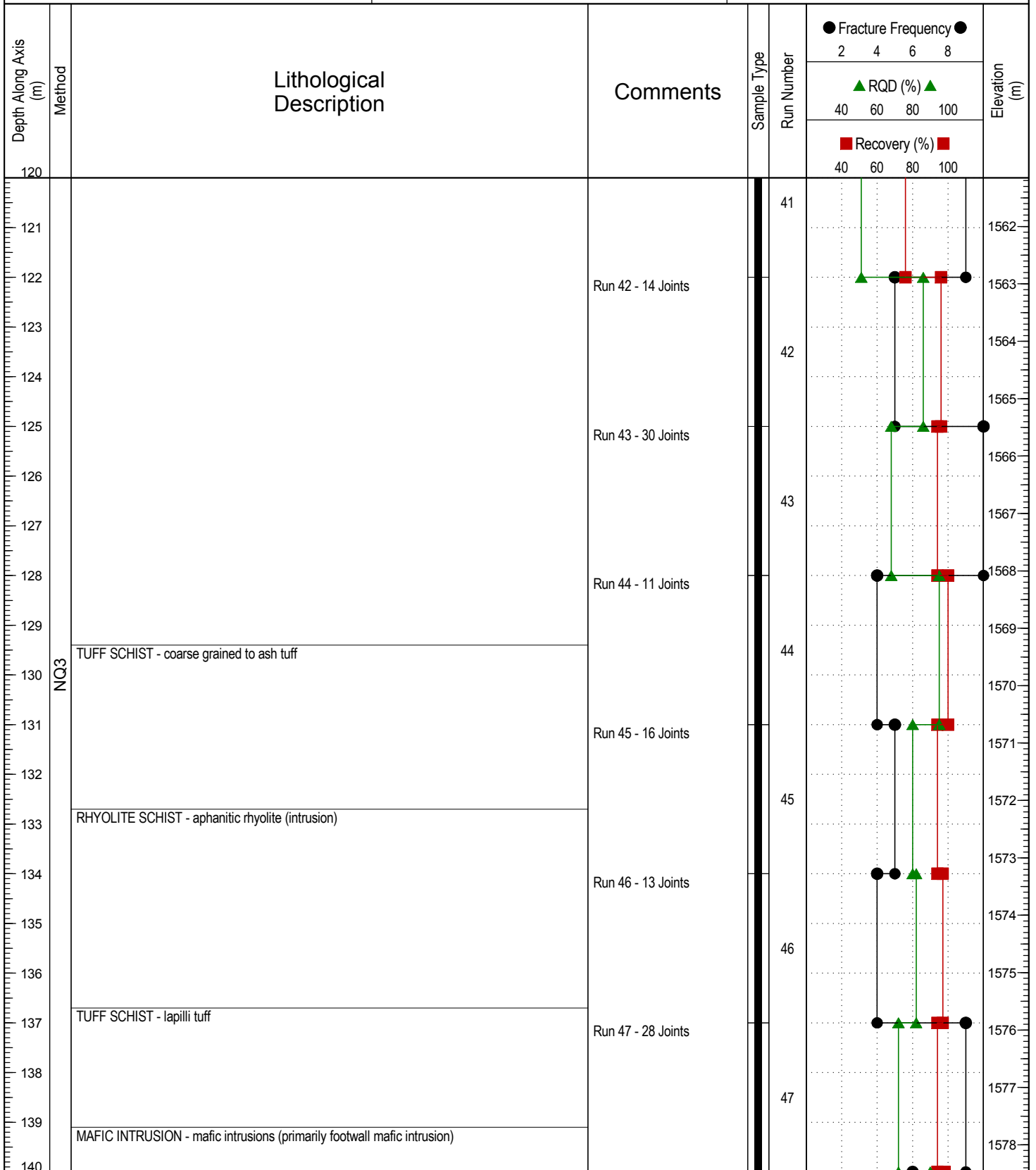
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1457.23 m

Yukon

UTM: 414549.469 E; 6815464.484 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 149 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 8

Logged By: Client

Completion Date: 2015 August 8

Reviewed By: SK

Page 7 of 8

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-204**

Project: KZK Hydrogeological Assessment

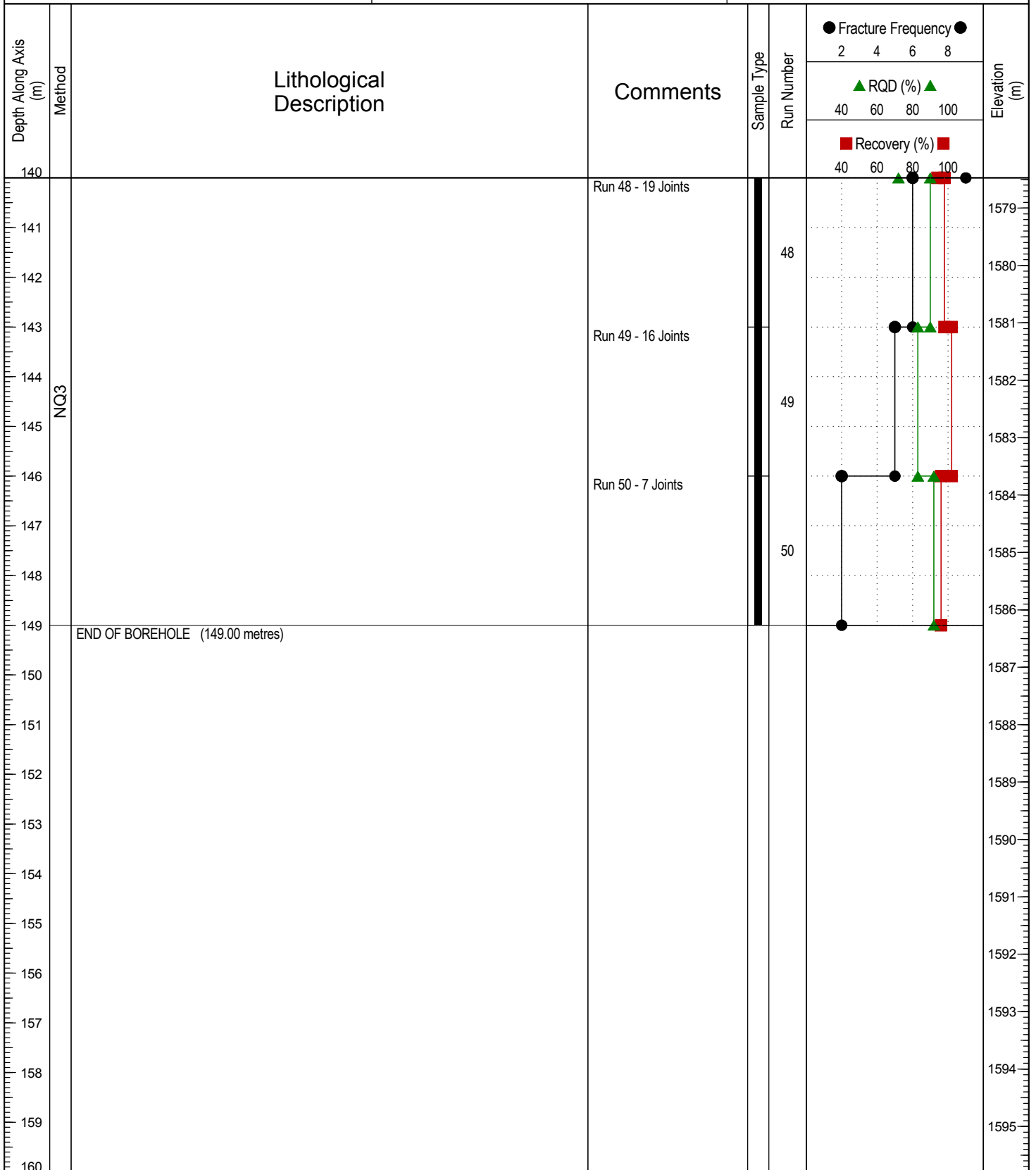
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1457.23 m

Yukon

UTM: 414549.469 E; 6815464.484 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 149 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 8

Logged By: Client

Completion Date: 2015 August 8

Reviewed By: SK

Page 8 of 8

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-206

Project: KZK Hydrogeological Assessment

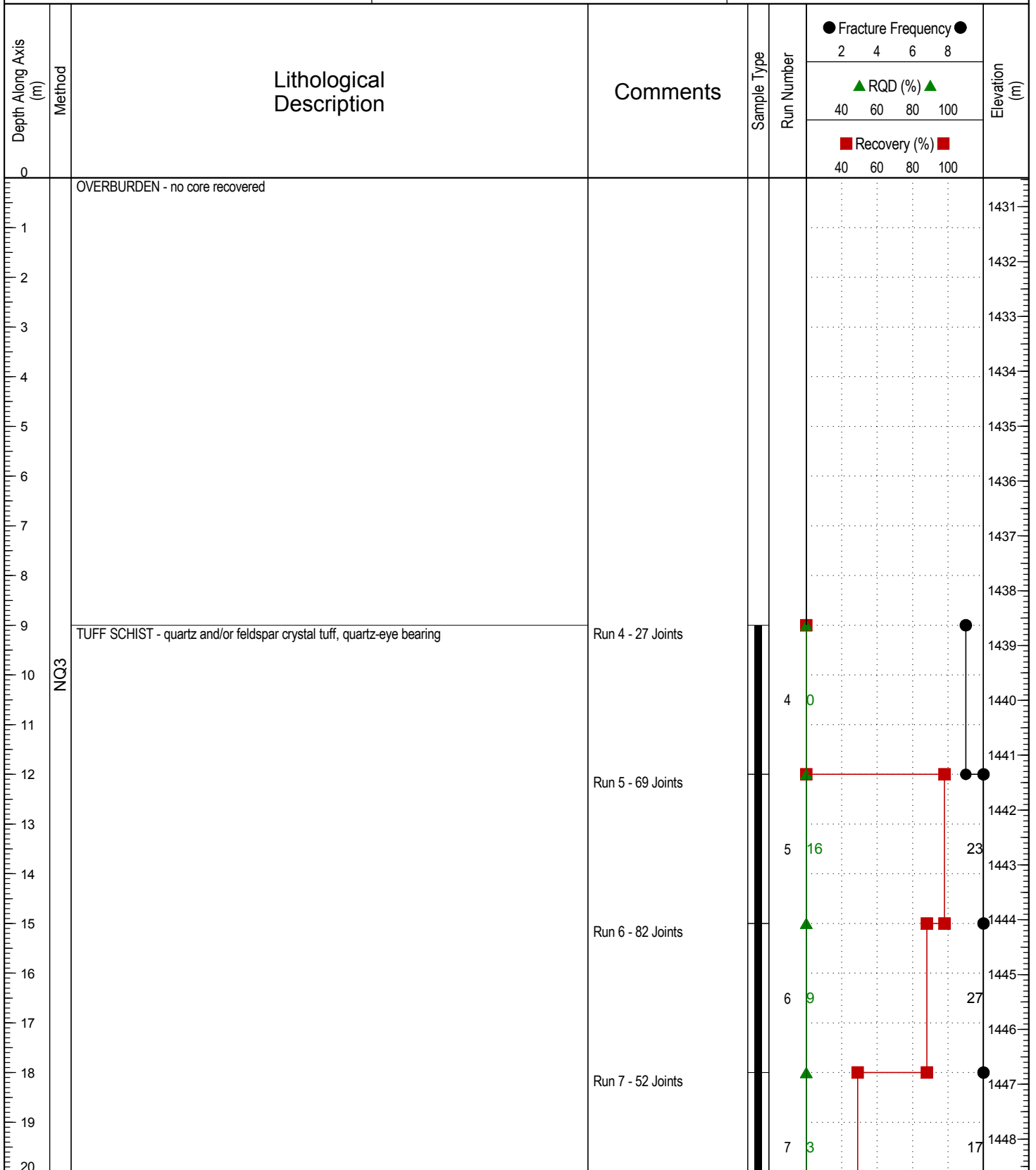
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 1 of 12

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-206

Project: KZK Hydrogeological Assessment

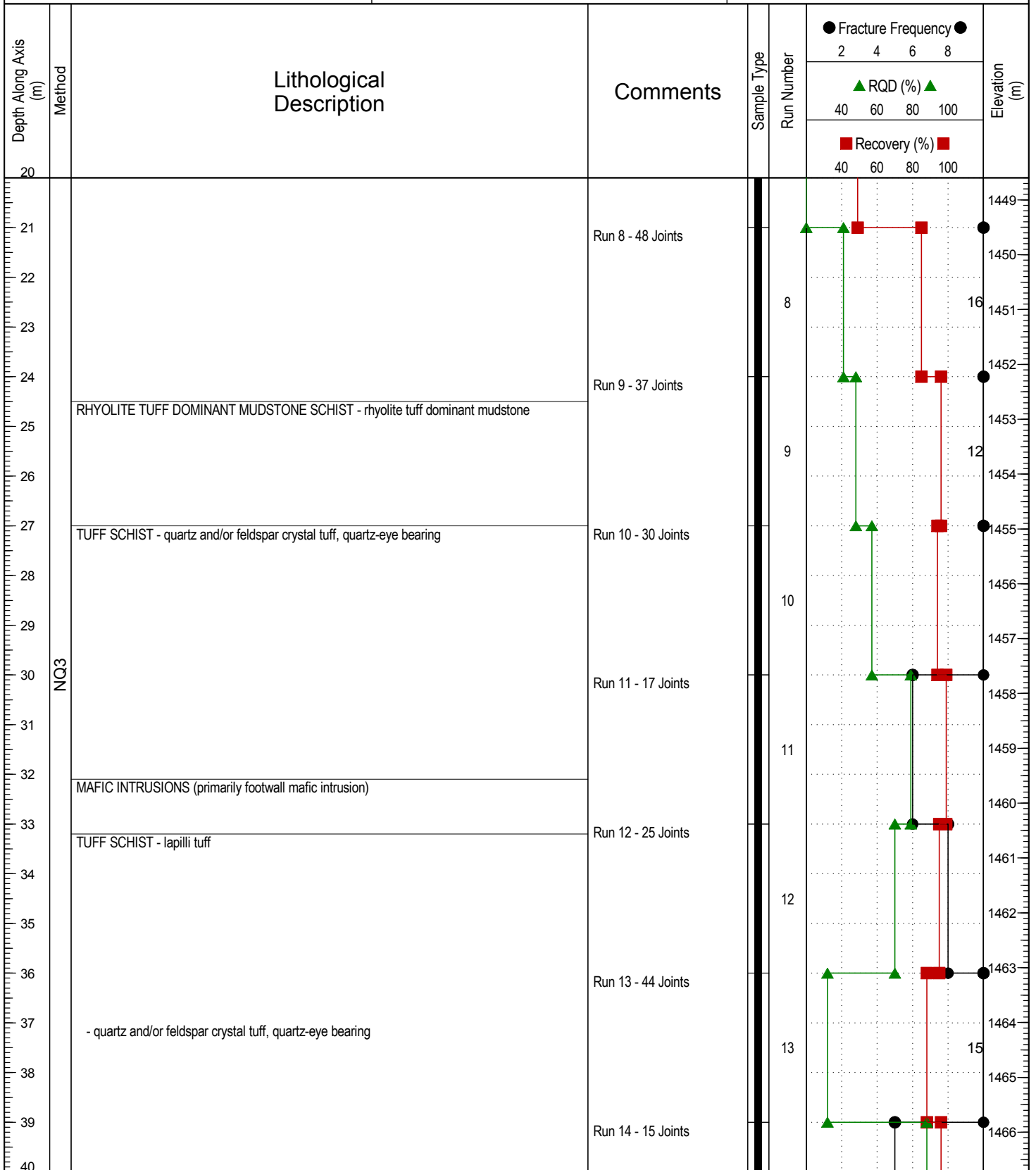
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 2 of 12

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-206

Project: KZK Hydrogeological Assessment

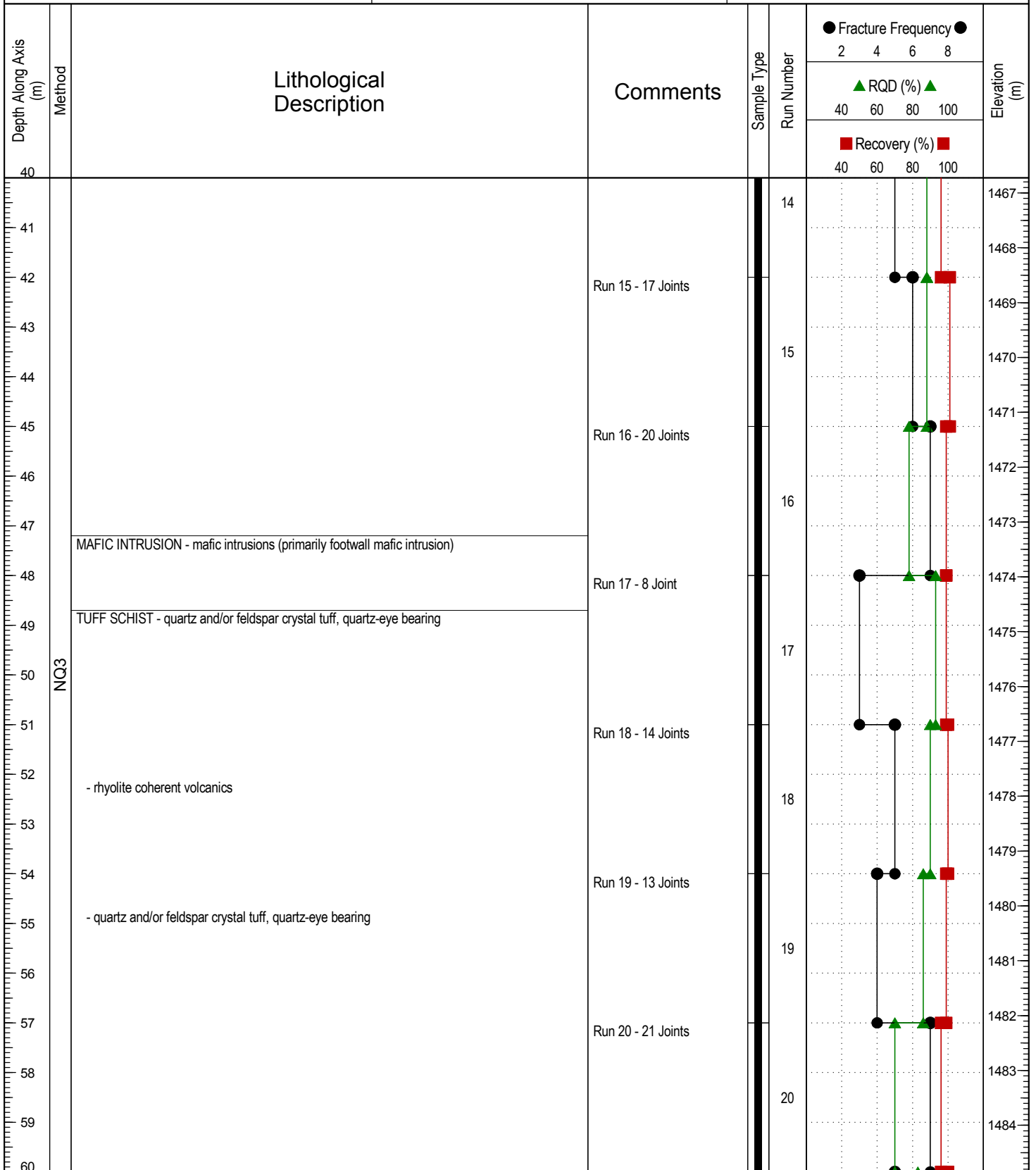
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 3 of 12



# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-206

Project: KZK Hydrogeological Assessment

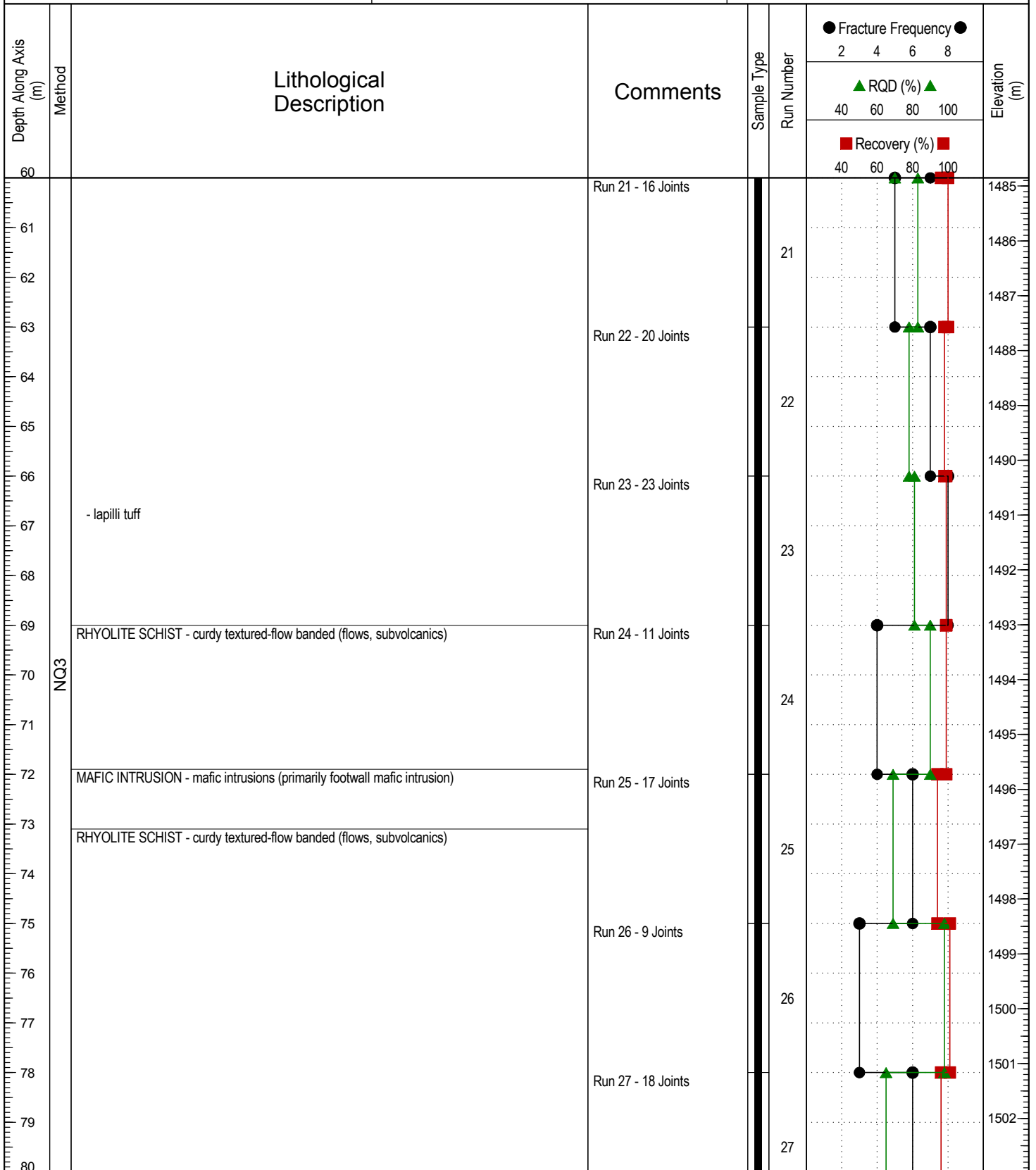
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 4 of 12

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-206

Project: KZK Hydrogeological Assessment

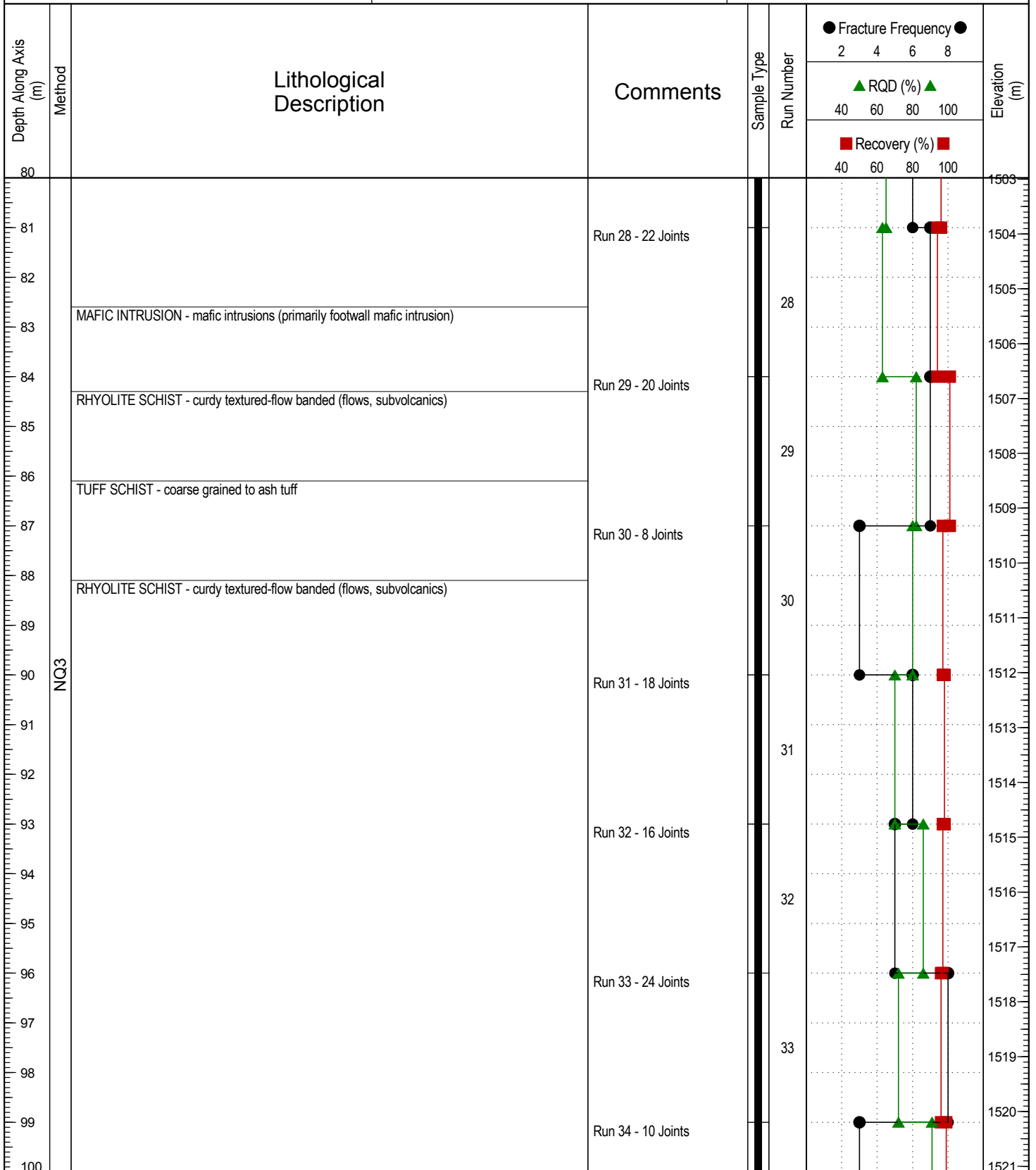
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 5 of 12

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-206

Project: KZK Hydrogeological Assessment

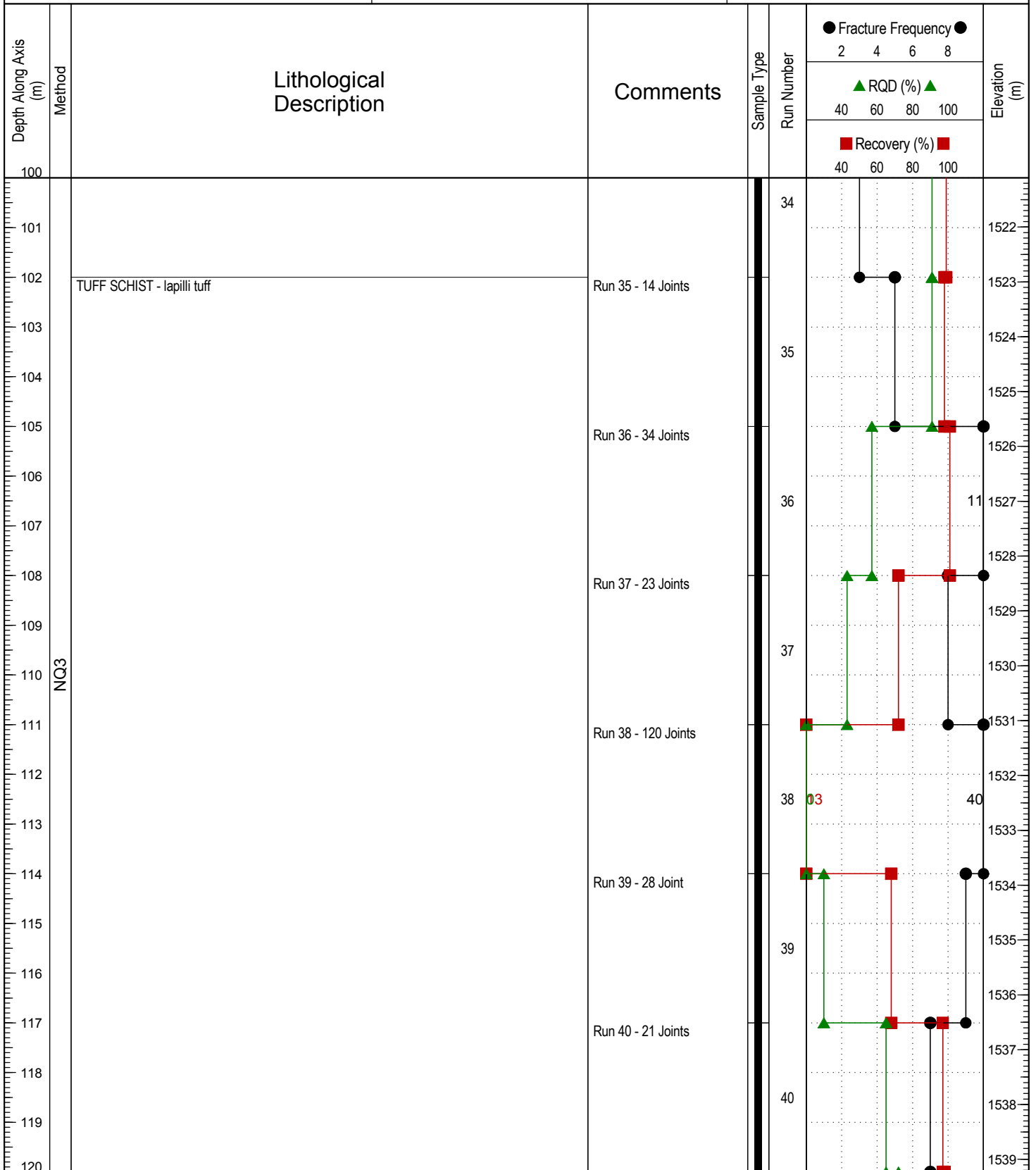
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 6 of 12

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-206

Project: KZK Hydrogeological Assessment

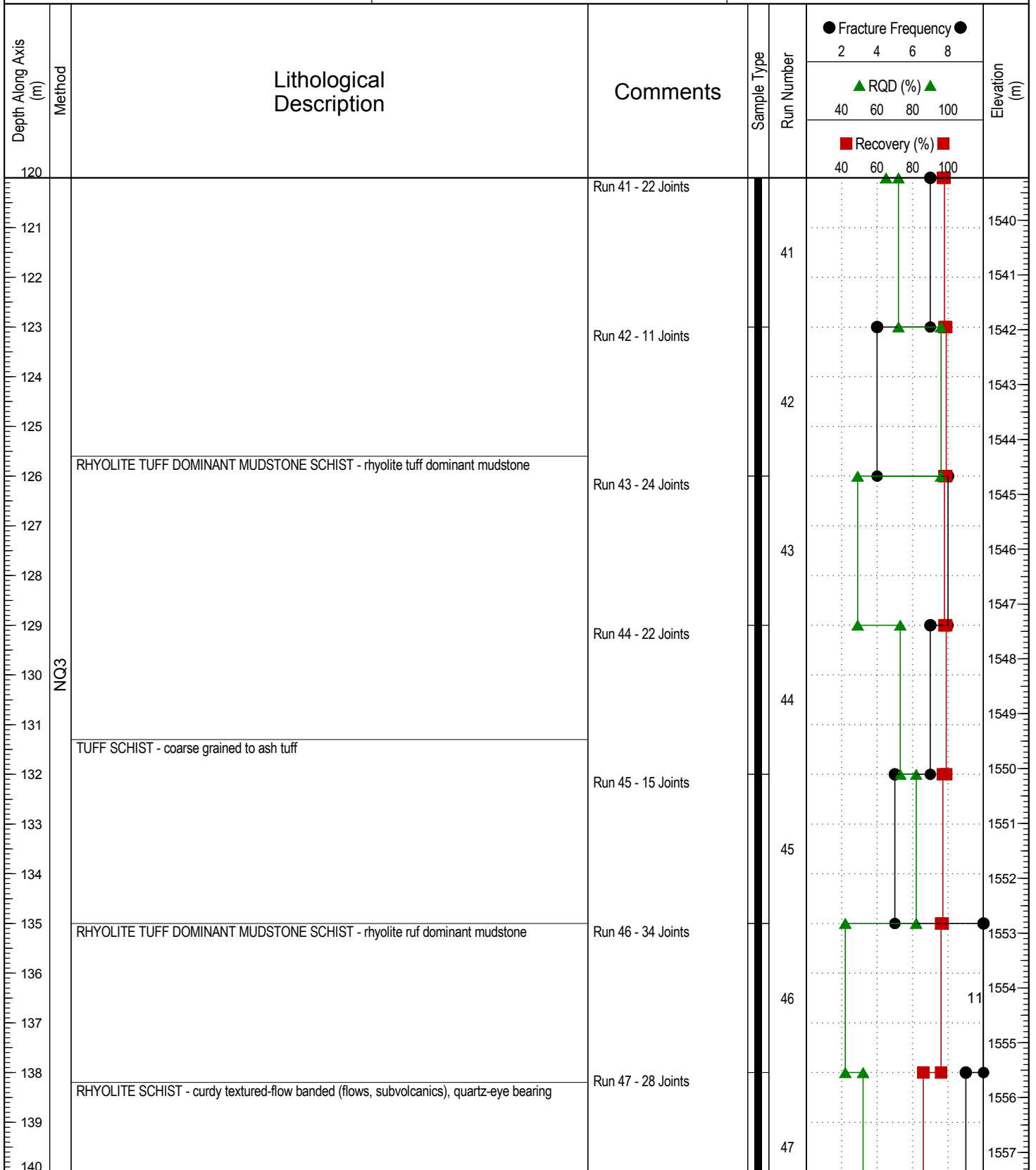
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 7 of 12

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-206

Project: KZK Hydrogeological Assessment

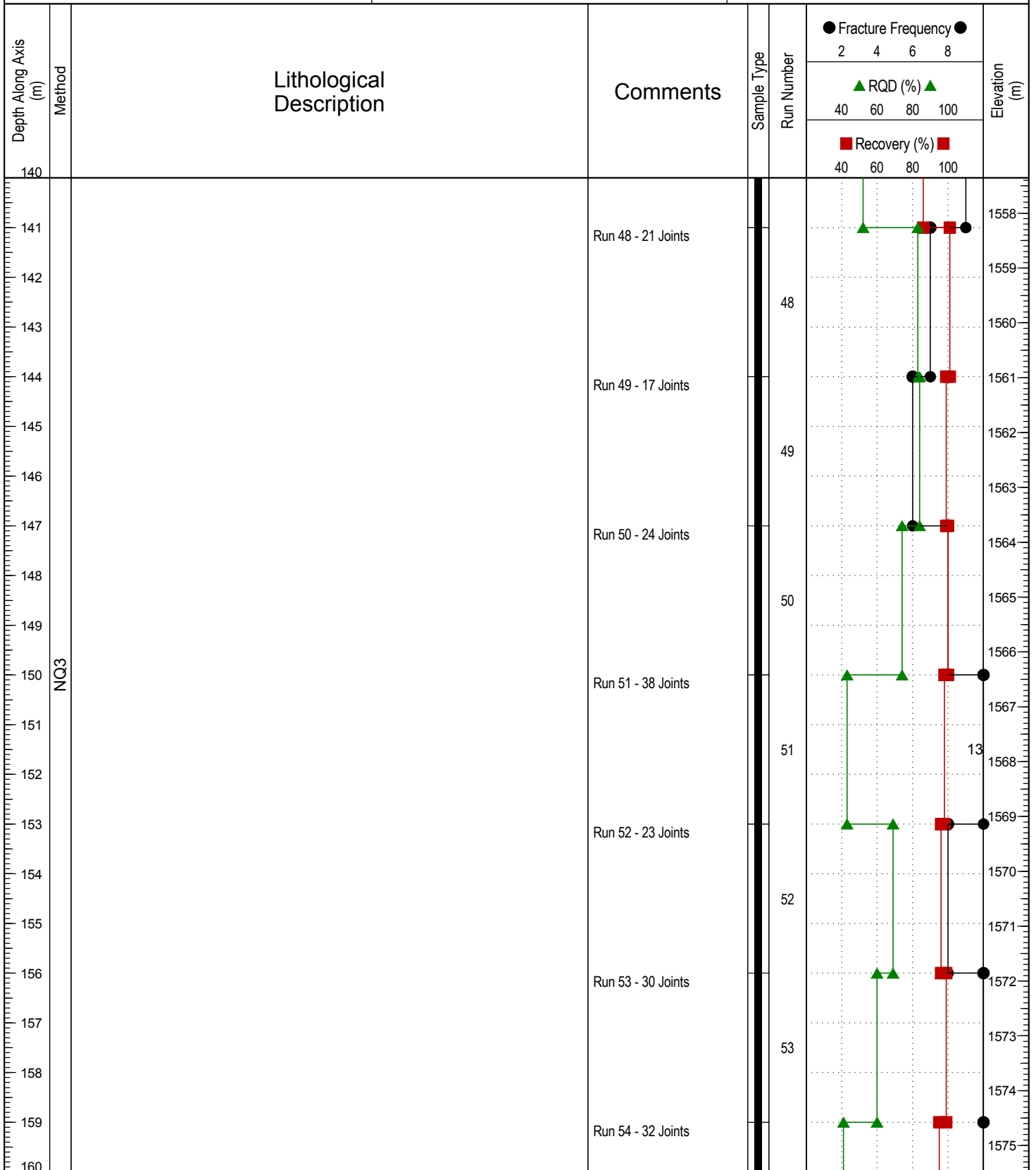
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 8 of 12

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-206

Project: KZK Hydrogeological Assessment

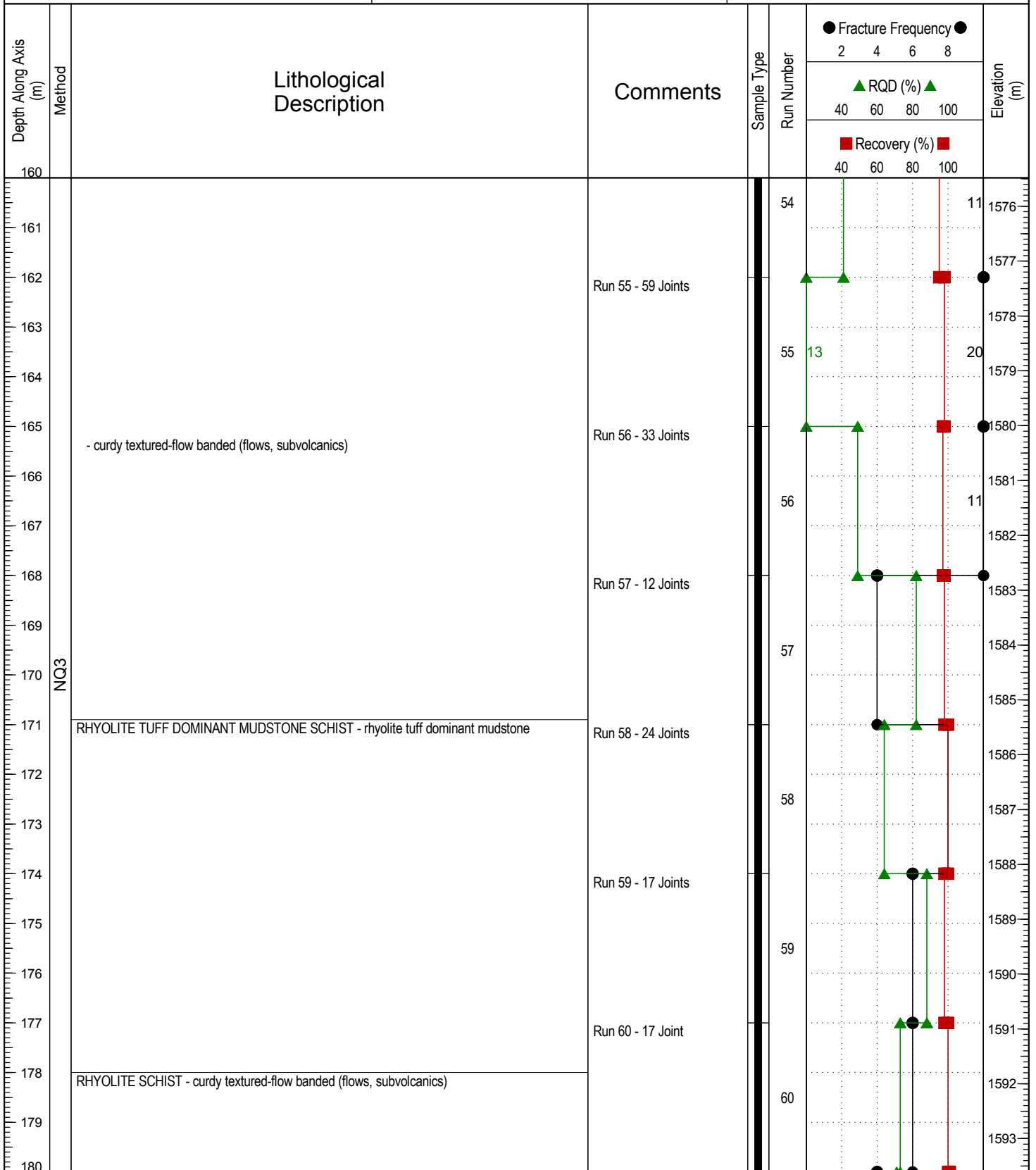
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

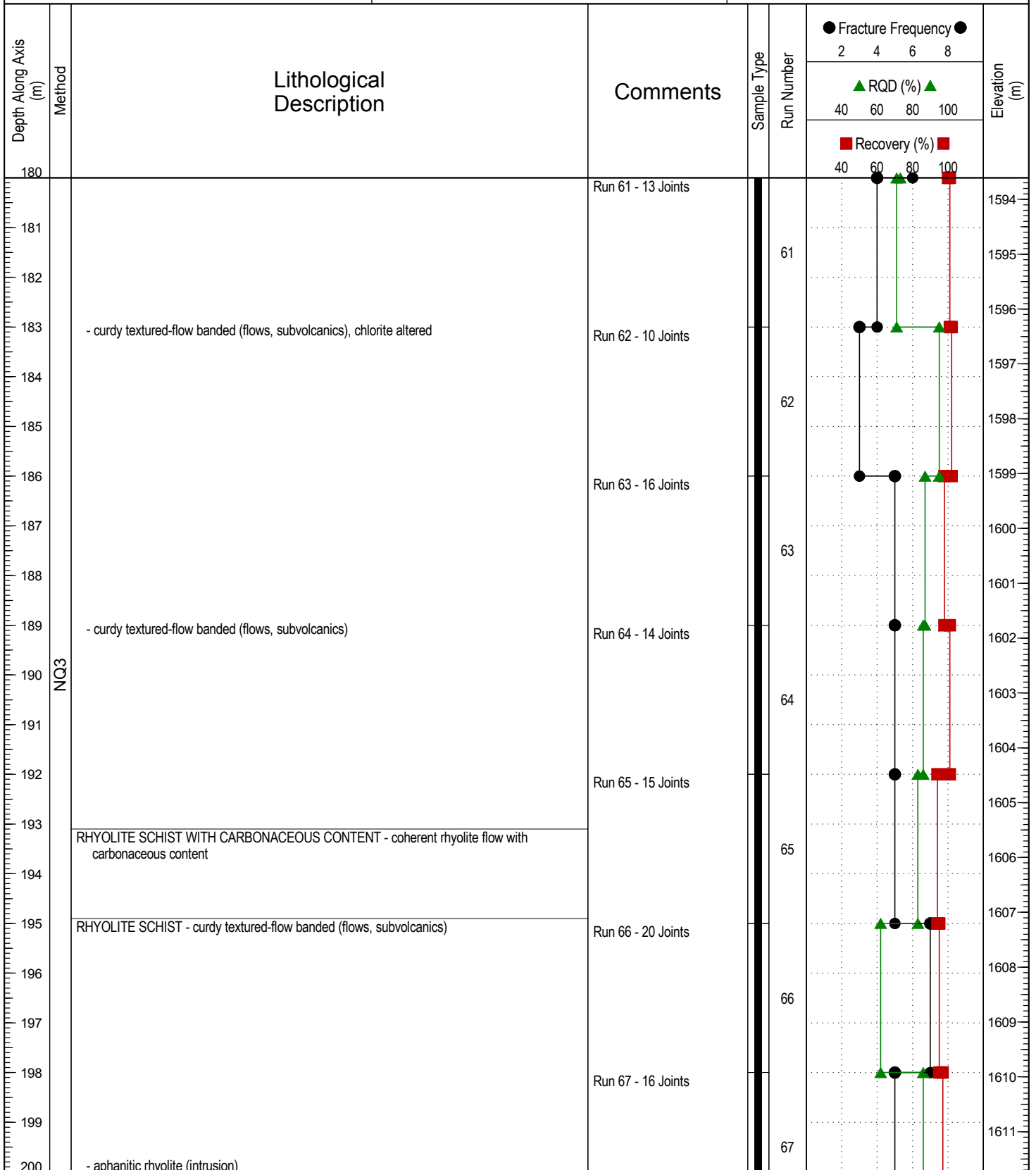
Page 9 of 12

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-206**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1430.473 m  
 UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling  
 Drilling Rig Type: Zinex A5  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 237 m  
 Start Date: 2015 September 4  
 Completion Date: 2015 August 10  
 Page 10 of 12

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-206

Project: KZK Hydrogeological Assessment

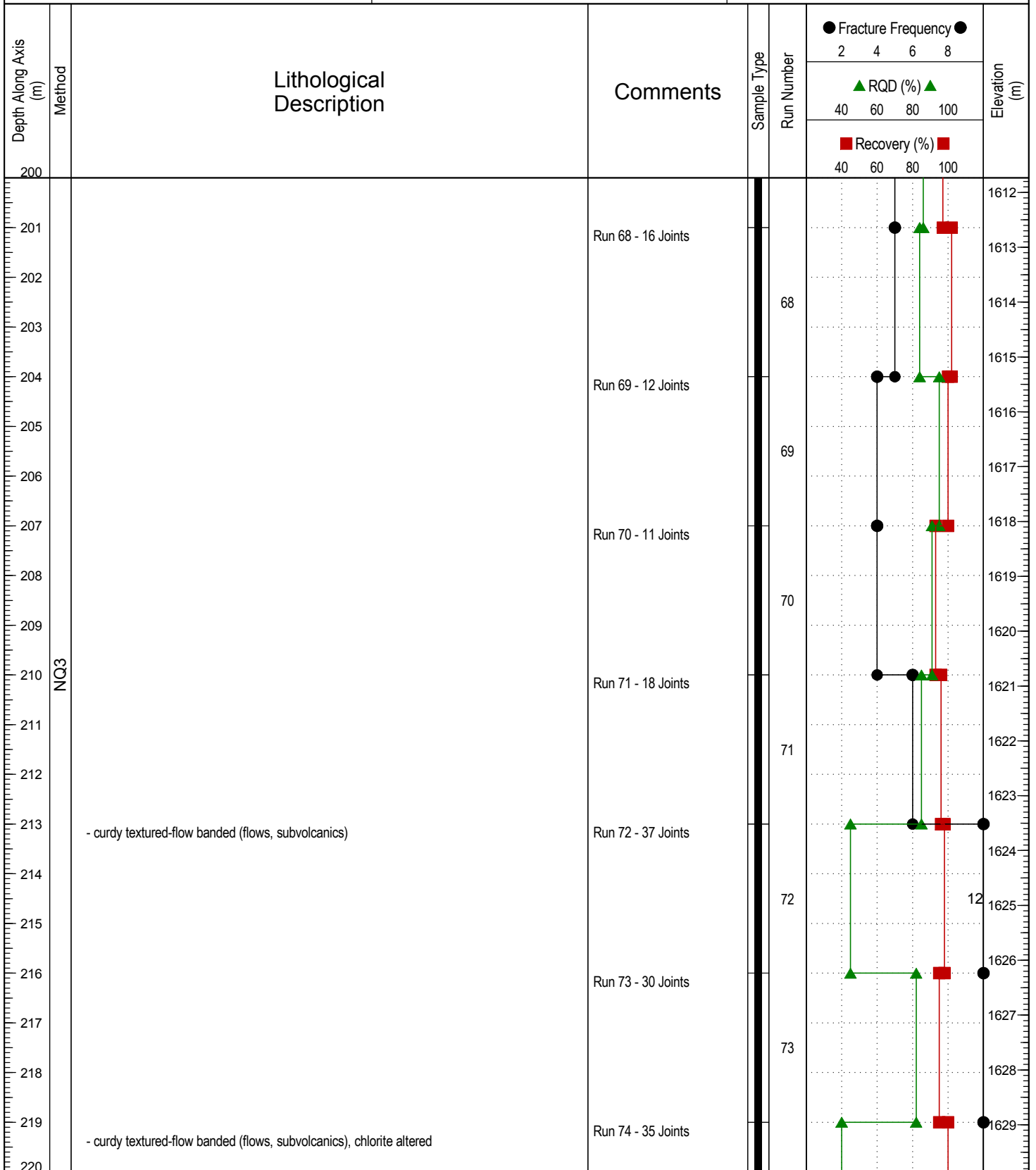
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

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# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-206

Project: KZK Hydrogeological Assessment

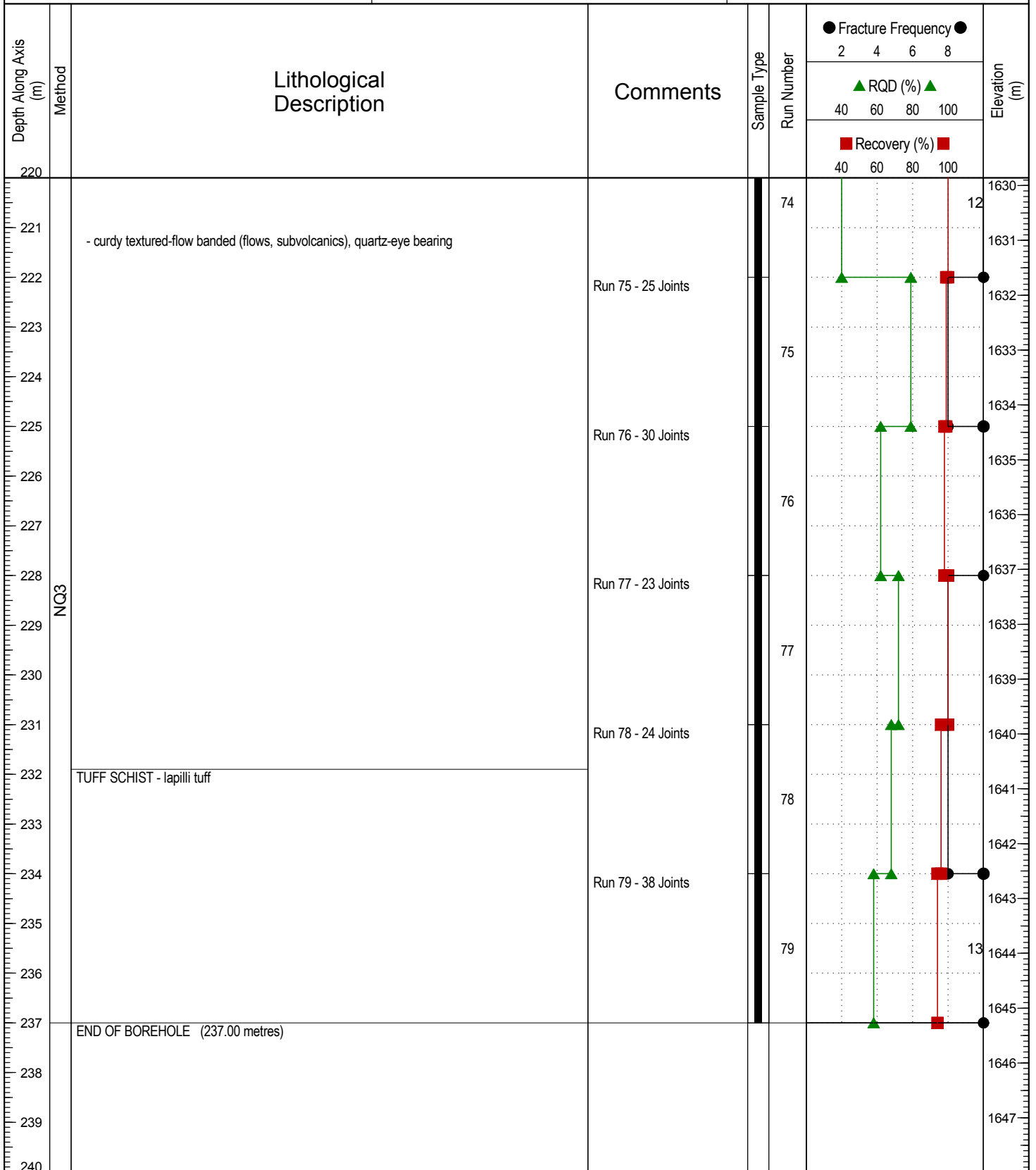
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1430.473 m

Yukon

UTM: 414651.702 E; 6815747.356 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 237 m

Drilling Rig Type: Zinex A5

Start Date: 2015 September 4

Logged By: Client

Completion Date: 2015 August 10

Reviewed By: SK

Page 12 of 12

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-242

Project: KZK Hydrogeological Assessment

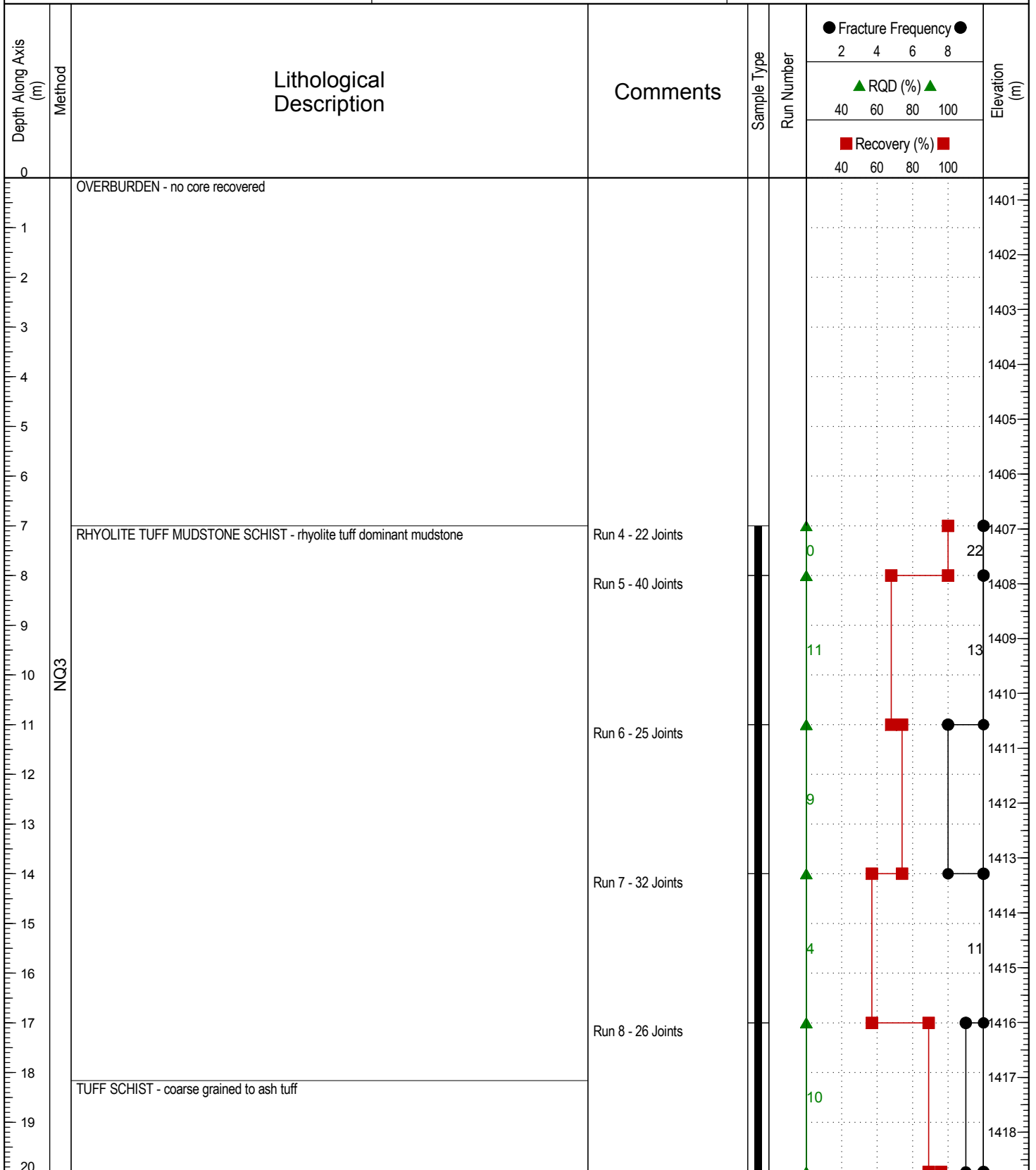
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.599 m

Yukon

UTM: 415134.726 E; 6815439.024 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 161 m

Drilling Rig Type: Hydracore

Start Date: 2015 September 18

Logged By: Client

Completion Date: 2015 September 2

Reviewed By: SK

Page 1 of 9

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-242

Project: KZK Hydrogeological Assessment

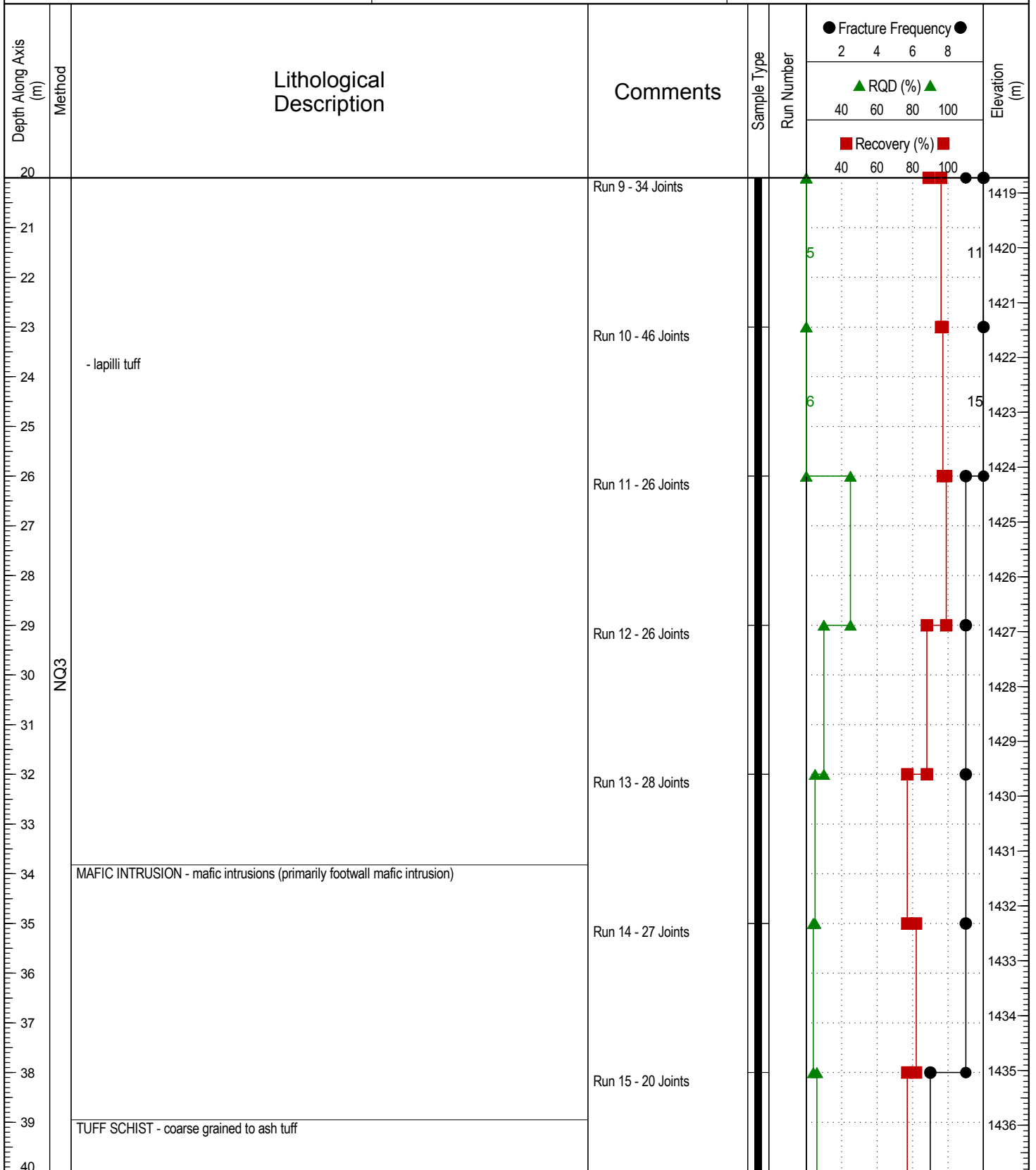
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.599 m

Yukon

UTM: 415134.726 E; 6815439.024 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 161 m

Drilling Rig Type: Hydracore

Start Date: 2015 September 18

Logged By: Client

Completion Date: 2015 September 2

Reviewed By: SK

Page 2 of 9

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-242

Project: KZK Hydrogeological Assessment

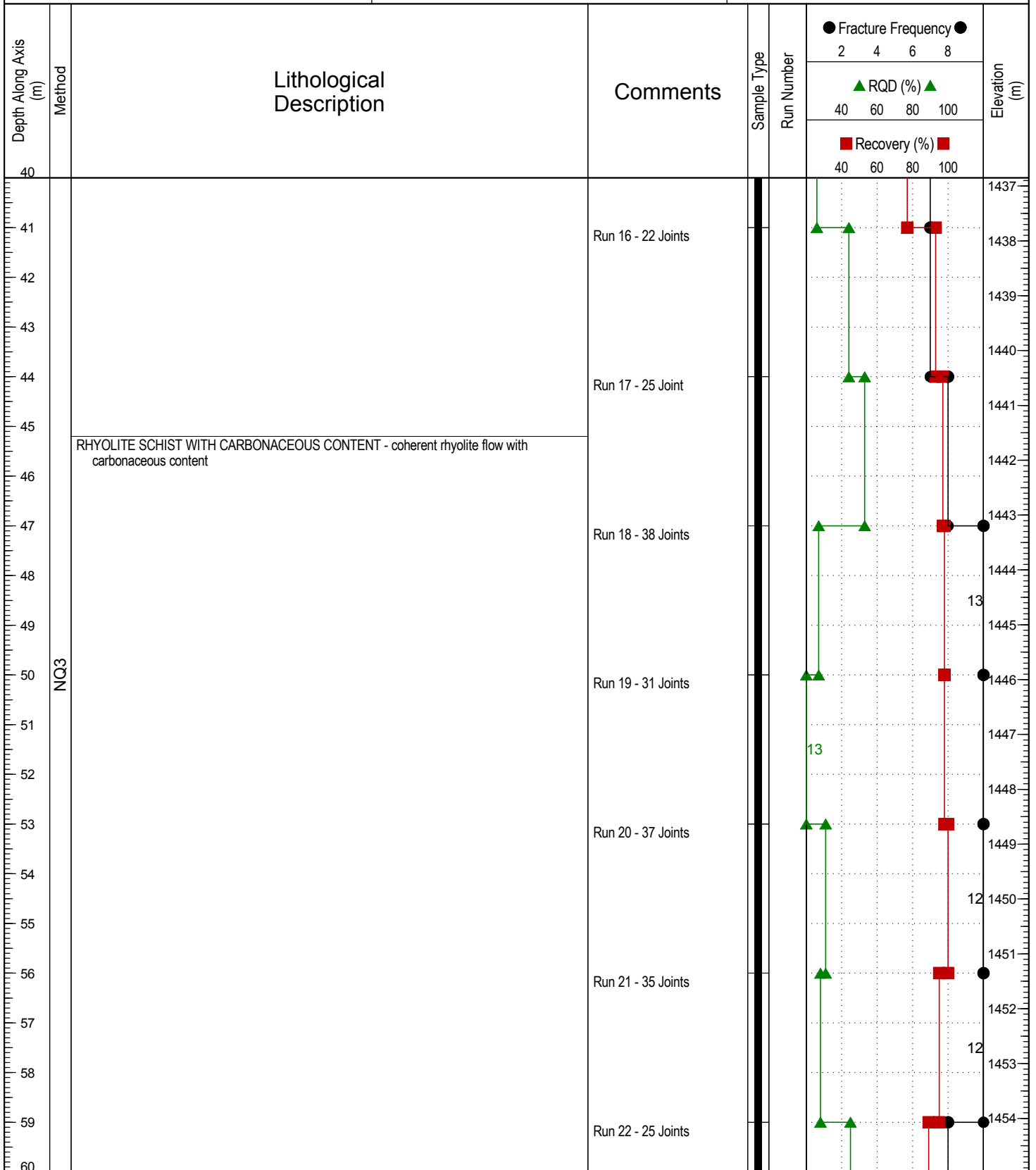
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.599 m

Yukon

UTM: 415134.726 E; 6815439.024 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 161 m

Drilling Rig Type: Hydracore

Start Date: 2015 September 18

Logged By: Client

Completion Date: 2015 September 2

Reviewed By: SK

Page 3 of 9

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-242

Project: KZK Hydrogeological Assessment

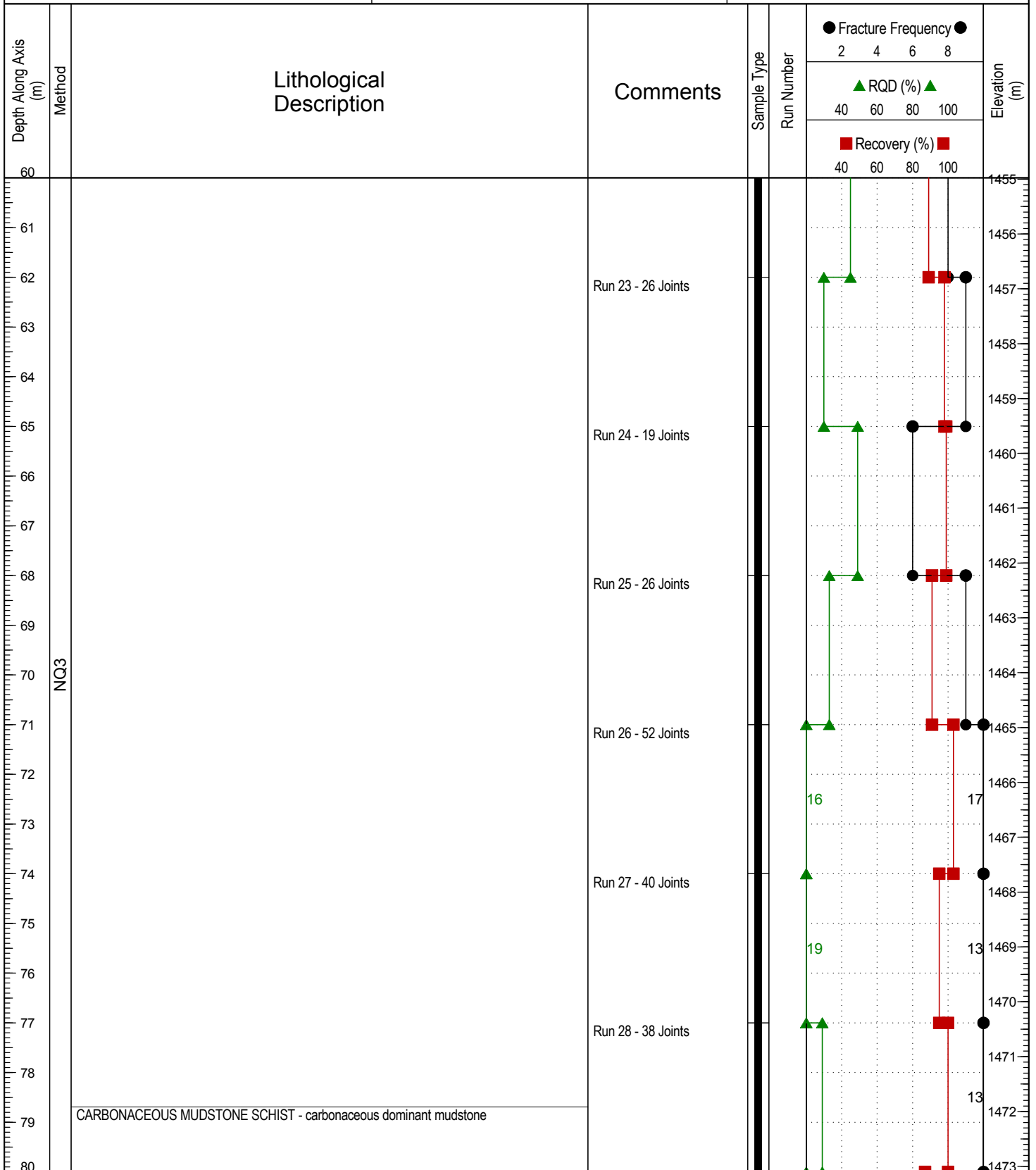
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.599 m

Yukon

UTM: 415134.726 E; 6815439.024 N; Z 9 NAD83



Contractor: Geotech Drilling

Completion Depth: 161 m

Drilling Rig Type: Hydracore

Start Date: 2015 September 18

Logged By: Client

Completion Date: 2015 September 2

Reviewed By: SK

Page 4 of 9

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-242

Project: KZK Hydrogeological Assessment

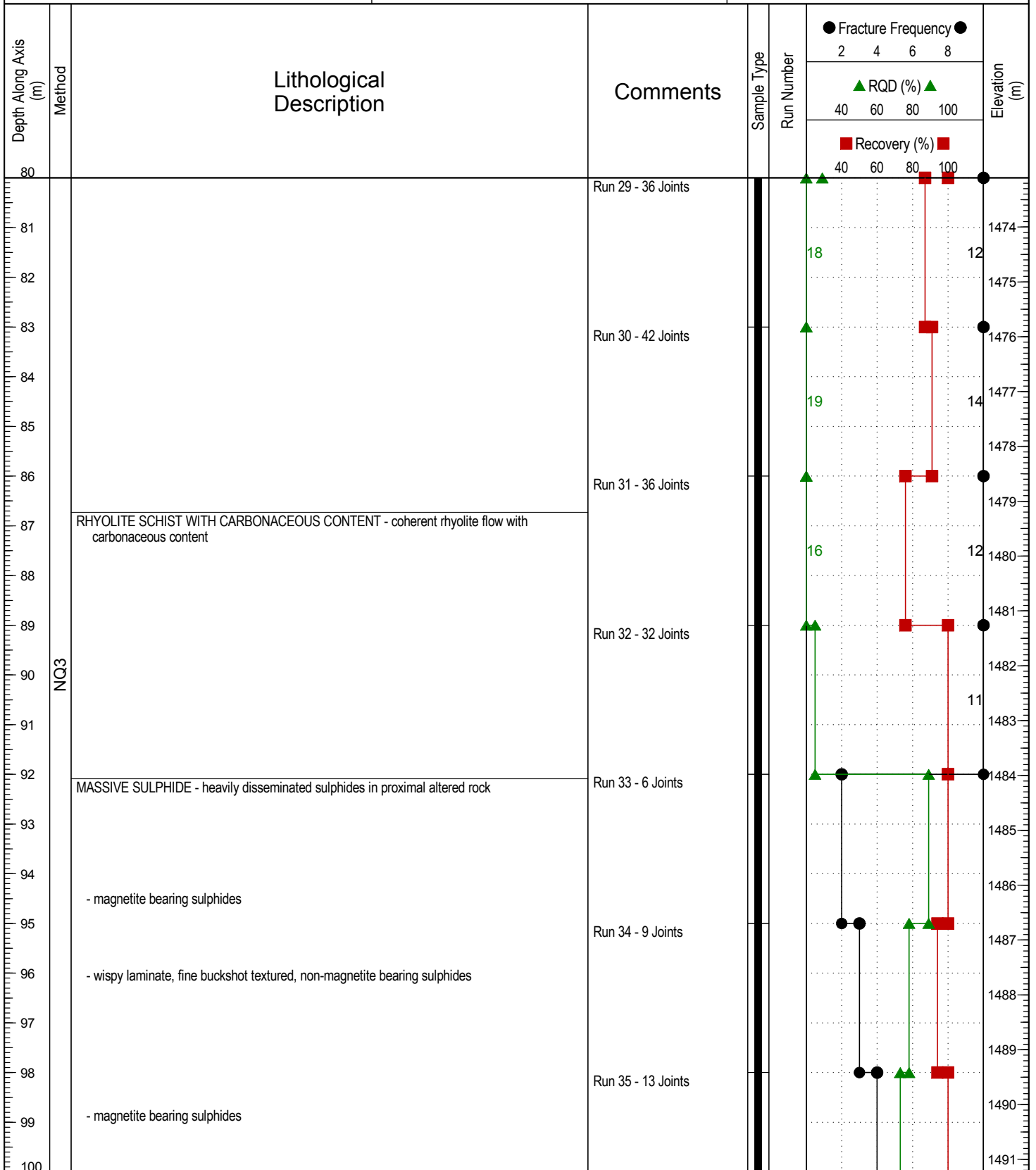
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.599 m

Yukon

UTM: 415134.726 E; 6815439.024 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 161 m

Drilling Rig Type: Hydracore

Start Date: 2015 September 18

Logged By: Client

Completion Date: 2015 September 2

Reviewed By: SK

Page 5 of 9

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-242

Project: KZK Hydrogeological Assessment

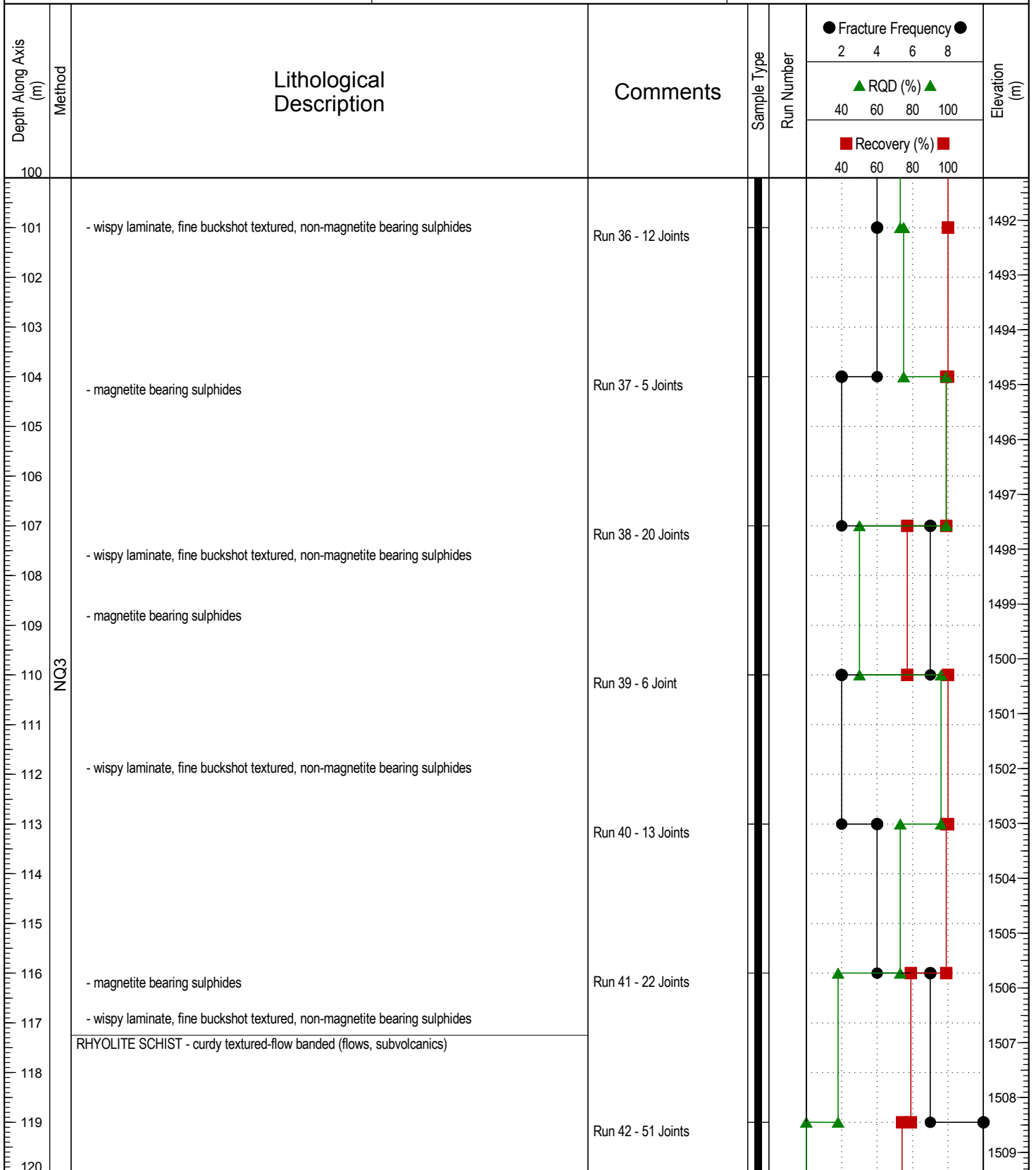
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.599 m

Yukon

UTM: 415134.726 E; 6815439.024 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 161 m

Drilling Rig Type: Hydracore

Start Date: 2015 September 18

Logged By: Client

Completion Date: 2015 September 2

Reviewed By: SK

Page 6 of 9

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-242

Project: KZK Hydrogeological Assessment

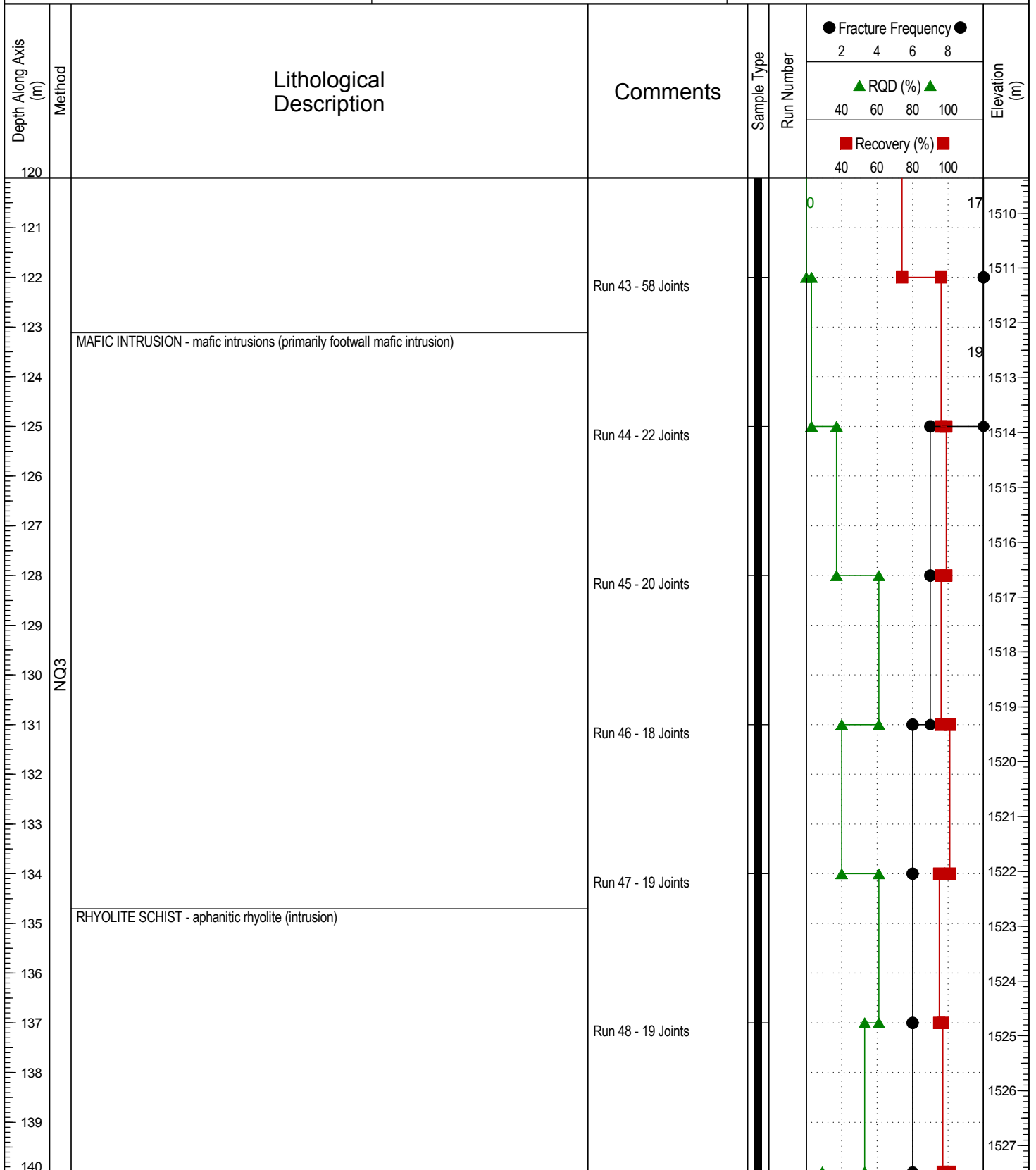
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.599 m

Yukon

UTM: 415134.726 E; 6815439.024 N; Z 9 NAD83



Contractor: Geotech Drilling

Completion Depth: 161 m

Drilling Rig Type: Hydracore

Start Date: 2015 September 18

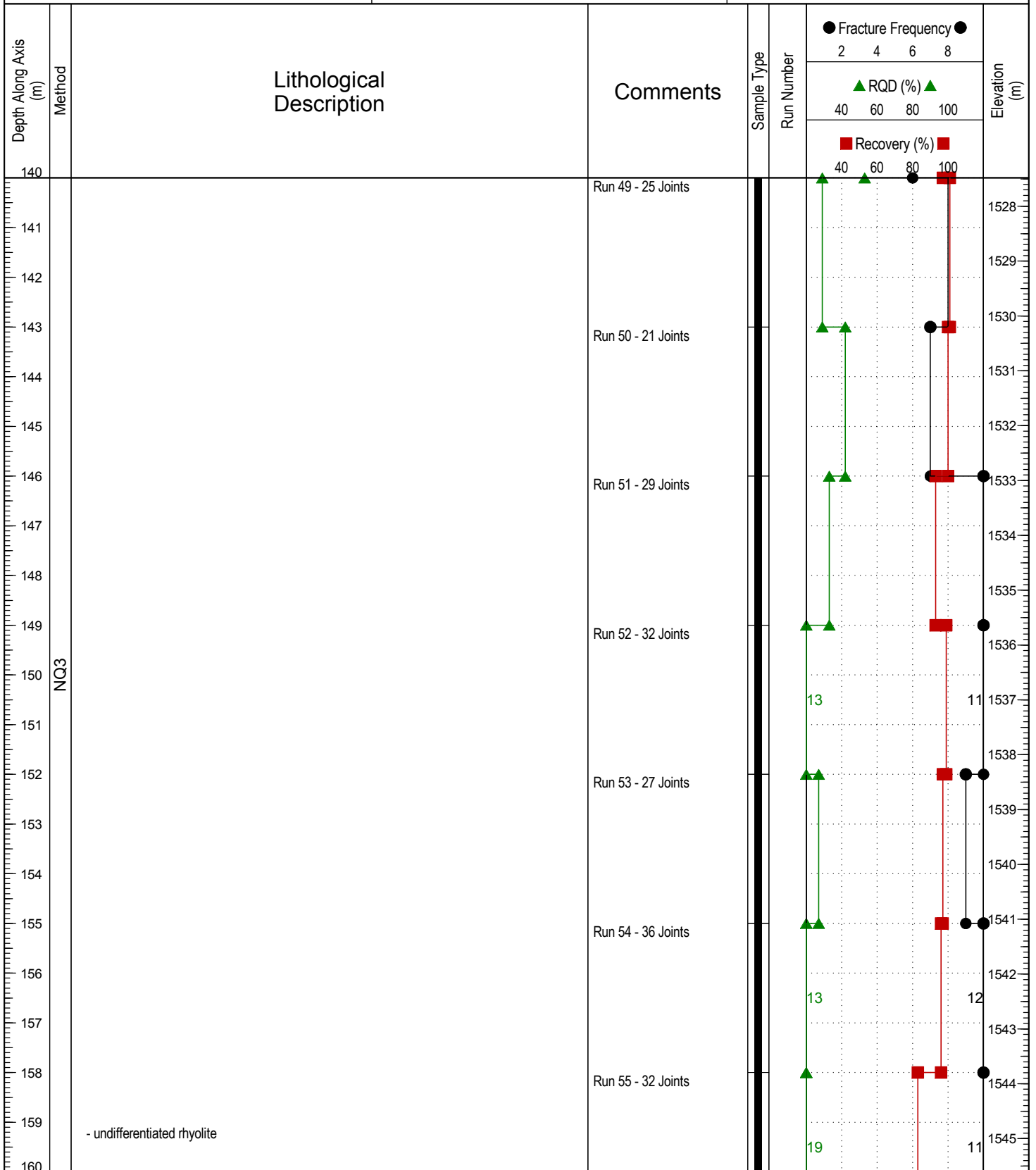
Logged By: Client

Completion Date: 2015 September 2

Reviewed By: SK

Page 7 of 9





**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-242**

Project: KZK Hydrogeological Assessment

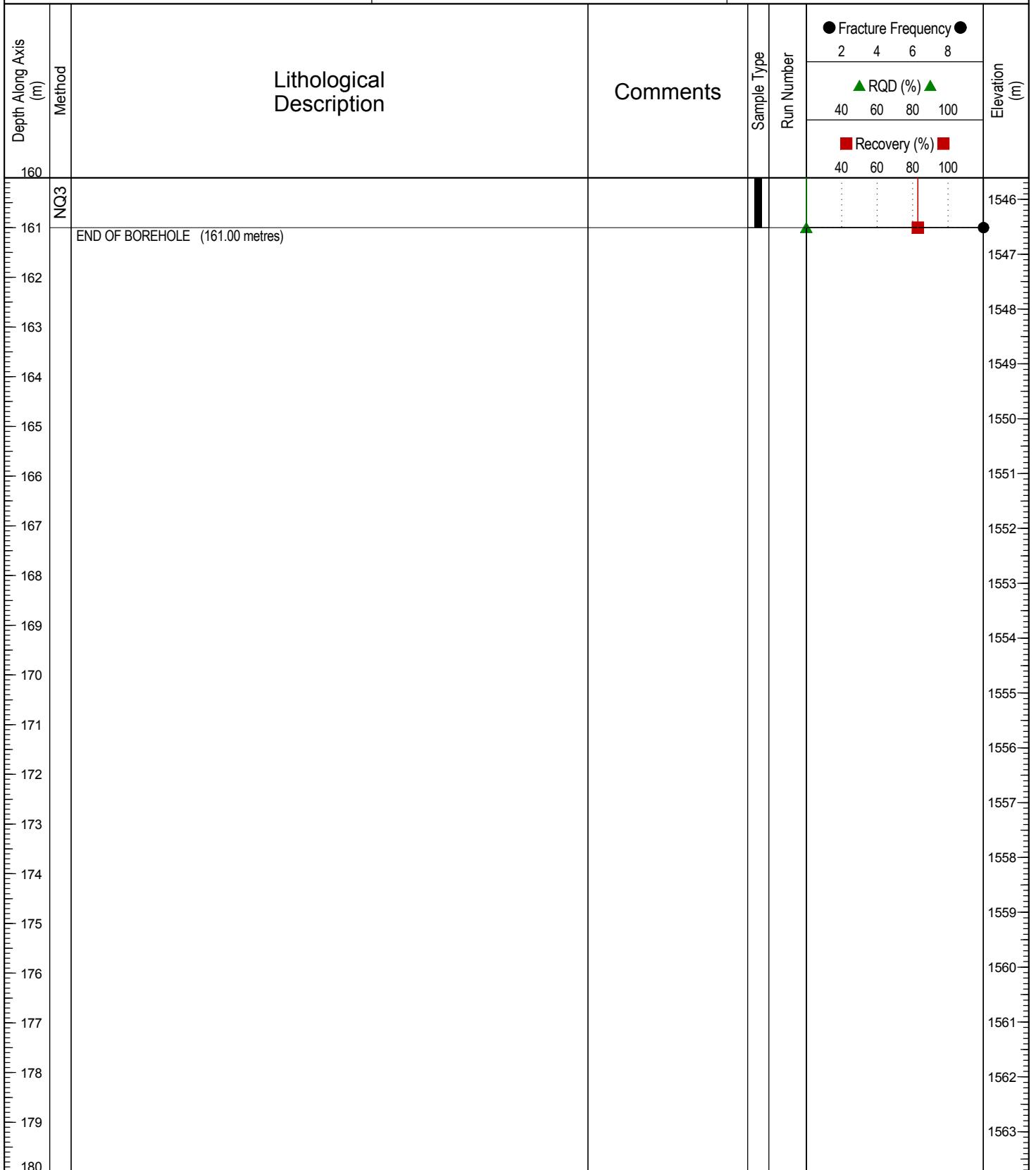
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1400.599 m

Yukon

UTM: 415134.726 E; 6815439.024 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 161 m

Drilling Rig Type: Hydracore

Start Date: 2015 September 18

Logged By: Client

Completion Date: 2015 September 2

Reviewed By: SK

Page 9 of 9

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-248-VWP**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1424.375 m

Yukon

UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83

Depth Along Axis (m)	Method	Lithological Description	Comments	Sample Type	Run Number	Fracture Frequency ●			VW33426	VW33429	VW33431	Elevation (m)
						2	4	6				
						▲ RQD (%) ▲						
						■ Recovery (%) ■						
						40	60	80	100			
						40	60	80	100			
0		OVERBURDEN - no core recovered										1425
1												1426
2												1427
3												1428
4												1429
5												1430
6												1431
7												1432
8												1433
9												1434
10	HQ3											1435
11												1436
12												1437
13												1438
14												1439
15												1440
16												1441
17												1442
18												1443
19												1443
20												1443



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 278.5 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 1

Logged By: Client

Completion Date: 2015 September 10

Reviewed By: SK

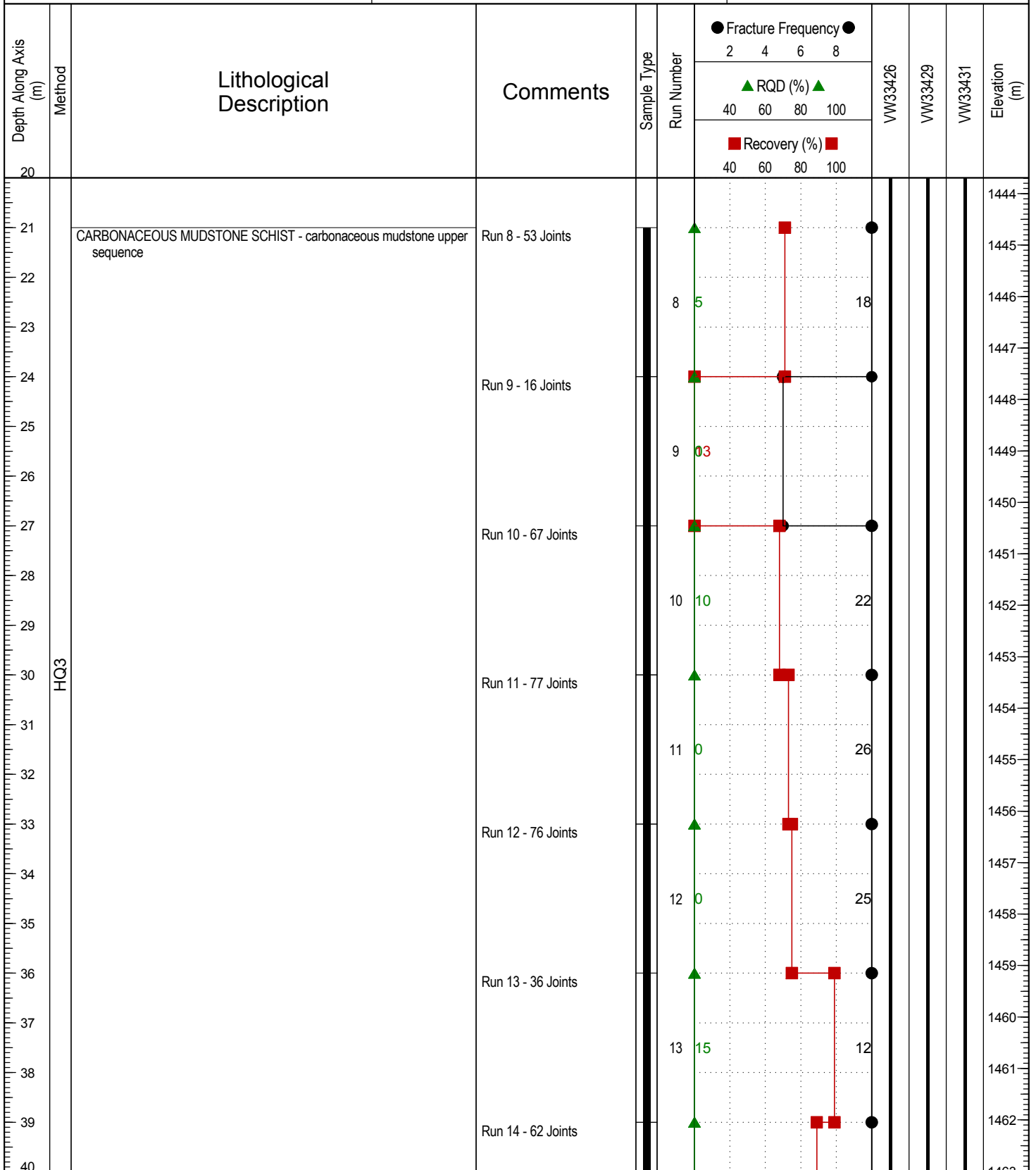
Page 1 of 14

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-248-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

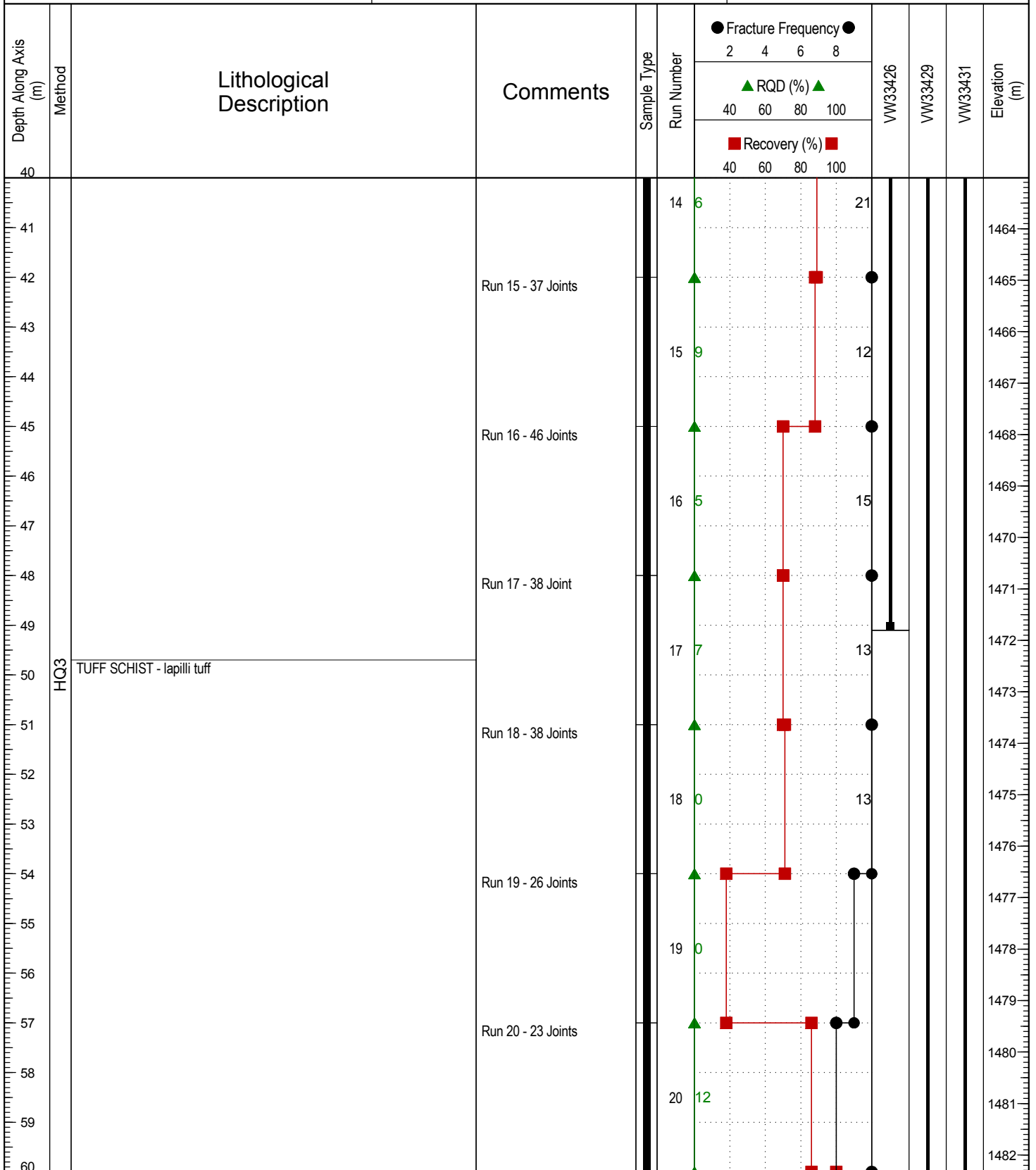
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 2 of 14

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-248-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

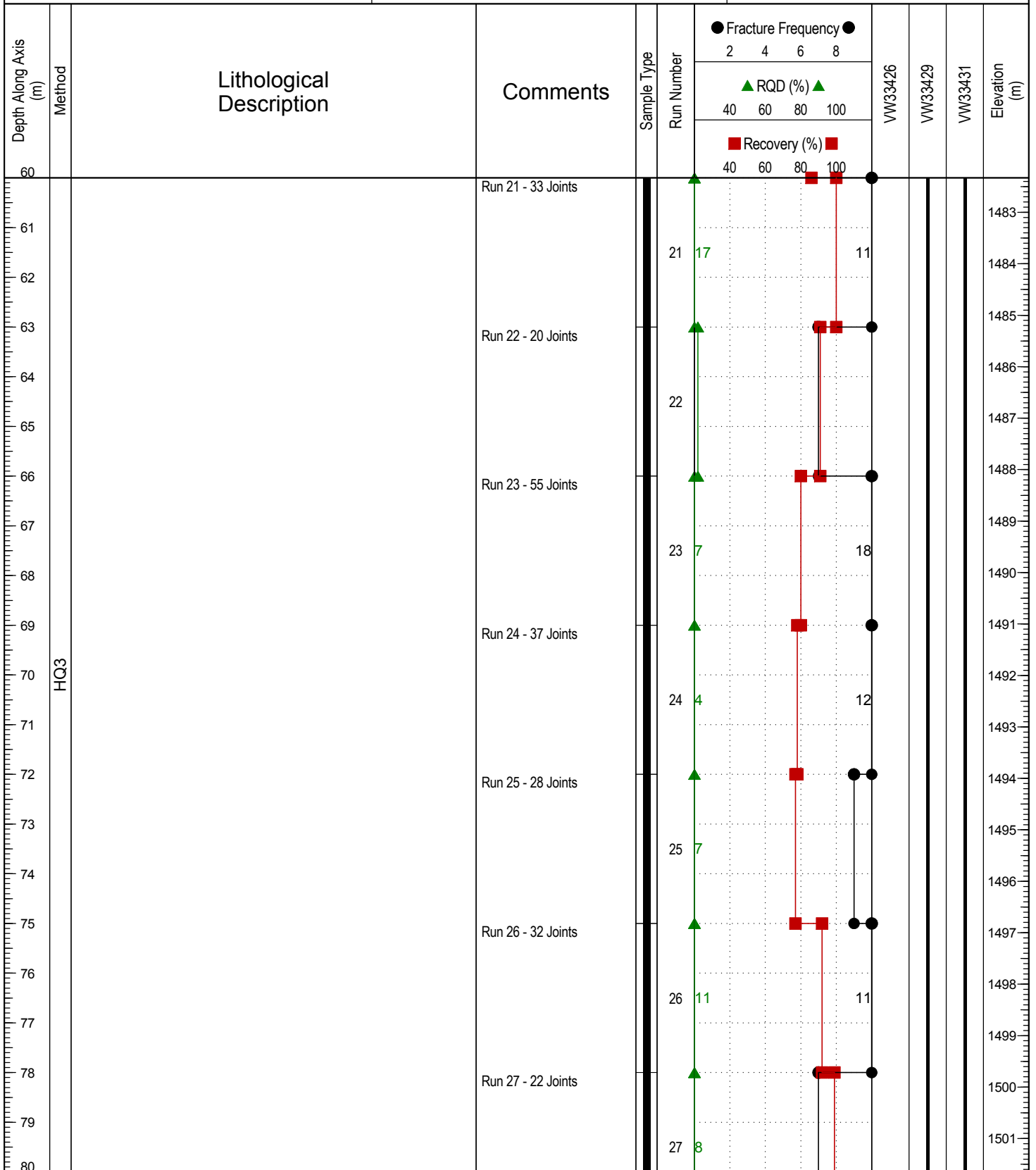
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 3 of 14

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-248-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

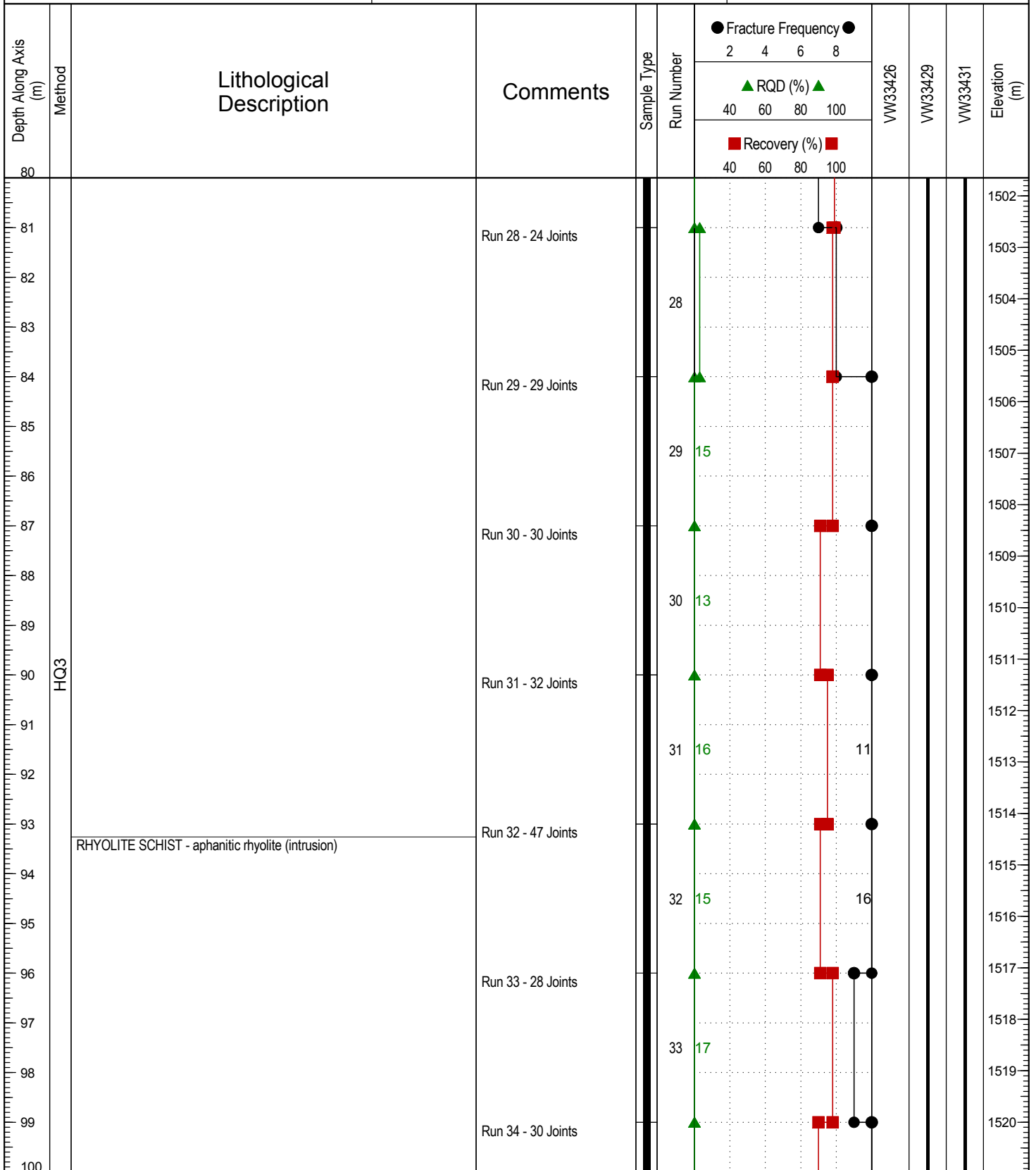
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 4 of 14

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-248-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

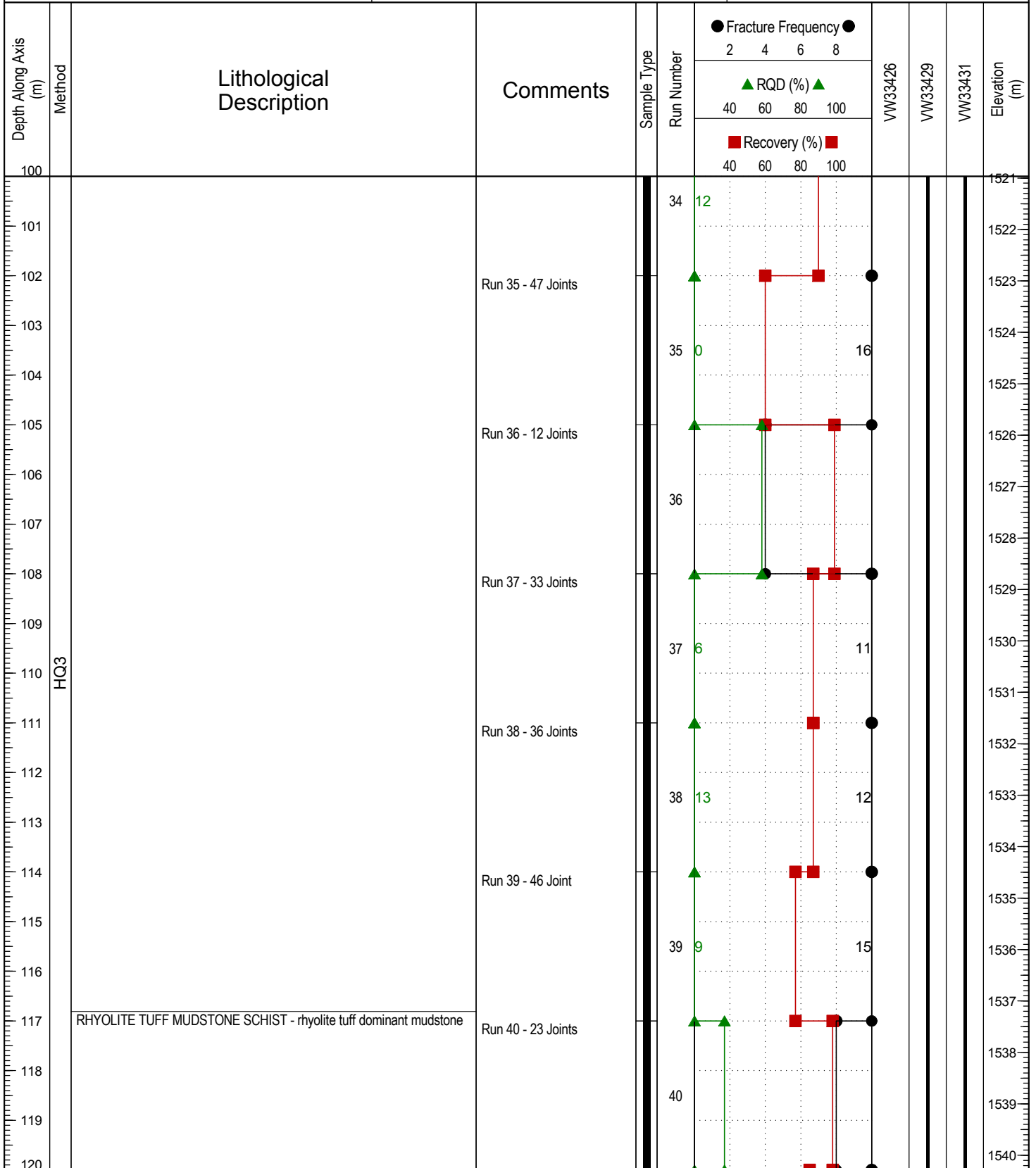
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 5 of 14

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-248-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 6 of 14

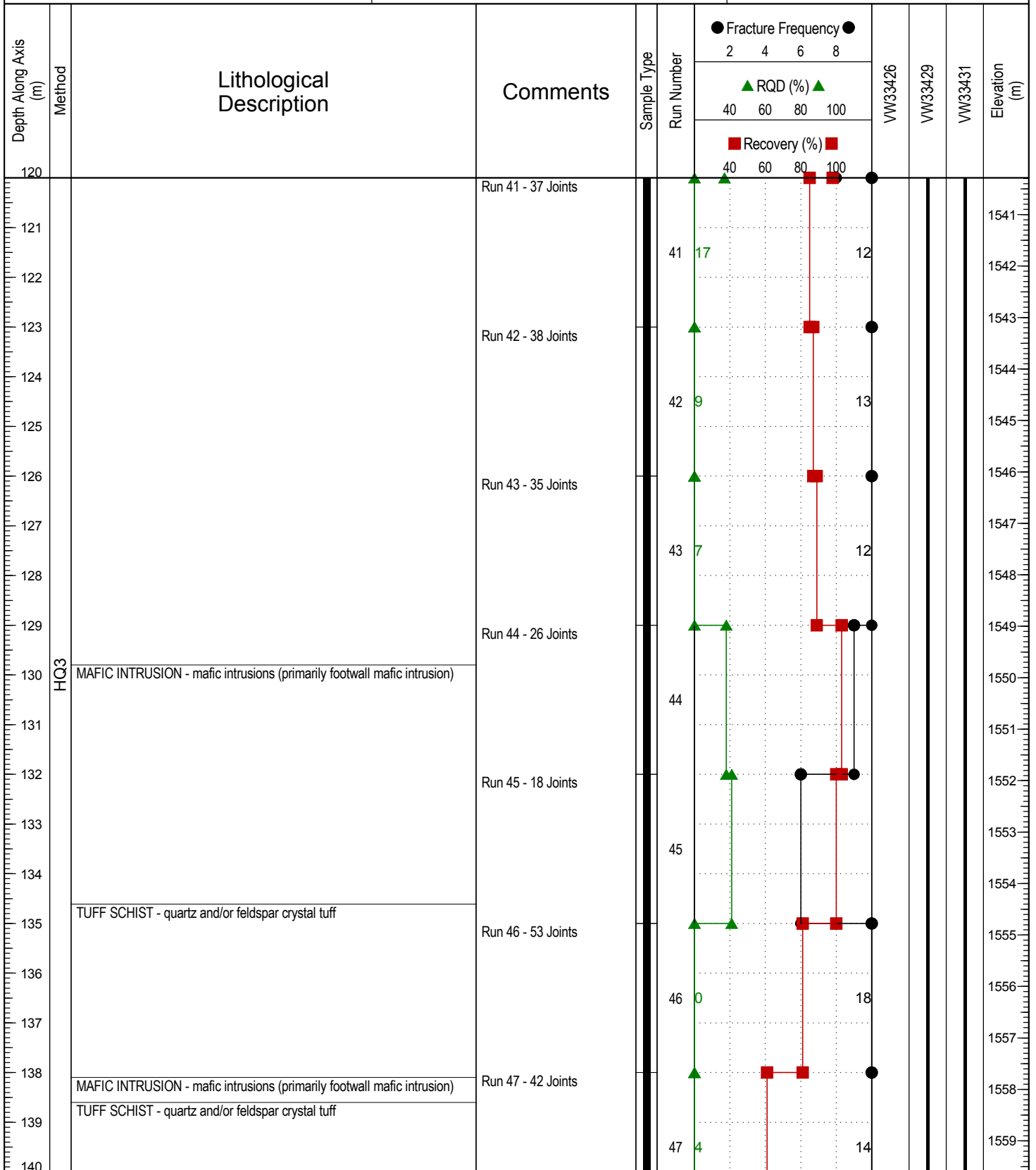


# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-248-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

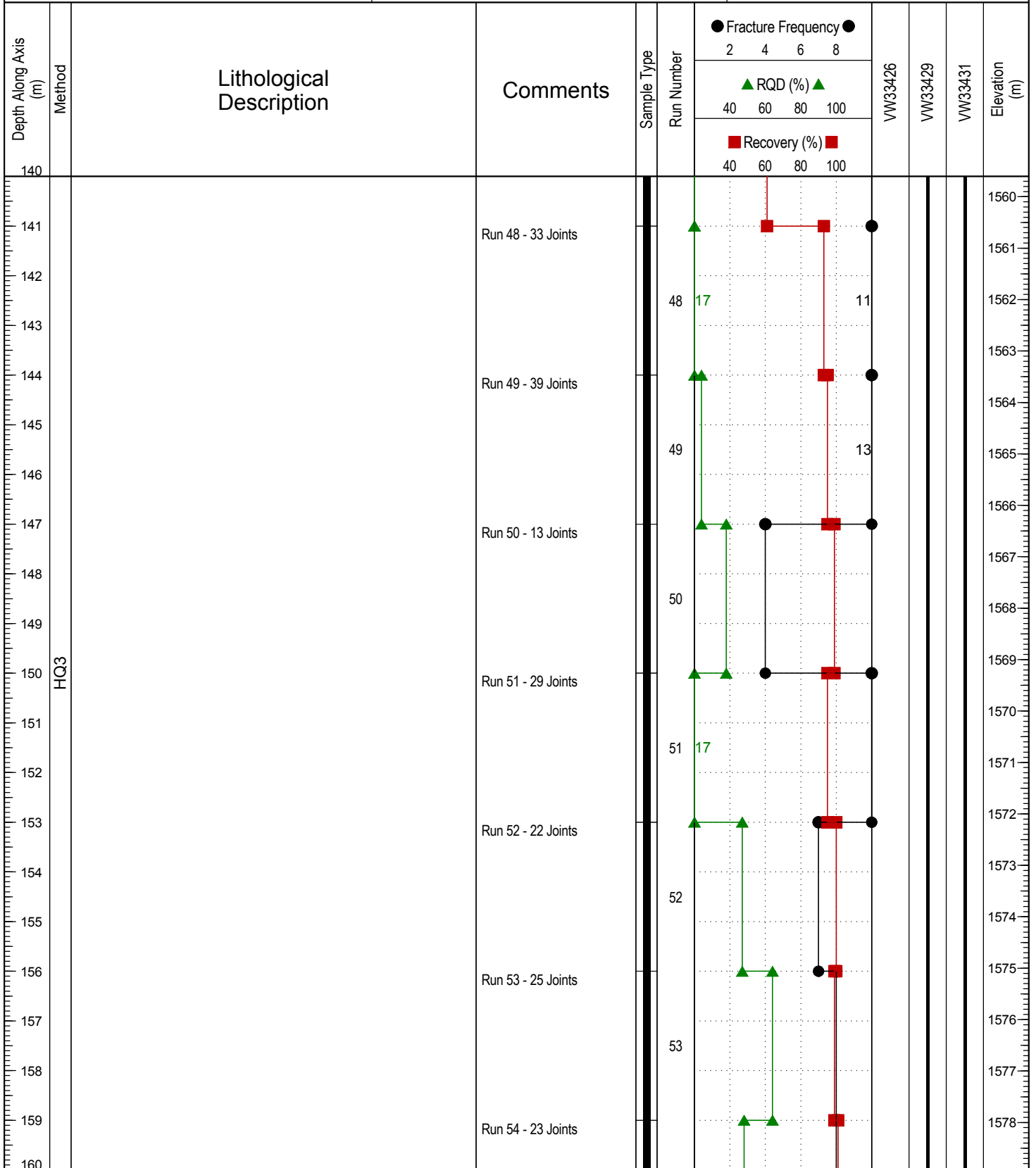
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 7 of 14

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-248-VWP

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

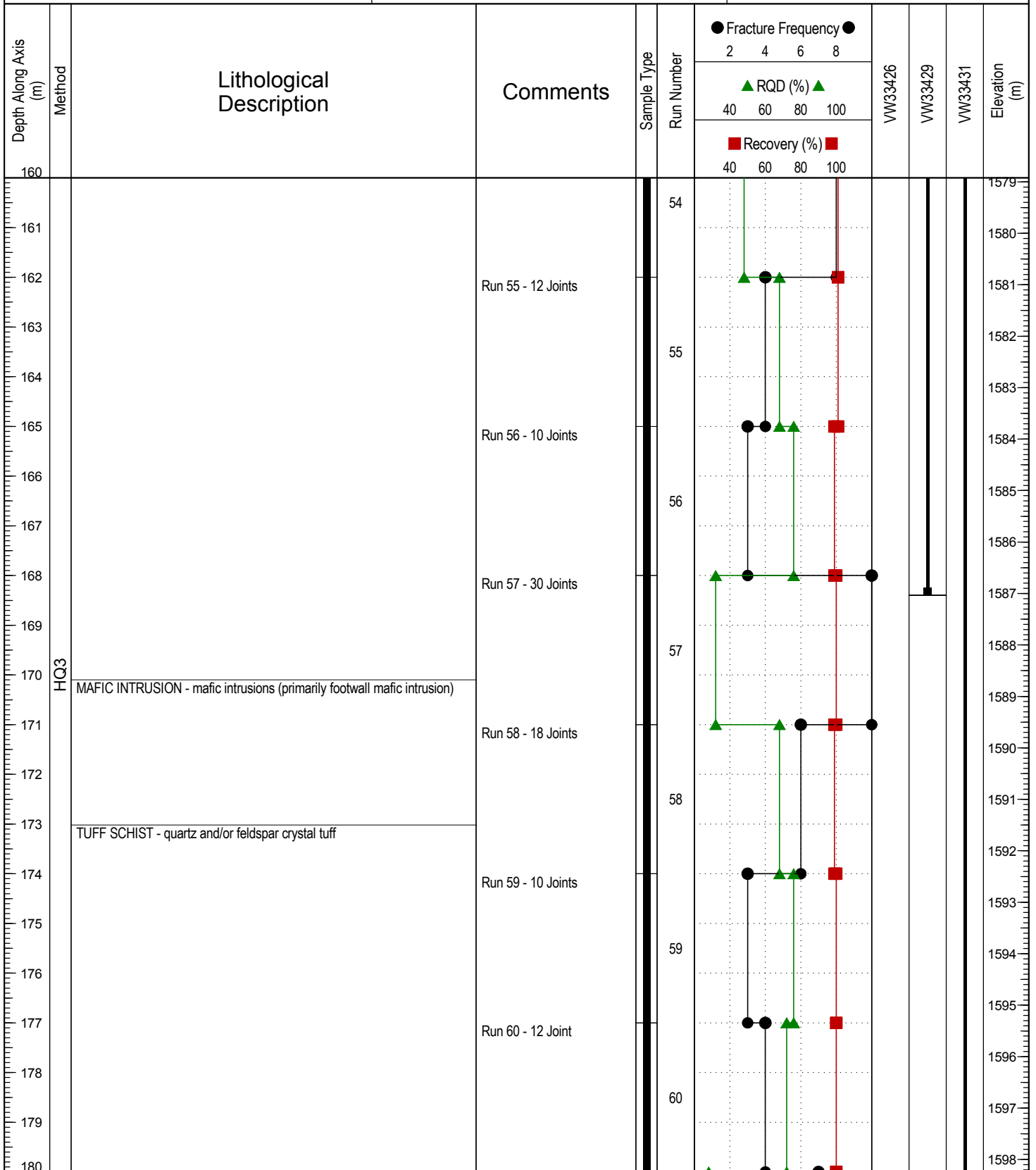
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 8 of 14

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-248-VWP**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

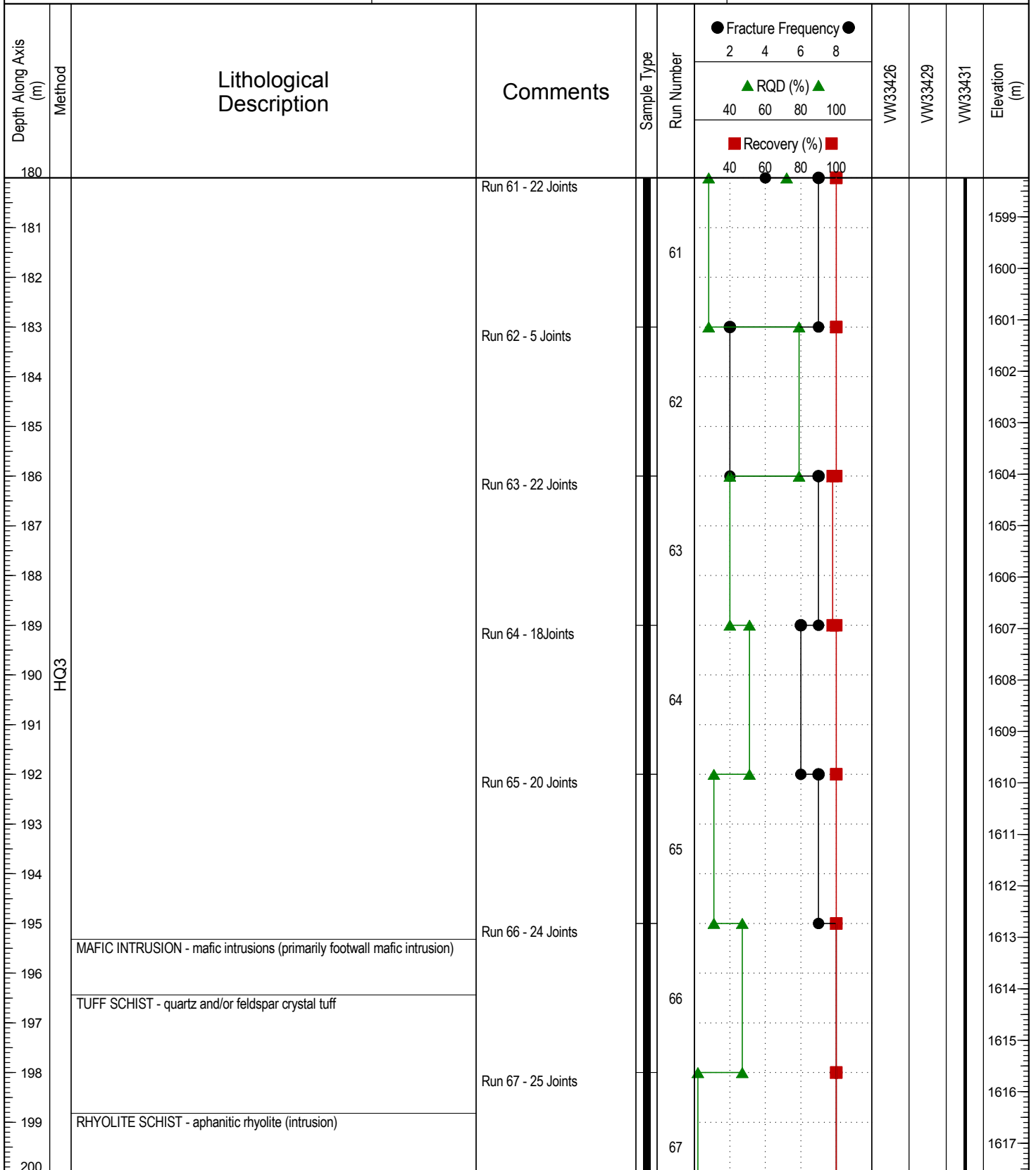
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 9 of 14

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-248-VWP**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Drilling Rig Type: Hydracore

Logged By: Client

Reviewed By: SK

Completion Depth: 278.5 m

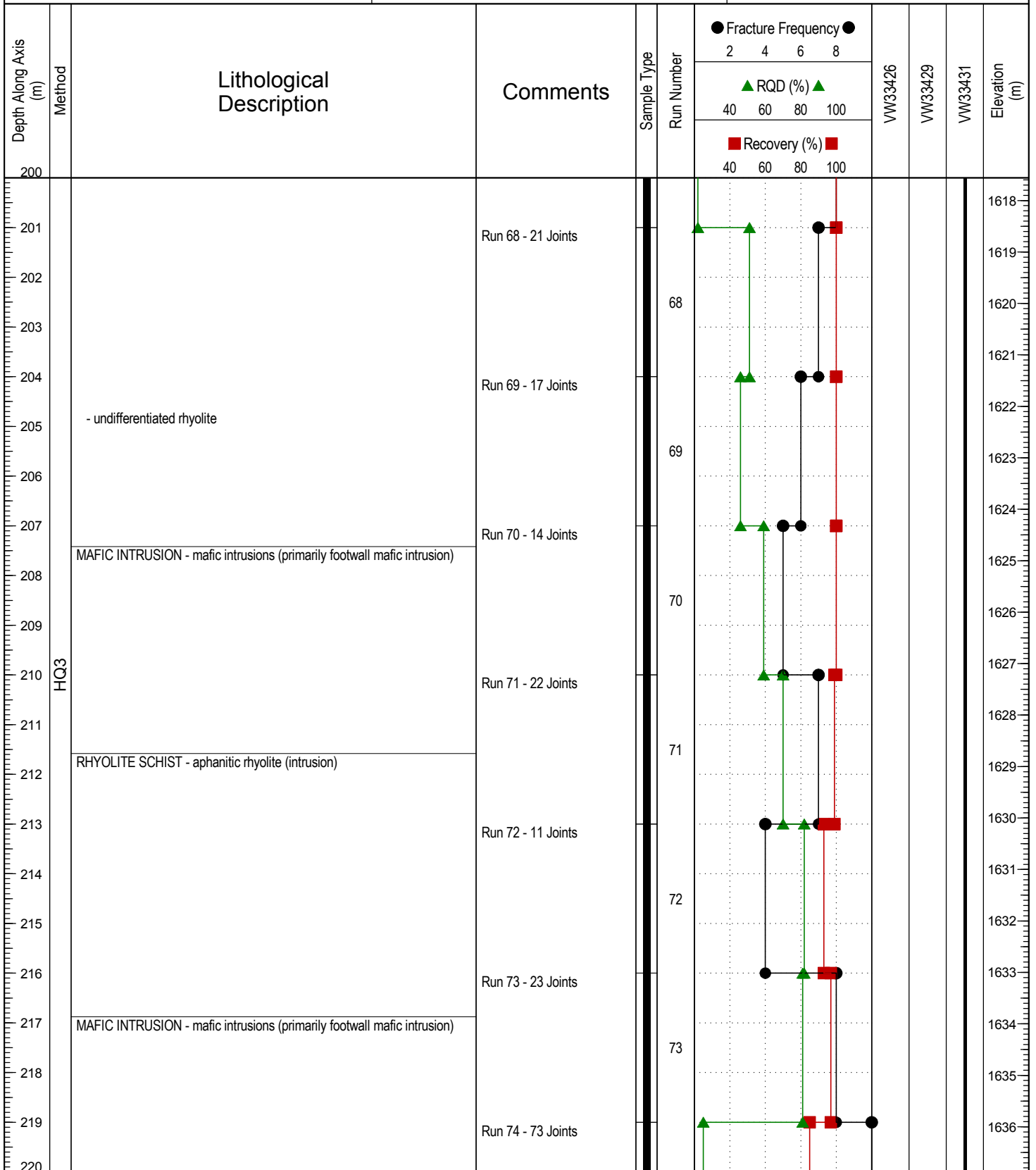
Start Date: 2015 August 1

Completion Date: 2015 September 10

Page 10 of 14

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

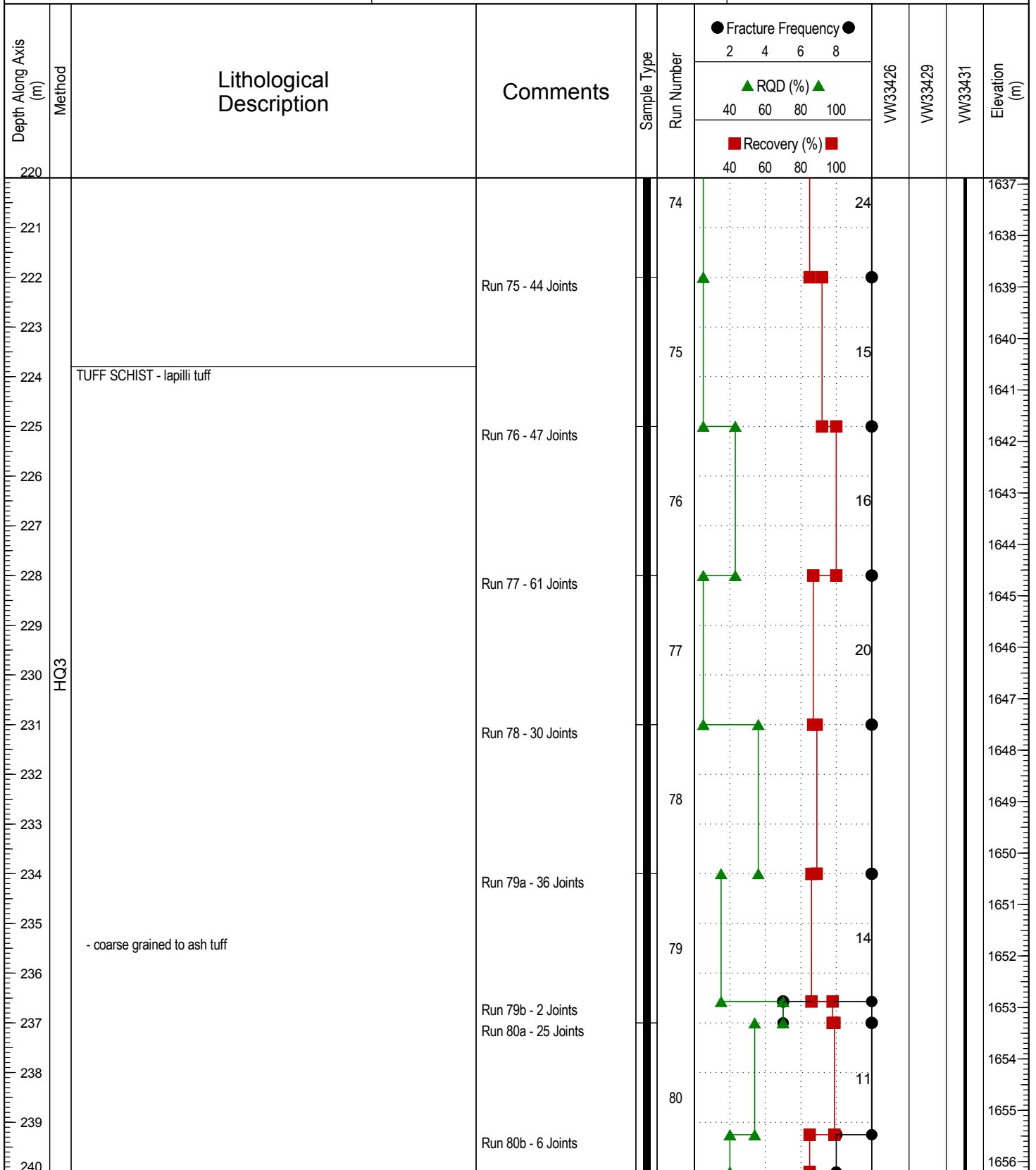
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 11 of 14

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-248-VWP**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83

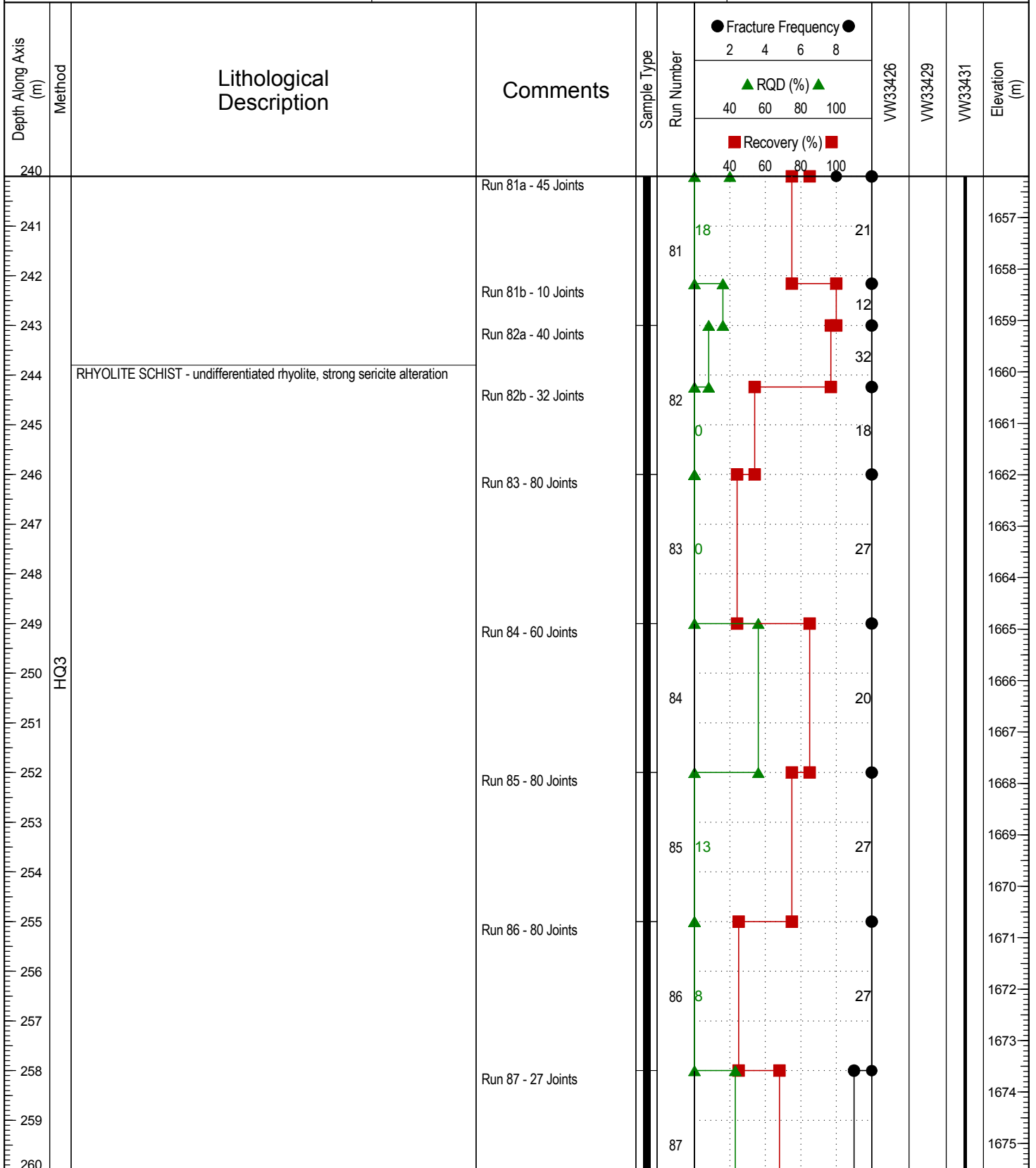


Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 12 of 14

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

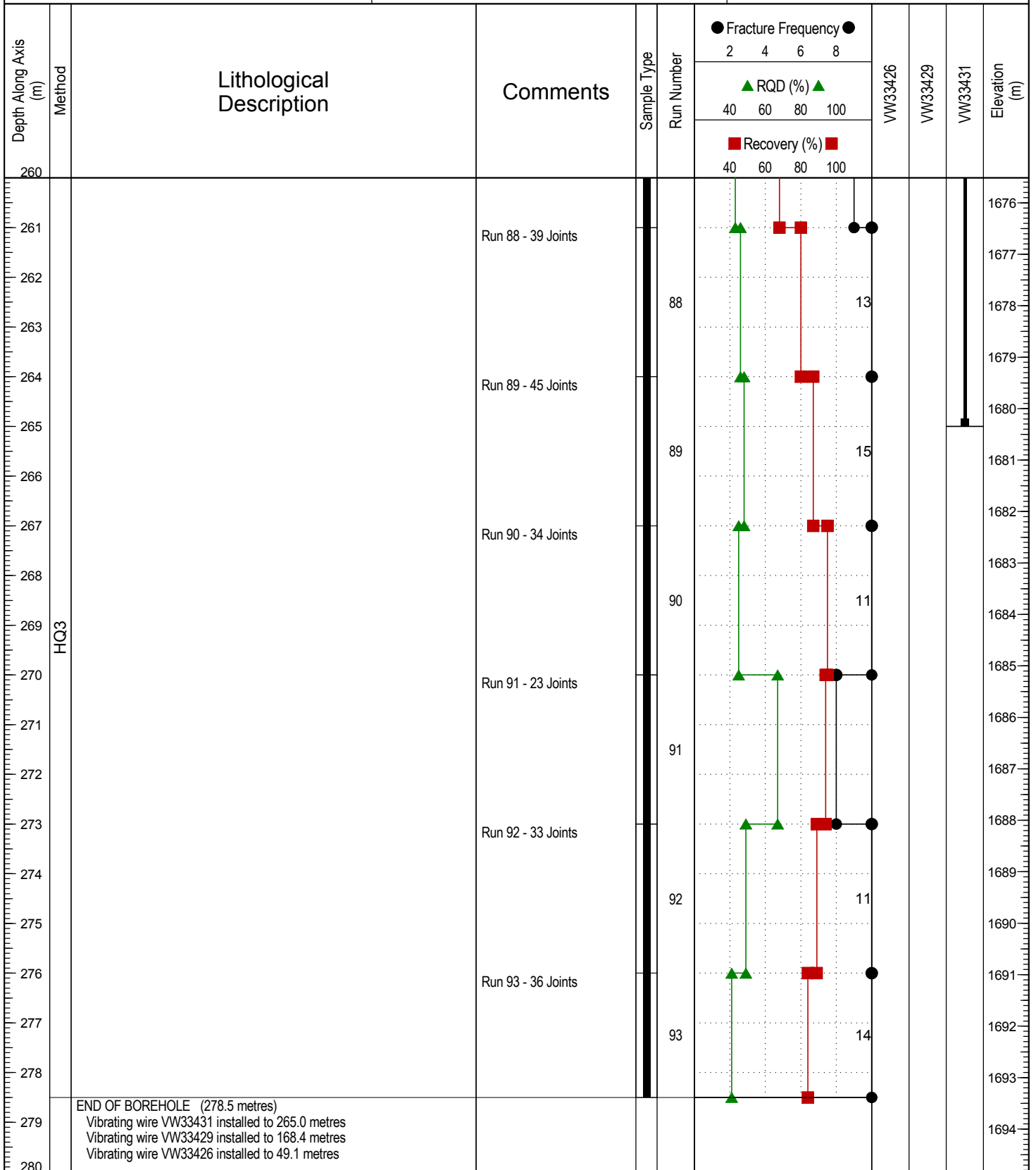
Completion Depth: 278.5 m  
 Start Date: 2015 August 1  
 Completion Date: 2015 September 10  
 Page 13 of 14

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-248-VWP**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1424.375 m  
 UTM: 415203.339 E; 6815282.948 N; Z 9 NAD83



Contractor: Geotech Drilling	Completion Depth: 278.5 m
Drilling Rig Type: Hydracore	Start Date: 2015 August 1
Logged By: Client	Completion Date: 2015 September 10
Reviewed By: SK	Page 14 of 14



**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-265**

Project: KZK Hydrogeological Assessment

Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83

Depth Along Axis (m)	Method	Lithological Description	Comments	Sample Type	Run Number	Fracture Frequency ●				Elevation (m)	
						2	4	6	8		
						▲ RQD (%) ▲					
						40	60	80	100		
						■ Recovery (%) ■					
						40	60	80	100		
0		OVERBURDEN - no core recovered								1424	
1										1425	
2										1426	
3										1427	
4										1428	
5										1429	
6										1430	
7										1431	
8										1432	
9										1433	
10	NQ3									1434	
11										1435	
12										1436	
13										1437	
14										1438	
15										1439	
16										1440	
17											
18											
19		TUFF SCHIST - lapilli tuff									
20											



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

Page 1 of 15

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-265

Project: KZK Hydrogeological Assessment

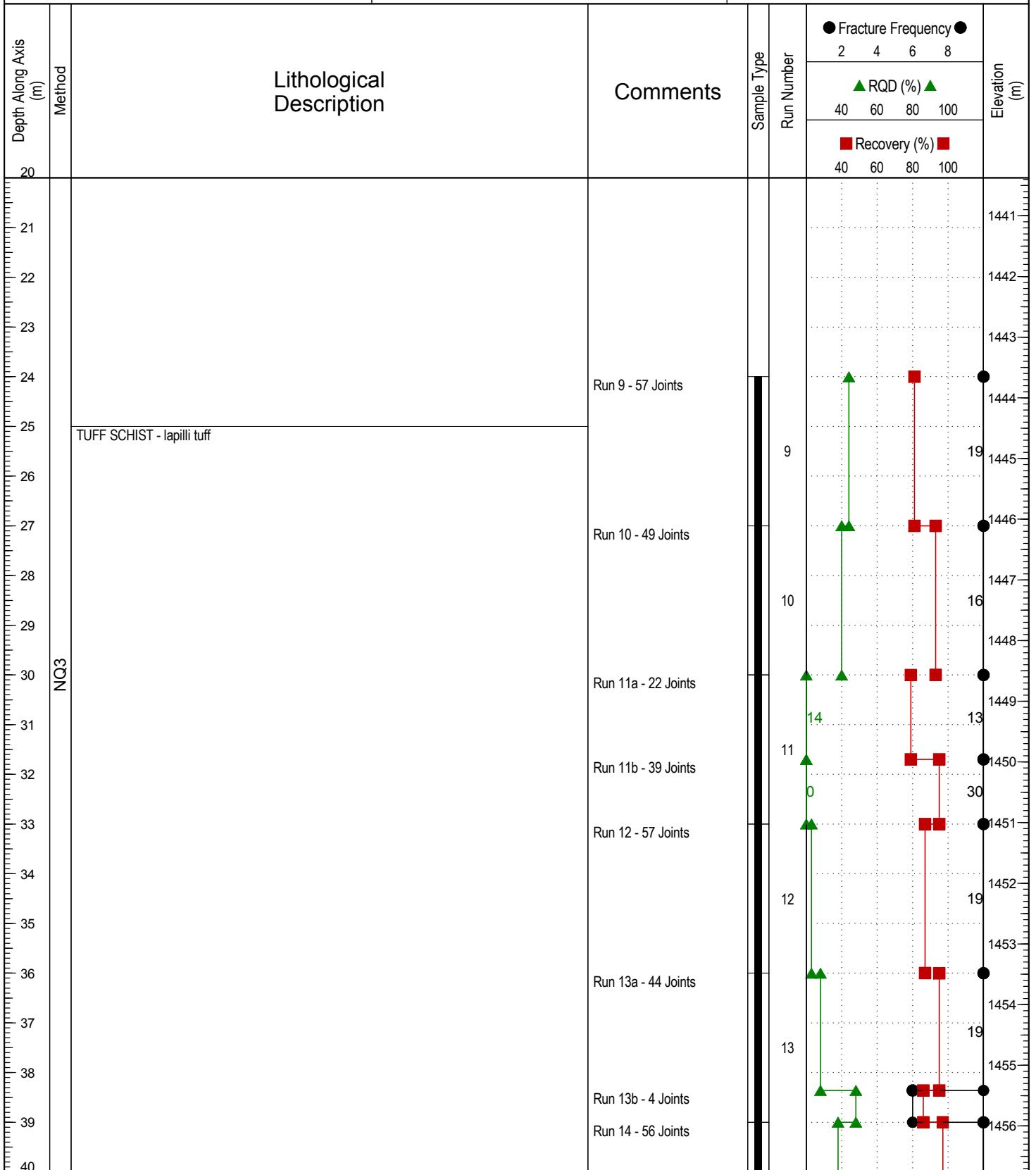
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

Page 2 of 15

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-265

Project: KZK Hydrogeological Assessment

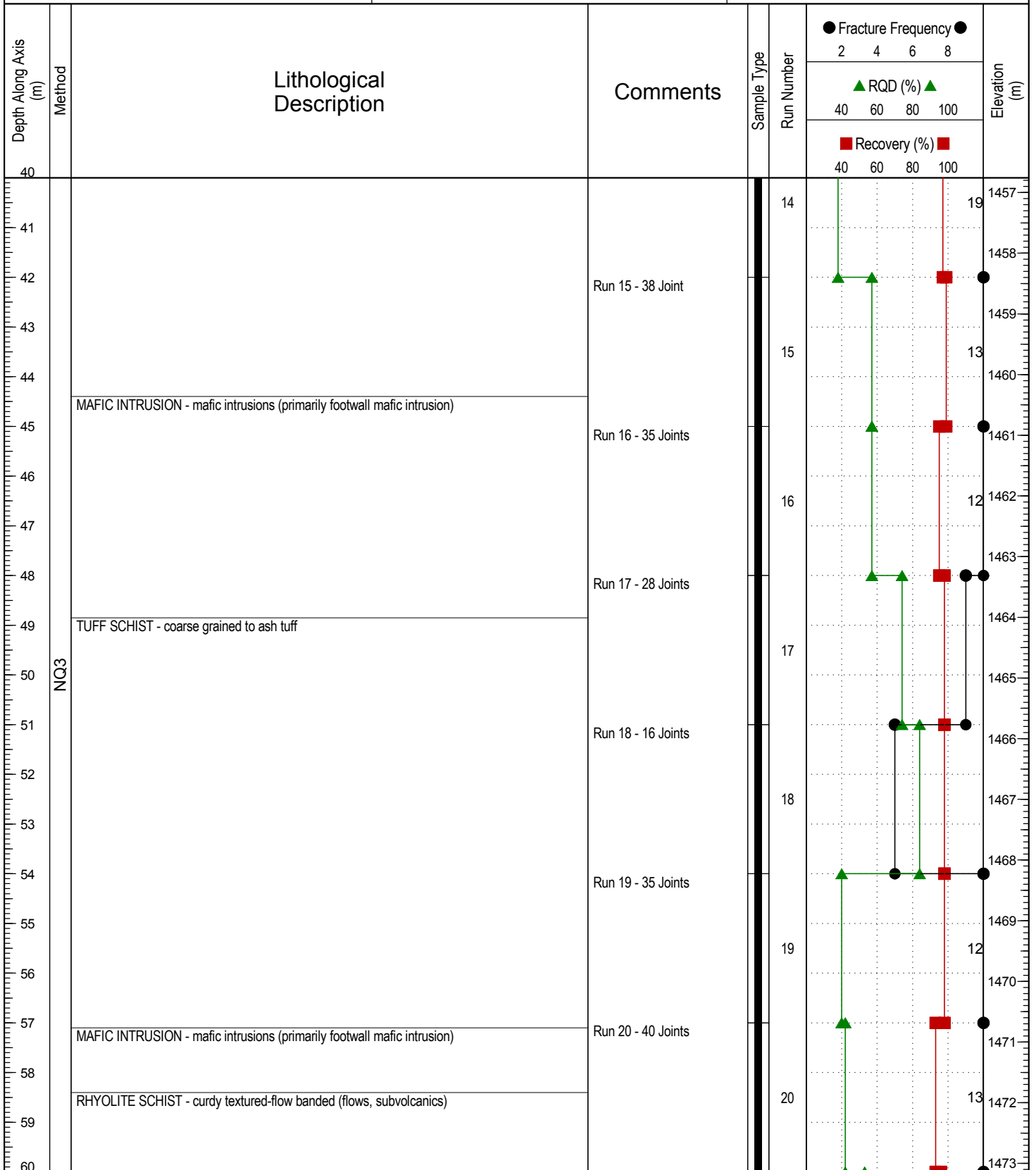
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

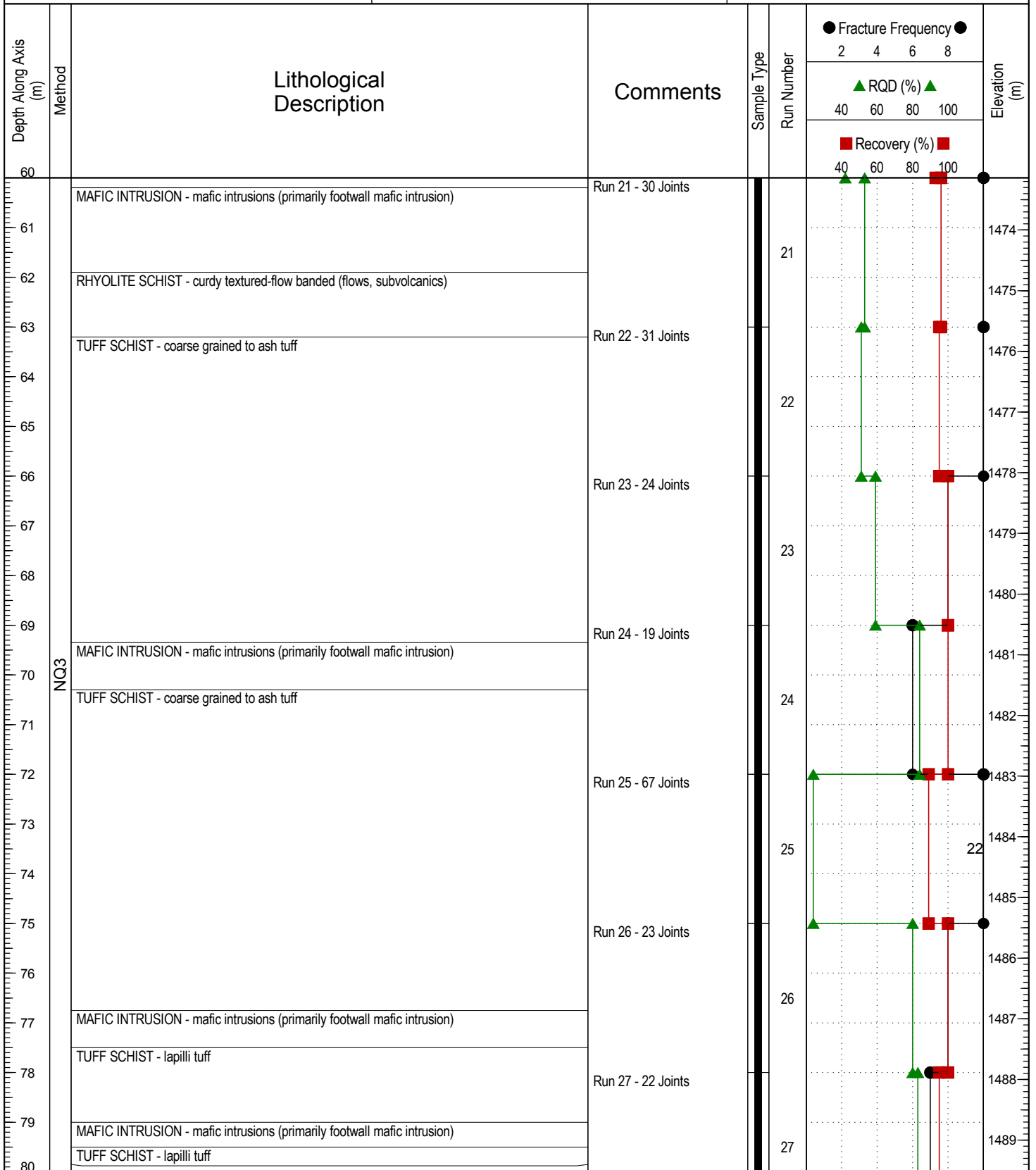
Page 3 of 15

# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-265

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1423.992 m  
 UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

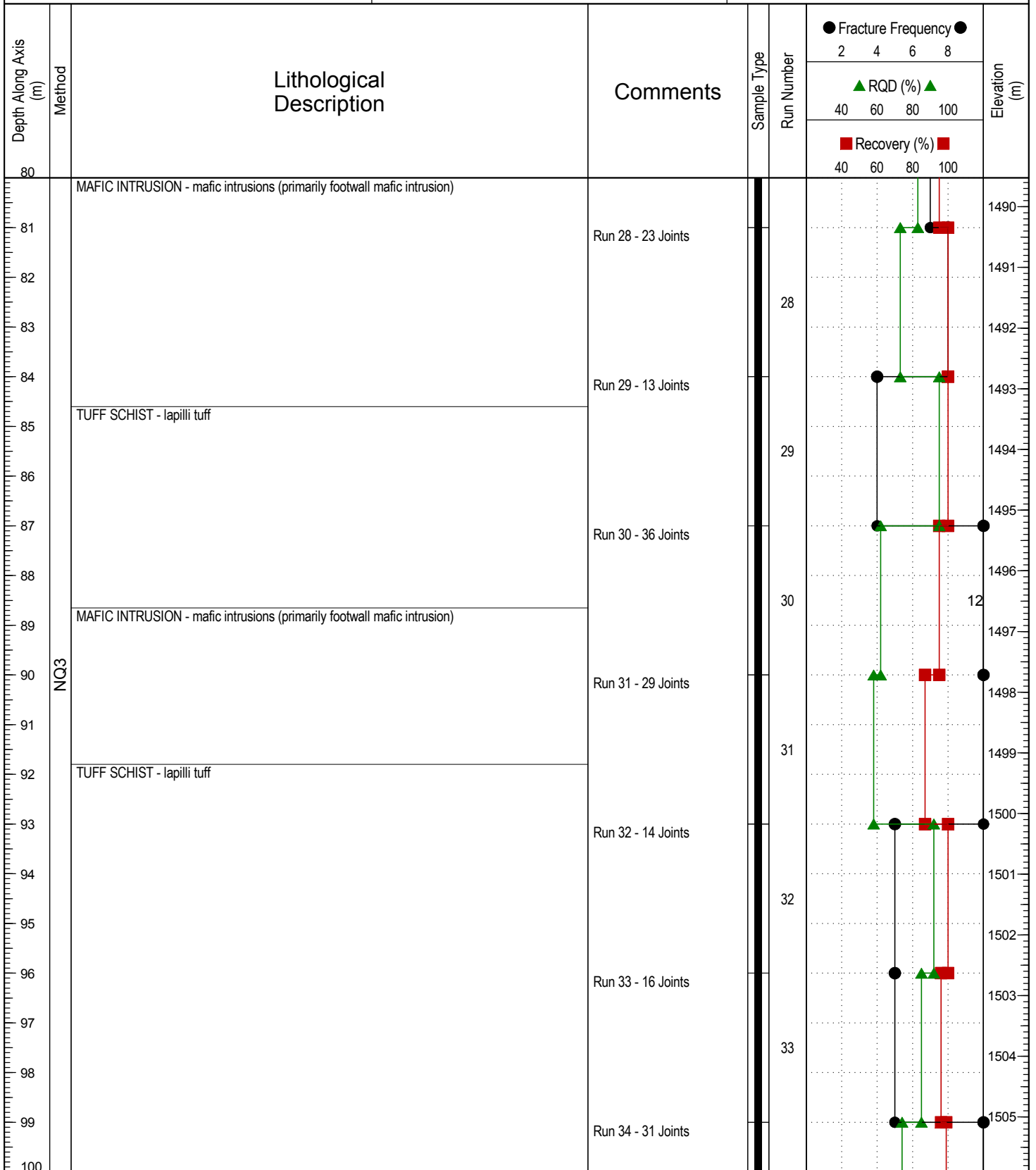
Completion Depth: 285 m  
 Start Date: 2015 August 30  
 Completion Date: 2015 September 21  
 Page 4 of 15

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-265**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1423.992 m  
 UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

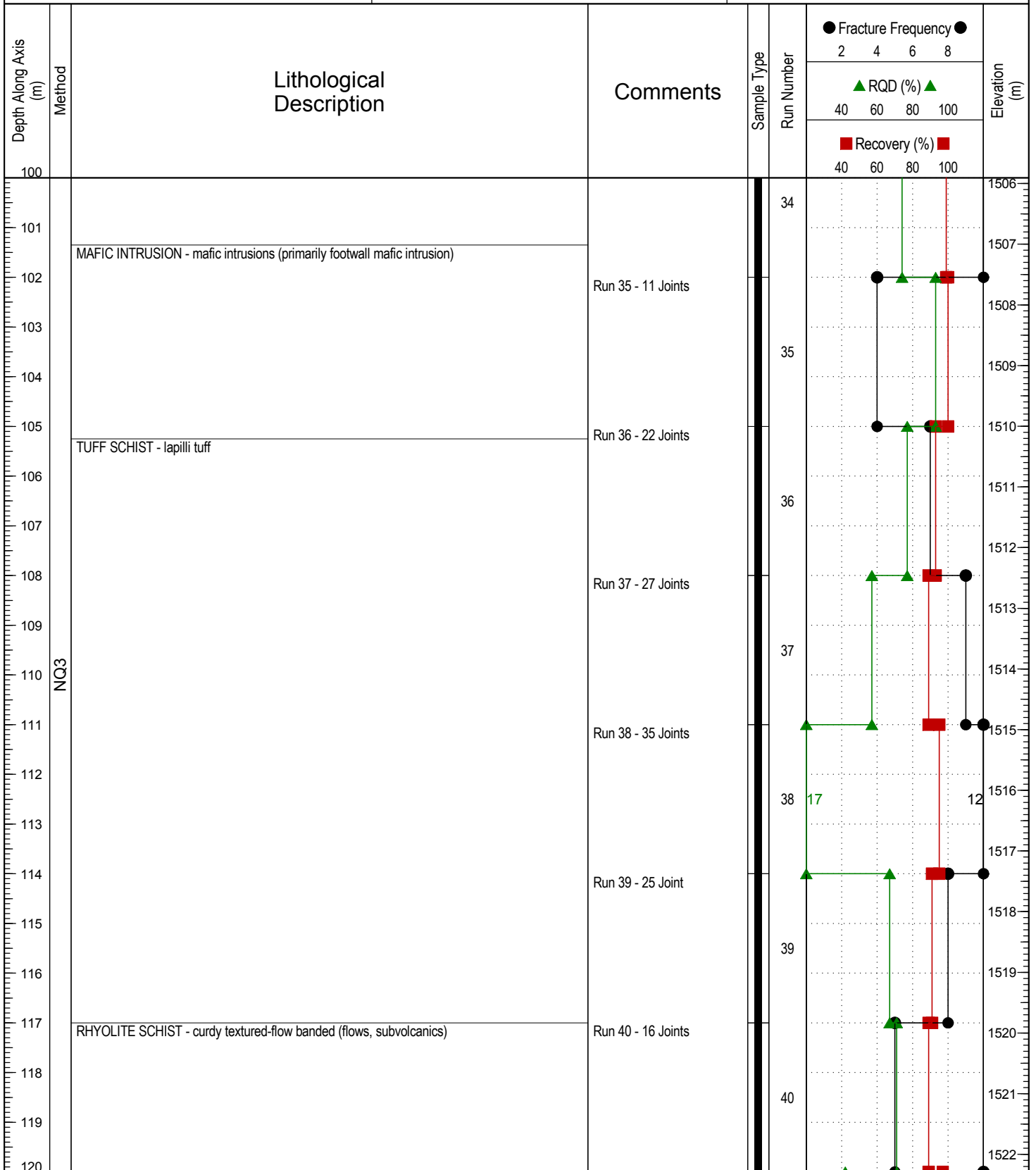
Completion Depth: 285 m  
 Start Date: 2015 August 30  
 Completion Date: 2015 September 21  
 Page 5 of 15

# BMC Minerals (No. 1) Ltd.

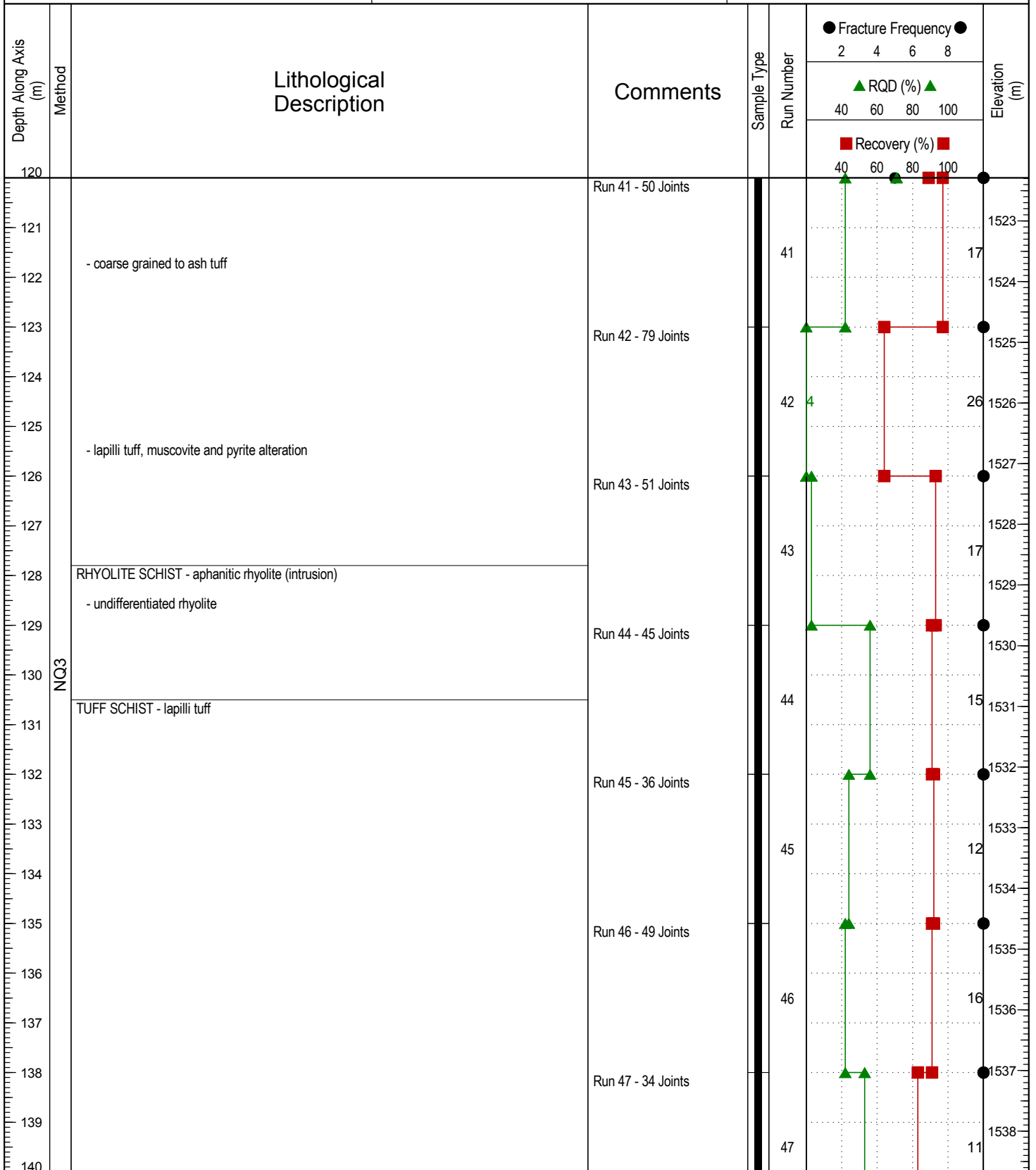
# Borehole No: K15-265

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1423.992 m  
 UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



Contractor: Geotech Drilling	Completion Depth: 285 m
Drilling Rig Type: Hydracore	Start Date: 2015 August 30
Logged By: Client	Completion Date: 2015 September 21
Reviewed By: SK	Page 6 of 15



Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

Completion Depth: 285 m  
 Start Date: 2015 August 30  
 Completion Date: 2015 September 21  
 Page 7 of 15

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-265

Project: KZK Hydrogeological Assessment

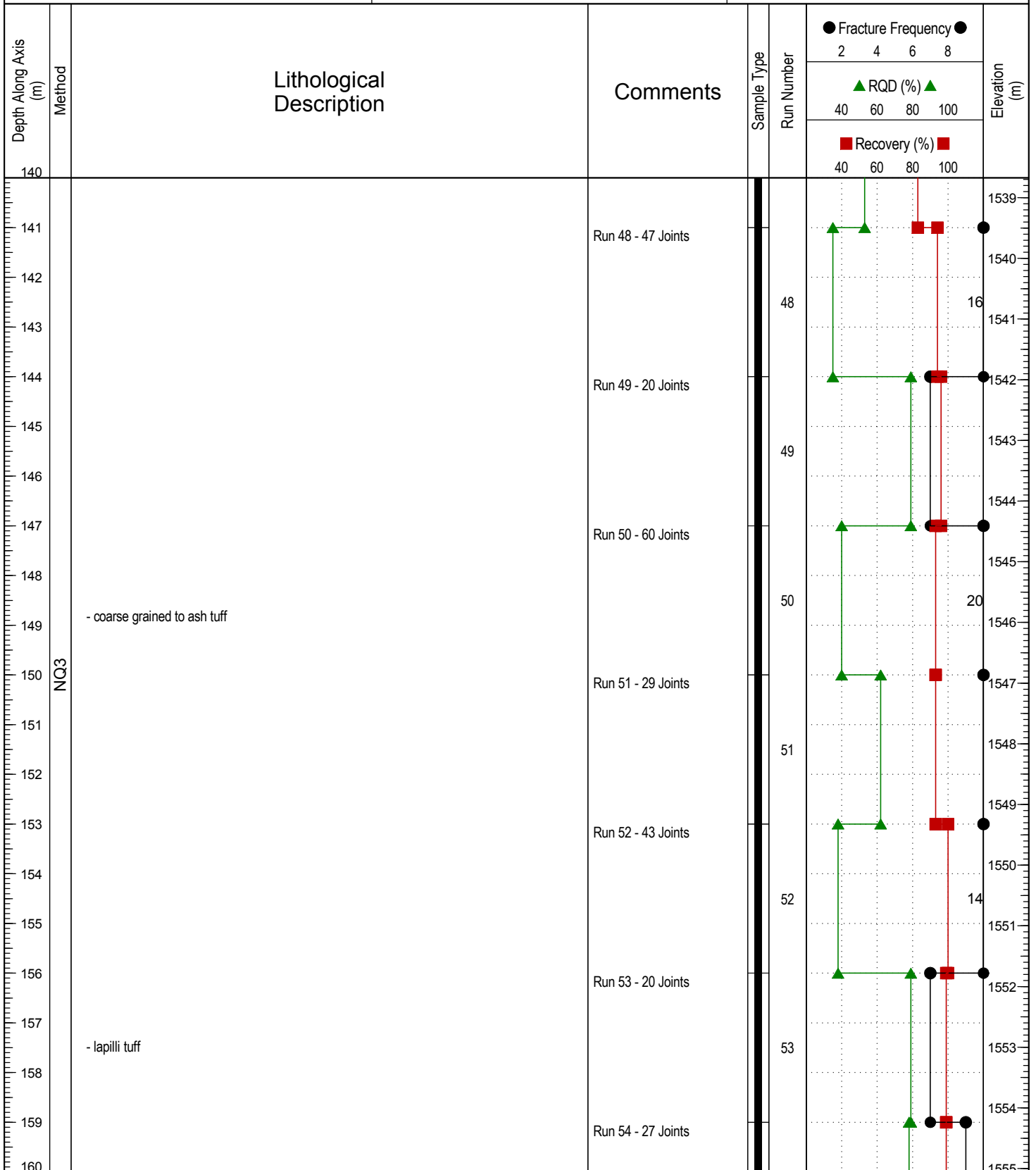
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

Page 8 of 15



# BMC Minerals (No. 1) Ltd.

# Borehole No: K15-265

Project: KZK Hydrogeological Assessment

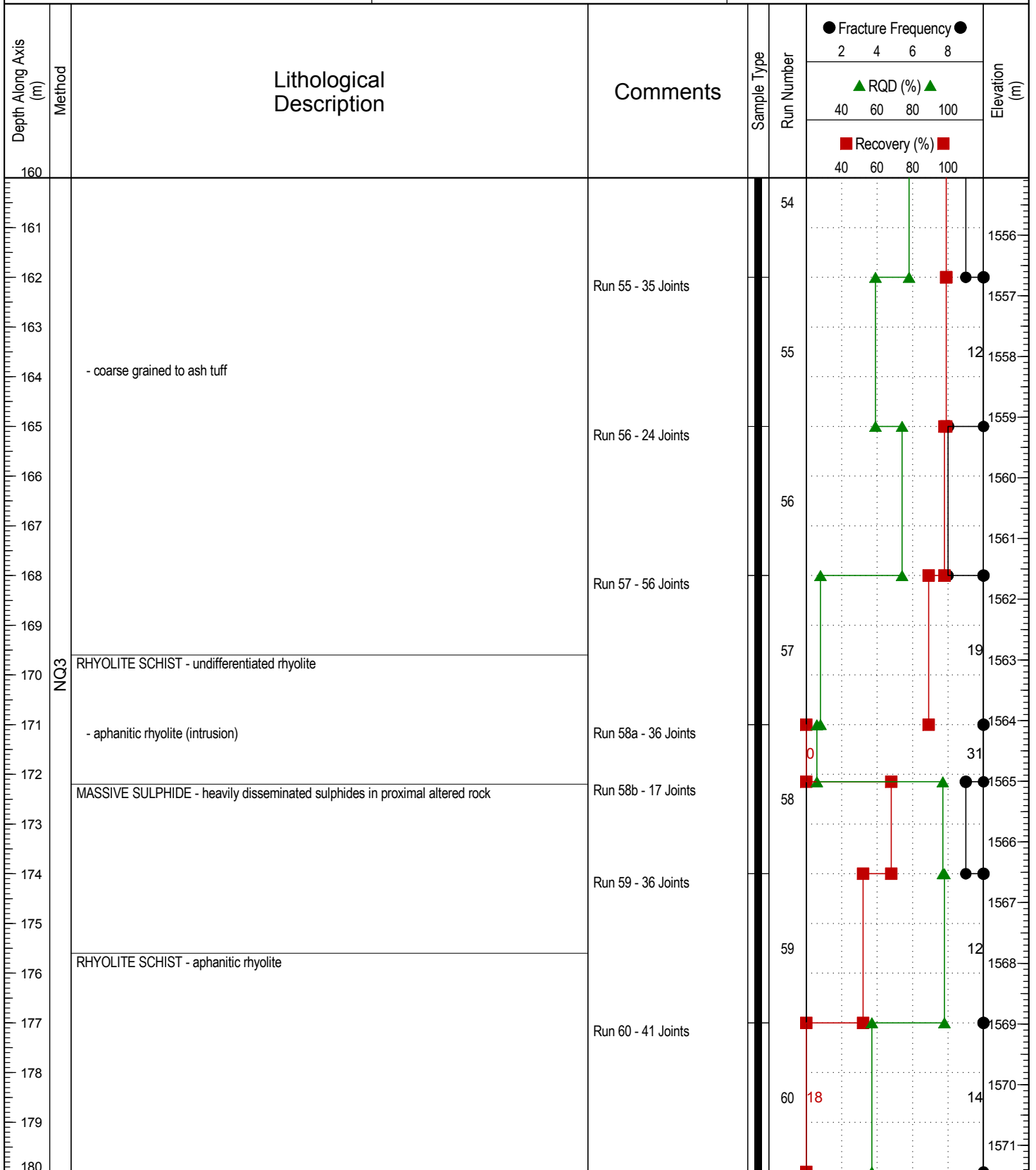
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

Page 9 of 15

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-265

Project: KZK Hydrogeological Assessment

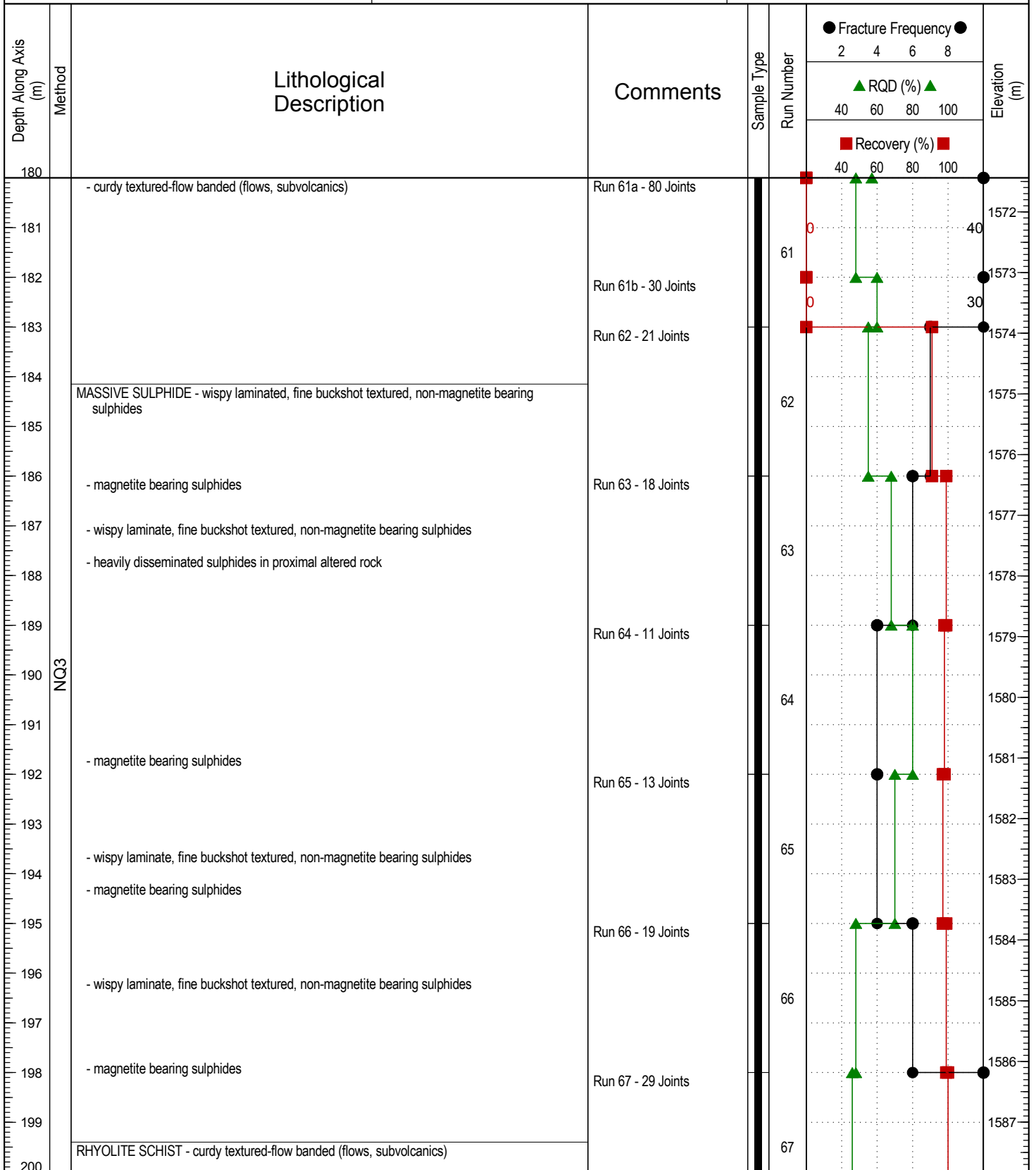
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

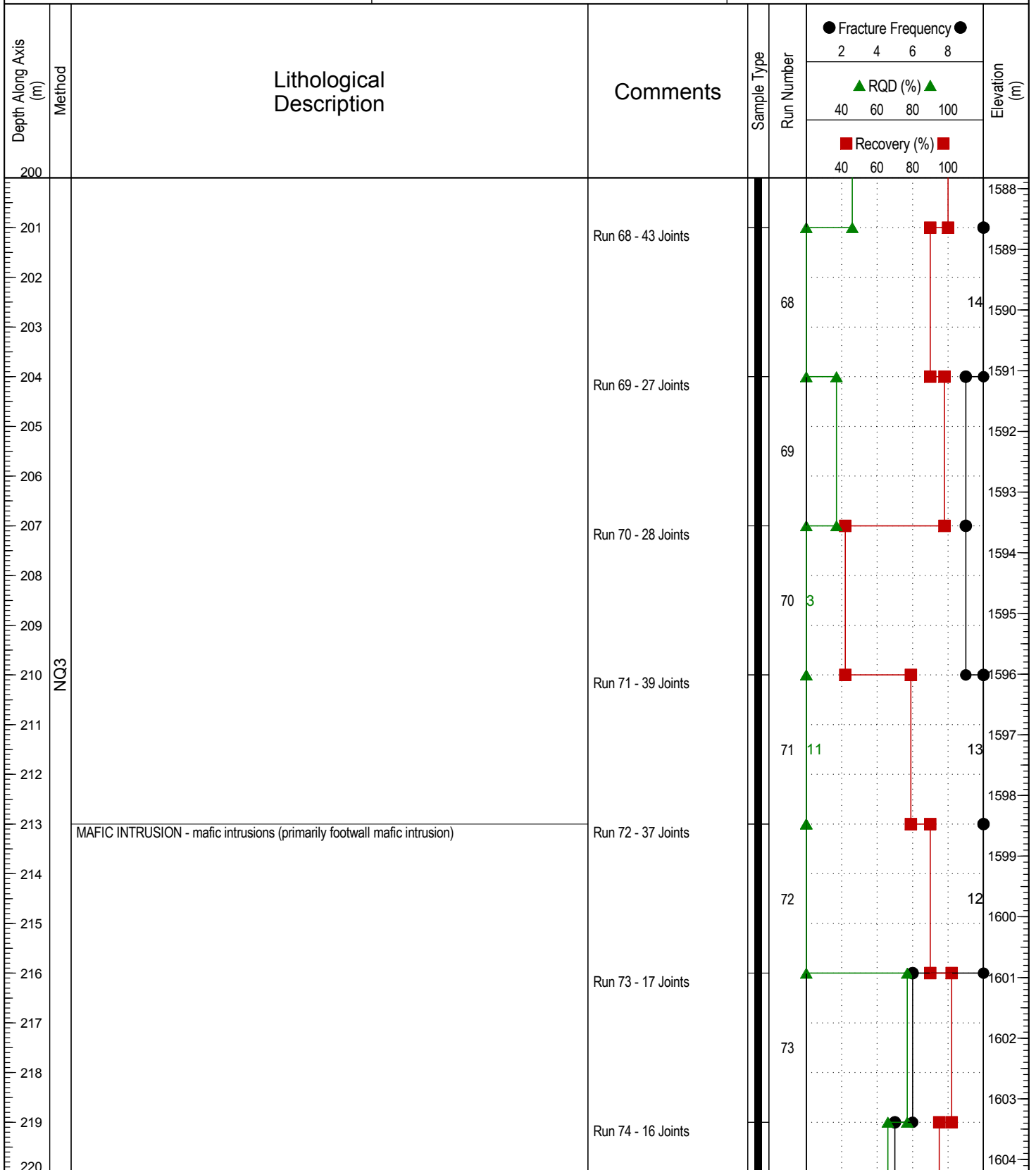
Page 10 of 15

# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-265

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1423.992 m  
 UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling  
 Drilling Rig Type: Hydracore  
 Logged By: Client  
 Reviewed By: SK

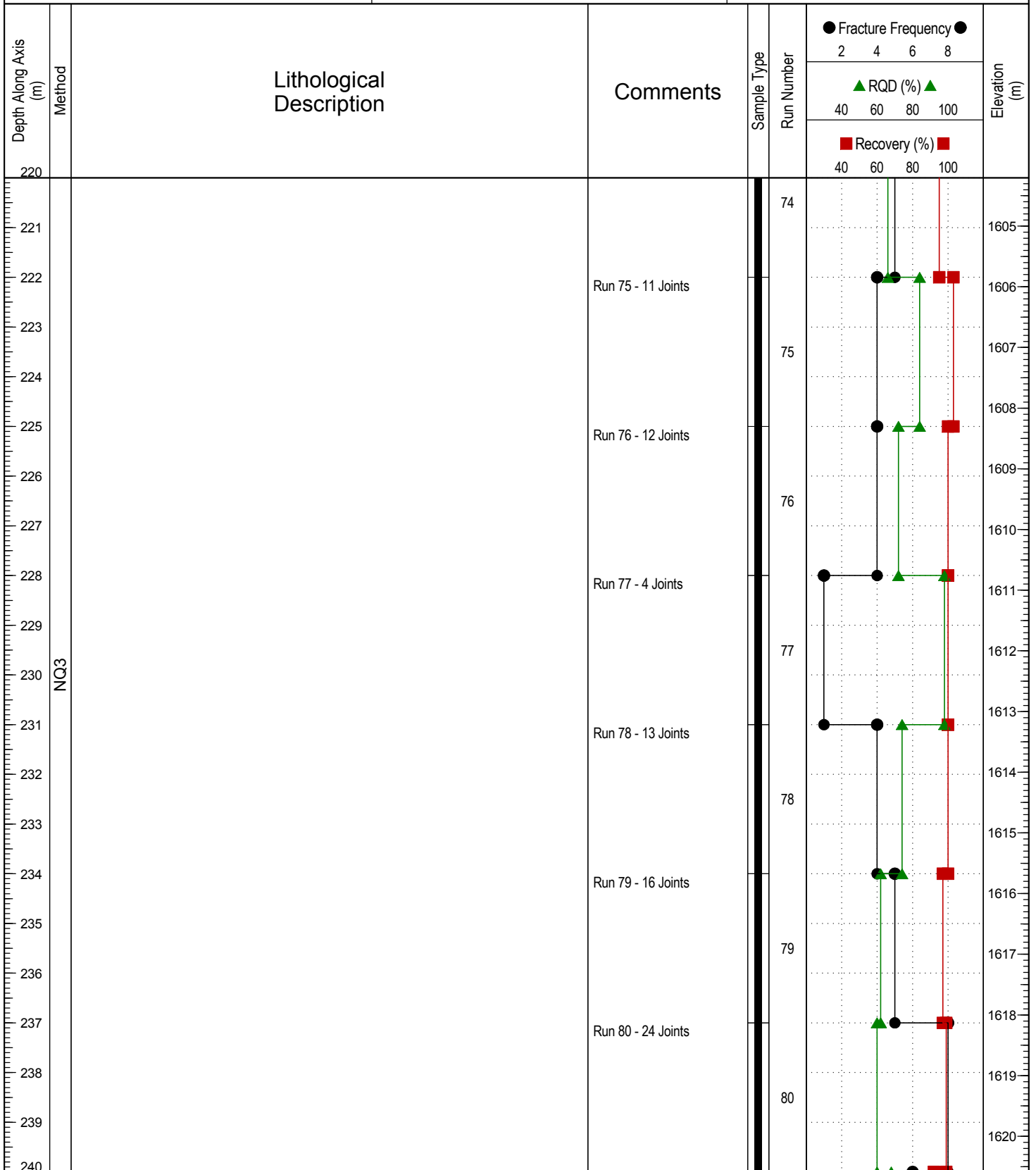
Completion Depth: 285 m  
 Start Date: 2015 August 30  
 Completion Date: 2015 September 21  
 Page 11 of 15

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-265**

Project: KZK Hydrogeological Assessment  
 Location: Kudz Ze Kayah  
 Yukon

Project No: ENVMIN03071-01  
 Ground Elev: 1423.992 m  
 UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



Contractor: Geotech Drilling	Completion Depth: 285 m
Drilling Rig Type: Hydracore	Start Date: 2015 August 30
Logged By: Client	Completion Date: 2015 September 21
Reviewed By: SK	Page 12 of 15

**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-265**

Project: KZK Hydrogeological Assessment

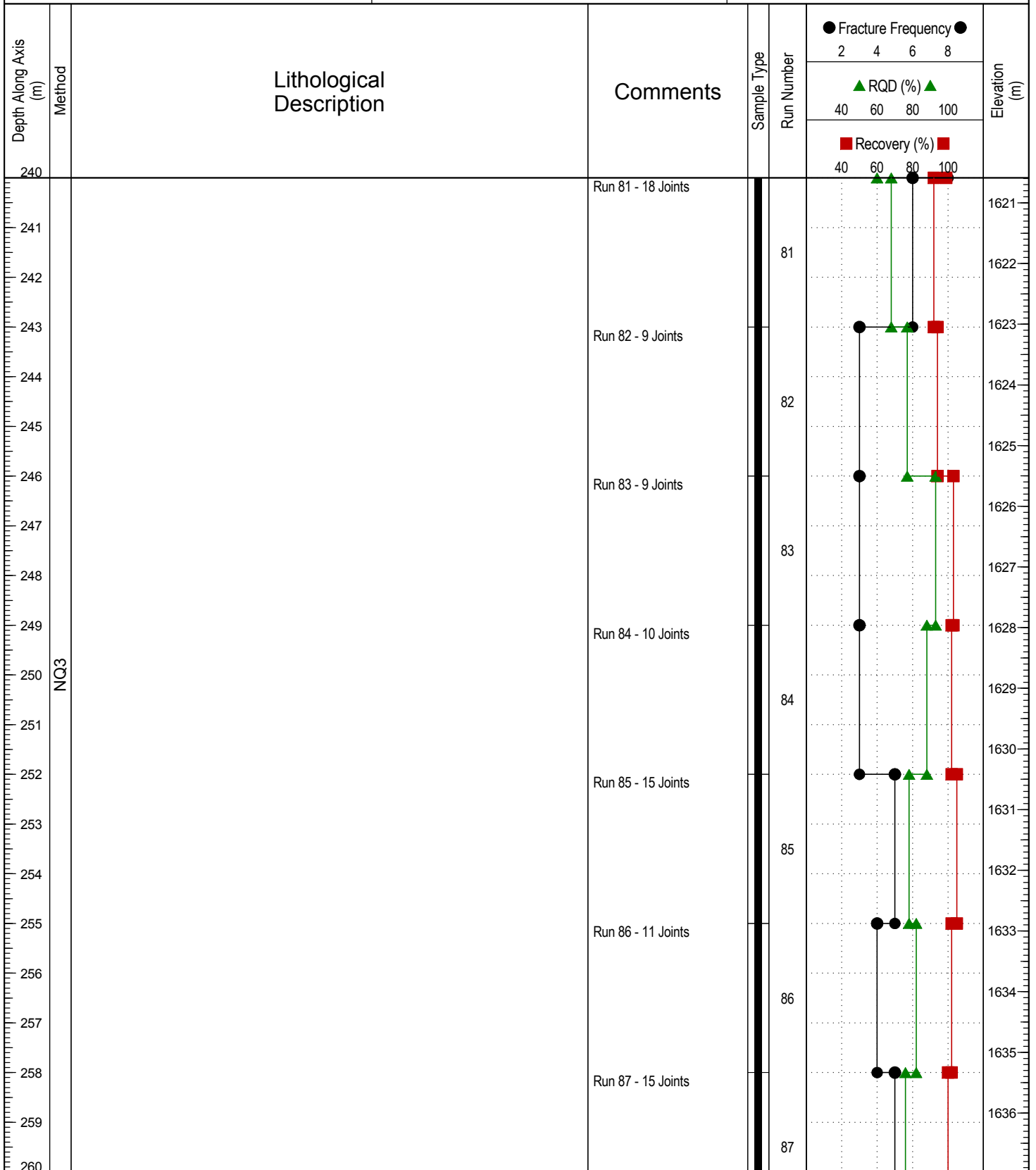
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

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# BMC Minerals (No. 1) Ltd.

## Borehole No: K15-265

Project: KZK Hydrogeological Assessment

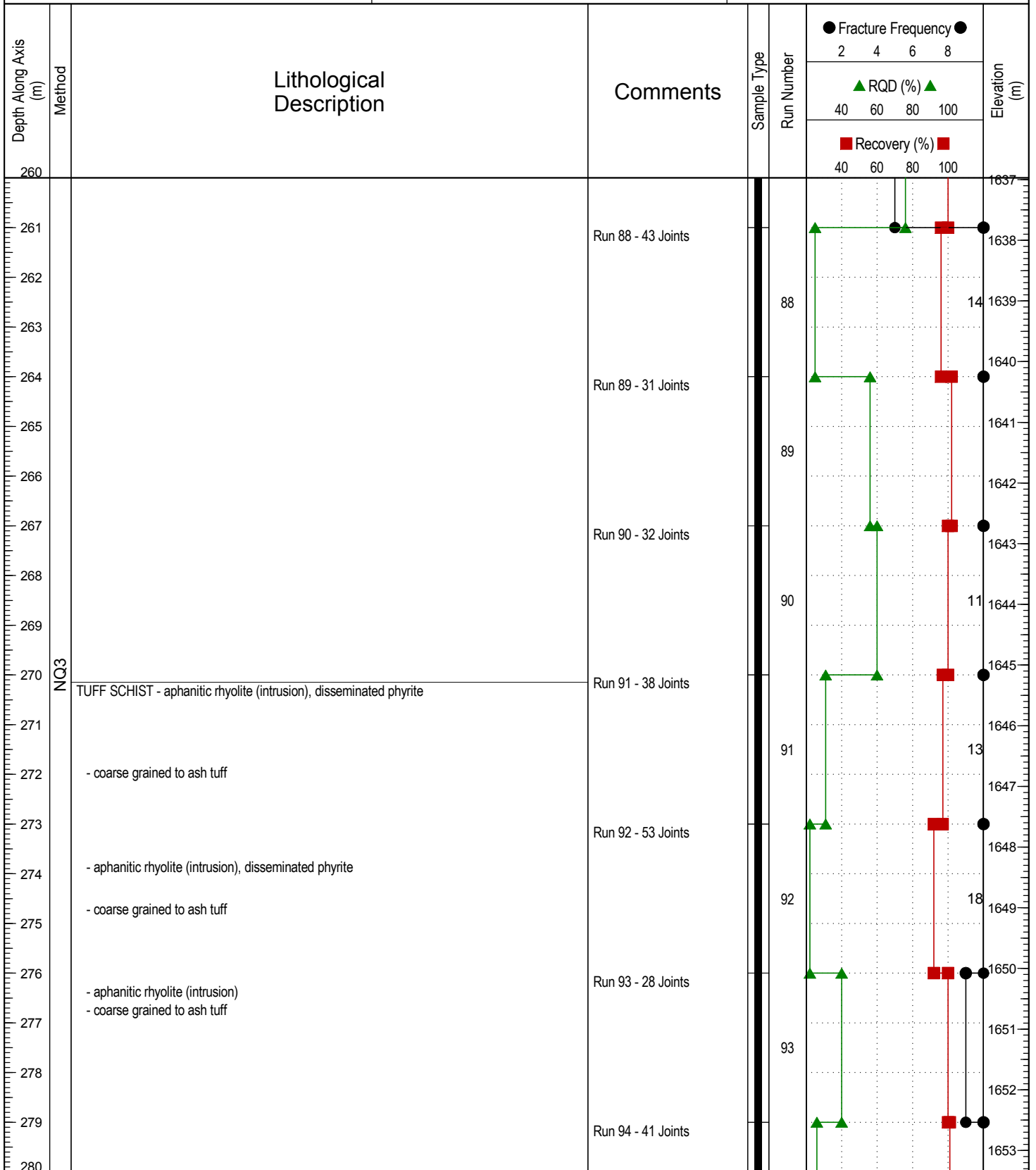
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



TETRA TECH EBA

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

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**BMC Minerals (No. 1) Ltd.**

**Borehole No: K15-265**

Project: KZK Hydrogeological Assessment

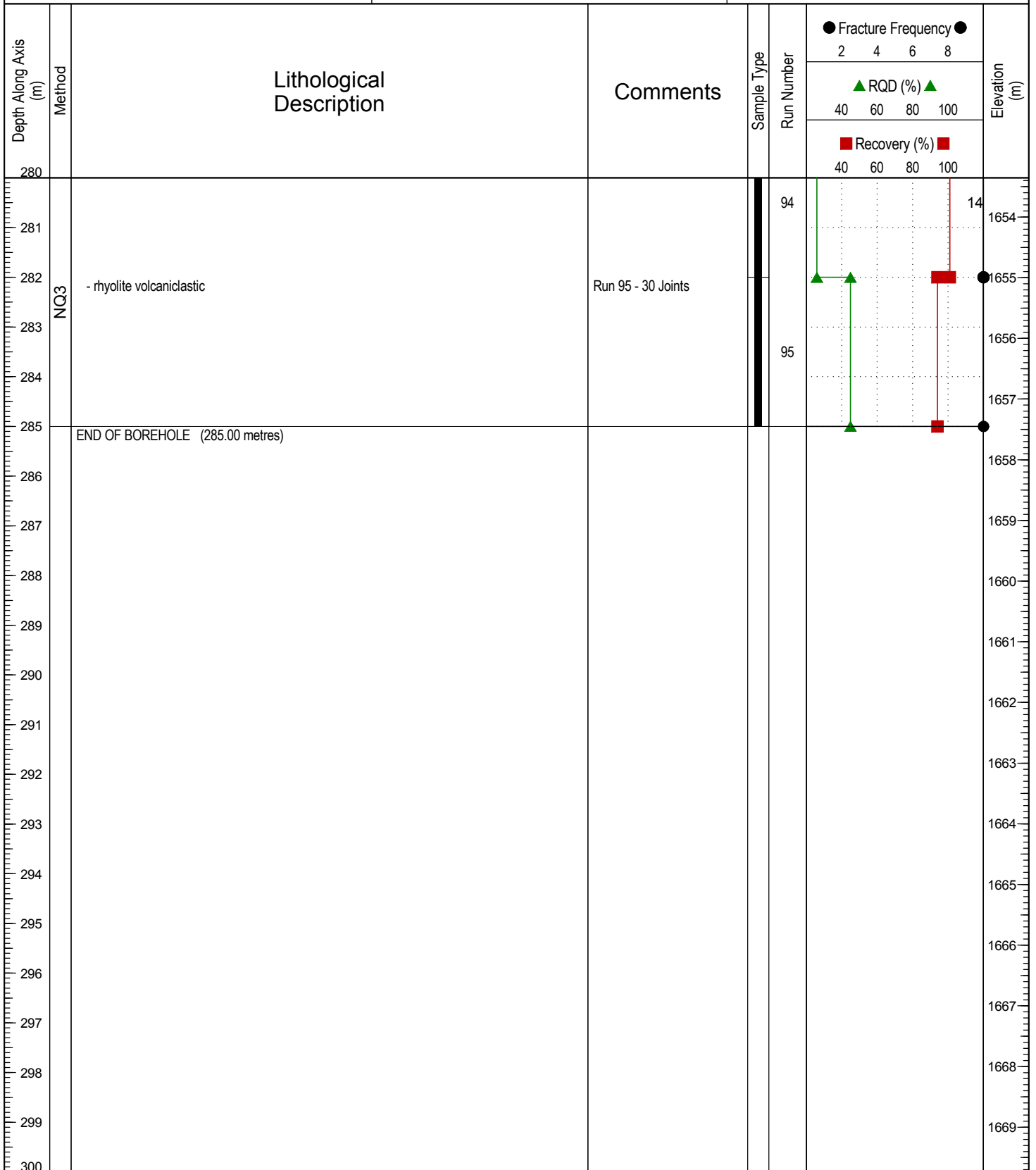
Project No: ENVMIN03071-01

Location: Kudz Ze Kayah

Ground Elev: 1423.992 m

Yukon

UTM: 415206.697 E; 6815594.549 N; Z 9 NAD83



**TETRA TECH EBA**

Contractor: Geotech Drilling

Completion Depth: 285 m

Drilling Rig Type: Hydracore

Start Date: 2015 August 30

Logged By: Client

Completion Date: 2015 September 21

Reviewed By: SK

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# APPENDIX C

## VIBRATING WIRE PIEZOMETER DATA AND CALIBRATION SHEETS

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**Vibrating Wire Piezometer Calibration Data (VW33430)**

Hole ID	Elevation	VWP s/n	Depth	Angle	True Depth	Date installed	p_CF	p_ini	T_CF	T_ini	F	B_ini	A	B	C
	[m asl]		[m ah]	[deg]	[m bgs]		[kPa/B]	[B]	[kPa/oC rise]	oC	[kPa/mbar]	[mbar]			
K15-200	1408.3	VW33430	199.95	-70	188		0.8235	8753.4	0.4254	23.4	0.1	1015			
	[m asl]		[m ah]	[deg]	[m bgs]		[MPa/B]	[B]	[MPa/oC rise]	oC	[MPa/mbar]	[mbar]			
	1408.3	VW33430	199.95	-70	188	4-Aug-15	0.0008235	8753.4	0.0004254	23.4	0.0001	1015	-3.2686E-09	-0.0007782	7.0567

**Readings**

Date	p_mes	B_mes	T_mes	p_lin	p_lin	p_lin (no baro corr)	p_poly	p_poly (no baro corr)	H2O column	Hydraulic Head
	[B]	[hPa]	[oC]	[kPa]	[MPa]	[kPa]	[kPa]	[kPa]	[m]	[m asl]
4-Aug-15	8759	857	12.2	6	0	-9.4	-21.6	-5.8	0.7	1221.063
4-Aug-15	6510.1	857	7.9	1857	2	1840.8	1842.6	1858.4	189.3	1409.725
5-Aug-15	6531.6	857	7.1	1839	2	1822.7	1825.3	1841.1	187.5	1407.885
6-Aug-15	6533.4	857	6.6	1837	2	1821.0	1824.0	1839.8	187.3	1407.712
7-Aug-15	6533.7	857	6.4	1836	2	1820.7	1823.9	1839.7	187.3	1407.678
10-Aug-15	6536.2	857	6.1	1834	2	1818.5	1822.0	1837.8	187.0	1407.455
16-Aug-15	6539.6	857	6.0	1831	2	1815.7	1819.2	1835.0	186.8	1407.165
31-Aug-15	6536.6	857	5.9	1834	2	1818.1	1821.7	1837.5	187.0	1407.413
5-Sep-15	6537.5	857	5.9	1833	2	1817.3	1821.0	1836.8	186.9	1407.337
22-Sep-15	6545.7	857	5.9	1826	2	1810.6	1814.2	1830.0	186.2	1406.649
23-Sep-15	6546.4	857	5.9	1826	2	1810.0	1813.7	1829.5	186.2	1406.590
30-Oct-15	6545.2	857	5.9	1827	2	1811.0	1814.7	1830.4	186.3	1406.691
14-Mar-16	6567.2	857	5.9	1809	2	1792.9	1796.6	1812.4	184.4	1404.843

Zero Reading

**Vibrating Wire Piezometer Calibration Data (VW33428)**

Hole ID	Elevation	VWP s/n	Depth	Angle	True Depth	Date installed	p_CF	p_ini	T_CF	T_ini	F	B_ini	A	B	C
	[m asl]		[m ah]	[deg]	[m bgs]		[kPa/B]	[B]	[kPa/oC rise]	oC	[kPa/mbar]	[mbar]			
K15-200	1408.3	VW33428	124.97	-70	117		0.83142	9021.5	0.3601	23.5	0.1	1015			
	[m asl]		[m ah]	[deg]	[m bgs]		[MPa/B]	[B]	[MPa/oC rise]	oC	[MPa/mbar]	[mbar]			
	1408.3	VW33428	124.97	-70	117	4-Aug-15	0.0008314	9021.5	0.0003601	23.5	0.0001	1015	-3.6629E-09	-0.0007786	7.3158

**Readings**

Date	p_mes	B_mes	T_mes	p_lin	p_lin	p_lin (no baro corr)	p_poly	p_poly (no baro corr)	H2O column	Hydraulic Head
	[B]	[hPa]	[oC]	[kPa]	[MPa]	[kPa]	[kPa]	[kPa]	[m]	[m asl]
4-Aug-15	9027.3	857	12.4	7	0	-8.8	-23.2	-7.4	0.7	1291.578
4-Aug-15	7670.9	857	6.2	1132	1	1116.7	1118.1	1133.9	115.5	1406.348
5-Aug-15	7672.4	857	5.5	1131	1	1115.2	1117.1	1132.9	115.3	1406.195
6-Aug-15	7671.7	857	4.9	1131	1	1115.6	1117.9	1133.7	115.4	1406.232
7-Aug-15	7670.6	857	4.6	1132	1	1116.4	1119.0	1134.8	115.4	1406.314
10-Aug-15	7666.3	857	4.2	1136	1	1119.8	1122.7	1138.5	115.8	1406.664
16-Aug-15	7660.6	857	4.0	1140	1	1124.5	1127.5	1143.3	116.3	1407.140
31-Aug-15	7655.8	857	3.9	1144	1	1128.4	1131.6	1147.4	116.7	1407.543
5-Sep-15	7658	857	3.9	1142	1	1126.6	1129.7	1145.5	116.5	1407.357
22-Sep-15	7664.2	857	3.8	1137	1	1121.4	1124.6	1140.4	116.0	1406.827
23-Sep-15	7664.7	857	3.8	1137	1	1121.0	1124.2	1140.0	115.9	1406.785
30-Oct-15	7646.6	857	3.8	1152	1	1136.0	1139.3	1155.1	117.5	1408.320
14-Mar-16	7672.8	857	3.8	1130	1	1114.2	1117.4	1133.2	115.2	1406.098

Zero reading

**Vibrating Wire Piezometer Calibration Data (VW33427)**

Hole ID	Elevation	VWP s/n	Depth	Angle	True Depth	Date installed	p_CF	p_ini	T_CF	T_ini	F	B_ini	A	B	C
	[m asl]		[m ah]	[deg]	[m bgs]		[kPa/B]	[B]	[kPa/oC rise]	oC	[kPa/mbar]	[mbar]			
K15-200	1408.3	VW33427	49.99	-70	47		0.82528	8839.3	0.7823	23.2	0.1	1015			
	[m asl]		[m ah]	[deg]	[m bgs]		[MPa/B]	[B]	[MPa/oC rise]	oC	[MPa/mbar]	[mbar]			
	1408.3	VW33427	49.99	-70	47	4-Aug-15	0.0008253	8839.3	0.0007823	23.2	0.0001	1015	-4.4055E-09	-0.0007635	7.0851

**Readings**

Date	p_mes	B_mes	T_mes	p_lin	p_lin	p_lin (no baro corr)	p_poly	p_poly (no baro corr)	H2O column	Hydraulic Head
	[B]	[hPa]	[oC]	[kPa]	[MPa]	[kPa]	[kPa]	[kPa]	[m]	[m asl]
4-Aug-15	8841.2	857	12.1	6	0	-10.3	-16.5	-0.7	0.6	1361.890
4-Aug-15	8346	857	5.6	409	0	393.3	404.1	419.9	41.7	1403.045
5-Aug-15	8350.7	857	4.5	404	0	388.6	401.0	416.8	41.2	1402.562
6-Aug-15	8353	857	3.6	402	0	386.0	399.8	415.6	41.0	1402.297
7-Aug-15	8353.5	857	3.1	401	0	385.2	399.8	415.6	40.9	1402.215
10-Aug-15	8352.3	857	2.4	401	0	385.6	401.3	417.1	40.9	1402.260
16-Aug-15	8352.1	857	1.9	401	0	385.4	401.9	417.7	40.9	1402.237
31-Aug-15	8341.2	857	1.7	410	0	394.3	411.2	427.0	41.8	1403.138
5-Sep-15	8340.1	857	1.7	411	0	395.2	412.1	427.9	41.9	1403.231
22-Sep-15	8335	857	1.7	415	0	399.4	416.4	432.2	42.3	1403.660
23-Sep-15	8334.1	857	1.7	416	0	400.1	417.1	432.9	42.4	1403.735
30-Oct-15	8333.7	857	1.6	416	0	400.4	417.5	433.3	42.4	1403.761
14-Mar-16	8347.5	857	1.5	405	0	388.9	406.1	421.9	41.3	1402.592

Zero Reading

**Vibrating Wire Piezometer Calibration Data (VW33431)**

Hole ID	Elevation	VWP s/n	Depth	Angle	True Depth	Date installed	p_CF	p_ini	T_CF	T_ini	F	B_ini	A	B	C
	[m asl]		[m ah]	[deg]	[m bgs]		[kPa/B]	[B]	[kPa/oC rise]	oC	[kPa/mbar]	[mbar]			
K15-248	1424.3	VW33431	274.3	-75	265		1.30093	8795.6	0.9171	23.3	0.1	1015			
	[m asl]		[m ah]	[deg]	[m bgs]		[MPa/B]	[B]	[MPa/oC rise]	oC	[MPa/mbar]	[mbar]			
	1424.3	VW33431	274.3	-75	265	10-Sep-15	0.0013009	8795.6	0.0009171	23.3	0.0001	1015	-6.1332E-09	-0.0012167	11.164

**Readings**

Date	p_mes	B_mes	T_mes	p_lin	p_lin	p_lin (no baro corr)	p_poly	p_poly (no baro corr)	H2O column	Hydraulic Head
	[B]	[hPa]	[oC]	[kPa]	[MPa]	[kPa]	[kPa]	[kPa]	[m]	[m asl]
10-Sep-15	8804	855	7.2	-10	0	-25.7	-24.5	-8.5	-1.0	1158.354
12-Sep-15	6840.4	855	8.7	2546	3	2530.2	2551.7	2567.7	259.6	1418.981
20-Sep-15	6848	855	8.2	2536	3	2519.8	2542.3	2558.2	258.6	1417.926
23-Sep-15	6848.5	855	8.2	2535	3	2519.2	2541.6	2557.6	258.5	1417.860
31-Oct-15	6851.2	855	8.2	2532	3	2515.7	2538.1	2554.1	258.2	1417.502
14-Mar-16	6857.9	855	8.1	2523	3	2506.9	2529.5	2545.4	257.3	1416.604

Zero Reading

**Vibrating Wire Piezometer Calibration Data (VW33429)**

Hole ID	Elevation	VWP s/n	Depth	Angle	True Depth	Date installed	p_CF	p_ini	T_CF	T_ini	F	B_ini	A	B	C
	[m asl]		[m ah]	[deg]	[m bgs]		[kPa/B]	[B]	[kPa/oC rise]	oC	[kPa/mbar]	[mbar]			
K15-248	1424.3	VW33429	174.3	-75	168		0.85253	8666.9	0.5493	23.4	0.1	1015			
	[m asl]		[m ah]	[deg]	[m bgs]		[MPa/B]	[B]	[MPa/oC rise]	oC	[MPa/mbar]	[mbar]			
	1424.3	VW33429	174.3	-75	168	10-Sep-15	0.0008525	8666.9	0.0005493	23.4	0.0001	1015	-2.1977E-09	-0.0008222	7.2872

**Readings**

Date	p_mes	B_mes	T_mes	p_lin	p_lin	p_lin (no baro corr)	p_poly	p_poly (no baro corr)	H2O column	Hydraulic Head
	[B]	[hPa]	[oC]	[kPa]	[MPa]	[kPa]	[kPa]	[kPa]	[m]	[m asl]
10-Sep-15	8679.6	855	7.4	-4	0	-19.6	-21.7	-5.8	-0.4	1255.566
12-Sep-15	6907.1	855	6.0	1507	2	1490.7	1497.1	1513.0	153.6	1409.578
20-Sep-15	6932.9	855	5.0	1484	1	1468.2	1475.6	1491.6	151.3	1407.279
23-Sep-15	6935.6	855	5.0	1482	1	1465.9	1473.3	1489.3	151.1	1407.044
31-Oct-15	6946.9	855	4.8	1472	1	1456.1	1463.8	1479.8	150.1	1406.051
14-Mar-16	6956.4	855	4.7	1464	1	1448.0	1455.8	1471.7	149.3	1405.219

Zero Reading

**Vibrating Wire Piezometer Calibration Data (VW33426)**

Hole ID	Elevation	VWP s/n	Depth	Angle	True Depth	Date installed	p_CF	p_ini	T_CF	T_ini	F	B_ini	A	B	C
	[m asl]		[m ah]	[deg]	[m bgs]		[kPa/B]	[B]	[kPa/oC rise]	oC	[kPa/mbar]	[mbar]			
K15-248	1424.3	VW33426	50.8	-75	49		0.8274	8824.2	0.6503	23.2	0.1	1015			
	[m asl]		[m ah]	[deg]	[m bgs]		[MPa/B]	[B]	[MPa/oC rise]	oC	[MPa/mbar]	[mbar]			
	1424.3	VW33426	50.8	-75	49	10-Sep-15	0.0008274	8824.2	0.0006503	23.2	0.0001	1015	-3.8493E-09	-0.0007735	7.1183

**Readings**

Date	p_mes	B_mes	T_mes	p_lin	p_lin	p_lin (no baro corr)	p_poly	p_poly (no baro corr)	H2O column	Hydraulic Head
	[B]	[hPa]	[oC]	[kPa]	[MPa]	[kPa]	[kPa]	[kPa]	[m]	[m asl]
10-Sep-15	8824.5	855	7.1	5	0	-10.7	-12.6	3.4	0.5	1375.765
12-Sep-15	8450	855	3.0	312	0	296.5	304.6	320.6	31.9	1407.090
20-Sep-15	8457.8	855	1.6	305	0	289.1	299.0	315.0	31.1	1406.340
23-Sep-15	8458.4	855	1.5	305	0	288.6	298.6	314.5	31.1	1406.282
31-Oct-15	8461.7	855	1.1	302	0	285.6	296.1	312.0	30.7	1405.977
14-Mar-16	8464.6	855	1.0	299	0	283.1	293.7	309.7	30.5	1405.726

Zero Reading



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# Calibration Record

RST Instruments Ltd., 11545 Kingston St., Maple Ridge, British Columbia, Canada V2X 0Z5  
Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)  
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

## Vibrating Wire Piezometer

Customer: BMC Minerals  
Model: VW2100-3.0  
Serial Number: VW33426  
Mfg Number: 1515557  
Range: 3.0 MPa  
Temperature: 23.3 °C  
Barometric Pressure: 990.0 millibars  
Work Order Number: 207430  
Cable Length: 53 meters  
Cable Markings: 919395 m - 919448 m  
Cable Colour Code: Red / Black (Coil) Green / White (Thermistor)  
Cable Type: EL380004  
Thermistor Type: 3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8816	8817	8817	0.006	0.21	-0.01
0.6	8100	8100	8100	0.599	-0.03	0.02
1.2	7380	7380	7380	1.195	-0.17	0.01
1.8	6656	6656	6656	1.794	-0.20	-0.02
2.4	5925	5926	5926	2.398	-0.05	0.00
3.0	5190	5190	5190	3.007	0.23	0.01
Max. Error (%):					0.23	0.02

Linear Calibration Factor: C.F. = 0.00082740 MPa/B unit  
Regression Zero: At Calibration = 8824.2 B unit  
Temperature Correction Factor: Tk = 0.0006503 MPa/°C rise

Polynomial Gage Factors (MPa) A: -3.8493E-09 B: -0.0007349 C: 7.1183

Pressure is calculated with the following equations:

Linear:  $P(\text{MPa}) = C.F. (Li - Lc) - [Tk(Ti - Tc)] + [0.00010(Bi - Bc)]$

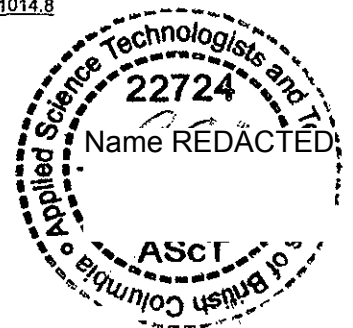
Polynomial:  $P(\text{MPa}) = A(Lc)^2 + BLc + C + Tk(Tc - Ti) - [0.00010(Bc - Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	<u>6-Jul-15</u>	<u>8821</u>	<u>23.2</u>	<u>1014.8</u>

Li, Lc = initial ( at installation) and current readings  
Ti, Tc = initial ( at installation) and current temperature, in °C  
Bi, Bc = initial ( at installation) and current barometric pressure readings, in millibars  
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts  
B units = Hz<sup>2</sup> / 1000 ie: 1700Hz = 2890 B units

Technician: Name REDACTED \_\_\_\_\_ Date: 6-Jul-15

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1



Document Number: ELL0143H





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# Calibration Record

RST Instruments Ltd., 11545 Kingston St., Maple Ridge, British Columbia, Canada V2X 0Z5  
Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)  
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

## Vibrating Wire Piezometer

Customer: BMC Minerals  
Model: VW2100-5.0-HD  
Serial Number: VW33431  
Mfg Number: 1516392  
Range: 5.0 MPa  
Temperature: 23.3 °C  
Barometric Pressure: 991.1 millibars  
Work Order Number: 207430  
Cable Length: 303 meters  
Cable Markings: 884740 m - 885045 m  
Cable Colour Code: Red / Black (Coil) Green / White (Thermistor)  
Cable Type: EL380004  
Thermistor Type: 3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8787	8787	8787	0.011	0.22	-0.02
1.0	8028	8027	8028	0.999	-0.01	0.03
2.0	7266	7266	7266	1.990	-0.20	-0.01
3.0	6499	6497	6498	2.989	-0.22	-0.02
4.0	5723	5722	5723	3.998	-0.04	0.01
5.0	4943	4943	4943	5.012	0.24	0.00
<b>Max. Error (%):</b>					<b>0.24</b>	<b>0.03</b>

Linear Calibration Factor: C.F. = 0.00130093 MPa/B unit  
Regression Zero: At Calibration = 8795.6 B unit  
Temperature Correction Factor: Tk = 0.0009171 MPa/°C rise

Polynomial Gage Factors (MPa) A: -6.1332E-09 B: -0.00121672 C: 11.1641

Pressure is calculated with the following equations:

Linear:  $P(\text{MPa}) = C.F. \cdot (L_i - L_c) - [Tk(T_i - T_c)] + [0.00010(B_i - B_c)]$

Polynomial:  $P(\text{MPa}) = A(L_c)^2 + B L_c + C + Tk(T_c - T_i) - [0.00010(B_c - B_i)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	<u>6-Jul-15</u>	<u>8797</u>	<u>23.3</u>	<u>1014.8</u>

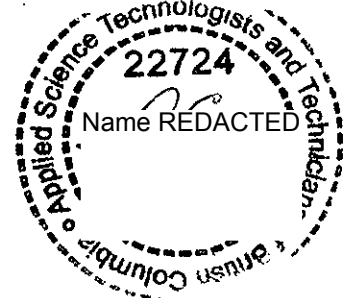
Li, Lc = initial ( at installation) and current readings  
Ti, Tc = initial ( at installation) and current temperature, in °C  
Bi, Bc = initial ( at installation) and current barometric pressure readings, in millibars  
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts  
B units = Hz<sup>2</sup> / 1000 ie: 1700Hz = 2890 B units

Name REDACTED

Technician

Date: 6-Jul-15

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1



Document Number: ELL0143H







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# Calibration Record

RST Instruments Ltd., 11545 Kingston St., Maple Ridge, British Columbia, Canada V2X 0Z5  
Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)  
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

## Vibrating Wire Piezometer

Customer: BMC Minerals  
Model: VW2100-3.0  
Serial Number: VW33430  
Mfg Number: 1517018  
Range: 3.0 MPa  
Temperature: 22.6 °C  
Barometric Pressure: 991.1 millibars  
Work Order Number: 207430  
Cable Length: 203 meters  
Cable Markings: 884535 m - 884739 m  
Cable Colour Code: Red / Black (Coil) Green / White (Thermistor)  
Cable Type: EL380004  
Thermistor Type: 3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8747	8747	8747	0.005	0.18	-0.02
0.6	8025	8025	8025	0.600	-0.01	0.03
1.2	7302	7302	7302	1.195	-0.16	-0.01
1.8	6574	6573	6574	1.795	-0.16	-0.01
2.4	5841	5841	5841	2.398	-0.06	-0.01
3.0	5103	5103	5103	3.006	0.20	0.01
Max. Error (%):					0.20	0.03

Linear Calibration Factor: C.F. = 0.00082350 MPa/B unit  
Regression Zero: At Calibration = 8753.4 B unit  
Temperature Correction Factor: Tk = 0.0004254 MPa/°C rise

Polynomial Gage Factors (MPa) A: -3.2686E-09 B: -0.00077823 C: 7.0567

Pressure is calculated with the following equations:

Linear:  $P(\text{MPa}) = C.F. \cdot (Li - Lc) - [Tk(Ti - Tc)] + [0.00010(Bi - Bc)]$

Polynomial:  $P(\text{MPa}) = A(Lc)^2 + BLc + C + Tk(Tc - Ti) - [0.00010(Bc - Bi)]$

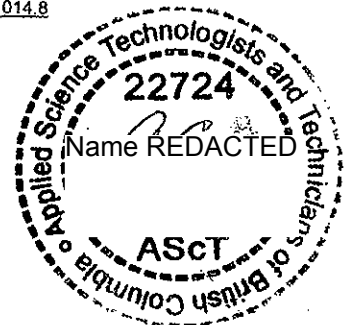
	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	<u>6-Jul-15</u>	<u>8747</u>	<u>23.4</u>	<u>1014.8</u>

Li, Lc = initial ( at installation) and current readings  
Ti, Tc = initial ( at installation) and current temperature, in °C  
Bi, Bc = initial ( at installation) and current barometric pressure readings, in millibars  
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts  
B units = Hz<sup>2</sup> / 1000 ie: 1700Hz = 2890 B units

Technician Name REDACTED

Date: 6-Jul-15

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# Calibration Record

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e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

## Vibrating Wire Piezometer

Customer: BMC Minerals  
Model: VW2100-3.0  
Serial Number: VW33429  
Mfg Number: 1517017  
Range: 3.0 MPa  
Temperature: 22.6 °C  
Barometric Pressure: 991.1 millibars  
Work Order Number: 207430  
Cable Length: 178 meters  
Cable Markings: 884356 m - 884534 m  
Cable Colour Code: Red / Black (Coil) Green / White (Thermistor)  
Cable Type: EL380004  
Thermistor Type: 3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8662	8663	8663	0.004	0.12	0.00
0.6	7964	7964	7964	0.599	-0.03	0.00
1.2	7263	7263	7263	1.197	-0.11	-0.01
1.8	6559	6559	6559	1.797	-0.10	0.00
2.4	5852	5852	5852	2.400	-0.01	0.02
3.0	5144	5144	5144	3.003	0.11	-0.01
Max. Error (%):					0.12	0.02

Linear Calibration Factor: C.F. = 0.00085253 MPa/B unit  
Regression Zero: At Calibration = 8666.9 B unit  
Temperature Correction Factor: Tk = 0.0005493 MPa/°C rise

Polynomial Gage Factors (MPa) A: -2.1977E-09 B: -0.00082218 C: 7.2872

Pressure is calculated with the following equations:

Linear:  $P(\text{MPa}) = C.F. \cdot (Li - Lc) - [Tk(Ti - Tc)] + [0.00010(Bi - Bc)]$

Polynomial:  $P(\text{MPa}) = A(Lc)^2 + BLc + C + Tk(Tc - Ti) - [0.00010(Bc - Bi)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	<u>6-Jul-15</u>	<u>8674</u>	<u>23.4</u>	<u>1014.8</u>

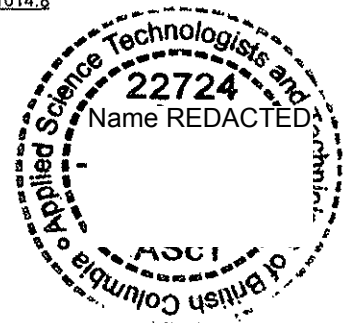
Li, Lc = initial ( at installation) and current readings  
Ti, Tc = initial ( at installation) and current temperature, in °C  
Bi, Bc = initial ( at installation) and current barometric pressure readings, in millibars  
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts  
B units = Hz<sup>2</sup> / 1000 ie: 1700Hz = 2890 B units

Name REDACTED

Technician: \_\_\_\_\_

Date: 6-Jul-15

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# Calibration Record

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Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)  
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

## Vibrating Wire Piezometer

Customer: BMC Minerals  
Model: VW2100-3.0  
Serial Number: VW33428  
Mfg Number: 1517016  
Range: 3.0 MPa  
Temperature: 22.6 °C  
Barometric Pressure: 991.1 millibars  
Work Order Number: 207430  
Cable Length: 128 meters  
Cable Markings: 884226 m - 884355 m  
Cable Colour Code: Red / Black (Coil) Green / White (Thermistor)  
Cable Type: EL380004  
Thermistor Type: 3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	9014	9015	9015	0.006	0.19	-0.02
0.6	8300	8300	8300	0.600	0.00	0.04
1.2	7585	7585	7585	1.194	-0.19	-0.02
1.8	6863	6863	6863	1.795	-0.18	-0.01
2.4	6136	6137	6137	2.399	-0.04	0.00
3.0	5405	5406	5406	3.006	0.21	0.00
Max. Error (%):					0.21	0.04

Linear Calibration Factor: C.F. = 0.00083142 MPa/B unit  
Regression Zero: At Calibration = 9021.5 B unit  
Temperature Correction Factor: Tk = 0.0003601 MPa/°C rise

Polynomial Gage Factors (MPa) A: -3.6629E-09 B: -0.00077860 C: 7.3158

Pressure is calculated with the following equations:

Linear:  $P(\text{MPa}) = C.F. \cdot (Li - Lc) - [Tk(Ti - Tc)] + \{0.00010(Bi - Bc)\}$

Polynomial:  $P(\text{MPa}) = A(Lc)^2 + B.Lc + C + Tk(Tc - Ti) - \{0.00010(Bc - Bi)\}$

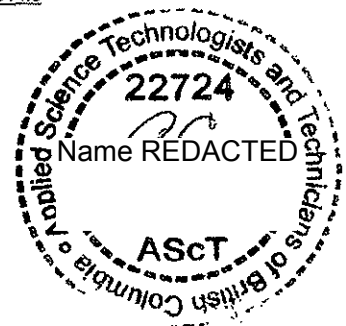
	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	<u>6-Jul-15</u>	<u>9014</u>	<u>23.5</u>	<u>1014.8</u>

Li, Lc = initial ( at installation) and current readings  
Ti, Tc = initial ( at installation) and current temperature, in °C  
Bi, Bc = initial ( at installation) and current barometric pressure readings, in millibars  
B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts  
B units = Hz<sup>2</sup> / 1000 ie: 1700Hz = 2890 B units

Name REDACTED

Technician: \_\_\_\_\_ Date: 6-Jul-15

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1



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# Calibration Record

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Tel: 604 540 1100 • Fax: 604 540 1005 • Toll Free: 1 800 665 5599 (North America only)  
e-mail: info@rstinstruments.com • Website: www.rstinstruments.com

## Vibrating Wire Piezometer

Customer: BMC Minerals  
Model: VW2100-3.0  
Serial Number: VW33427  
Mfg Number: 1515558  
Range: 3.0 MPa  
Temperature: 23.3 °C  
Barometric Pressure: 990.0 millibars  
Work Order Number: 207430  
Cable Length: 53 meters  
Cable Markings: 919449 m - 919501 m  
Cable Colour Code: Red / Black (Coil) Green / White (Thermistor)  
Cable Type: EL380004  
Thermistor Type: 3 kΩ

Applied Pressure (MPa)	First Reading (B units)	Second Reading (B units)	Average Reading (B units)	Calculated Linear (MPa)	Linearity Error (% FS)	Polynomial Error (% FS)
0.0	8830	8830	8830	0.008	0.26	0.00
0.6	8114	8114	8114	0.599	-0.05	0.00
1.2	7393	7393	7393	1.194	-0.21	-0.01
1.8	6666	6666	6666	1.794	-0.21	0.00
2.4	5933	5933	5933	2.399	-0.05	0.01
3.0	5195	5195	5195	3.008	0.25	0.00
Max. Error (%):					0.26	0.01

Linear Calibration Factor: C.F. = 0.00082528 MPa/B unit  
Regression Zero: At Calibration = 8839.3 B unit  
Temperature Correction Factor: Tk = 0.0007823 MPa/°C rise

Polynomial Gage Factors (MPa) A: -4.4055E-09 B: -0.00076349 C: 7.0851

Pressure is calculated with the following equations:

Linear:  $P(\text{MPa}) = C.F. (L_i - L_c) - [Tk(T_i - T_c)] + [0.00010(B_i - B_c)]$

Polynomial:  $P(\text{MPa}) = A(L_c)^2 + BL_c + C + Tk(T_c - T_i) - [0.00010(B_c - B_i)]$

	Date (dd/mm/yy)	VW Readout Pos. B (Li)	Temp °C (Ti)	Baro (Bi)
Shipped Zero Readings:	6-Jul-15	8833	23.2	1014.8

$L_i, L_c$  = initial ( at installation) and current readings

$T_i, T_c$  = initial ( at installation) and current temperature, in °C

$B_i, B_c$  = initial ( at installation) and current barometric pressure readings, in millibars

B units = B scale output of VW 2102, VW 2104, VW 2106 and DT 2011 readouts

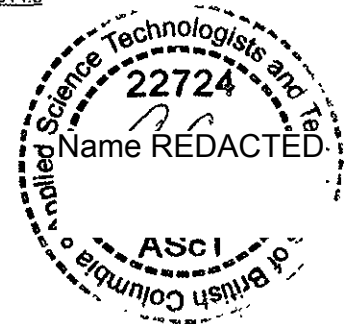
B units =  $\text{Hz}^2 / 1000$  ie:  $1700\text{Hz} = 2890$  B units

Name REDACTED

Technician: \_\_\_\_\_

Date: 6-Jul-15

This instrument has been calibrated using standards traceable to the NIST in compliance with ANSI Z540-1



Document Number: ELL0143H



MIG0106B

# APPENDIX D

## HYDRAULIC RESPONSE TEST DATA ANALYSIS

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## Field Procedure and Interpretation of Hydraulic Response Test Data

The following field procedure was followed for all hydraulic response tests:

- The static water level was measured prior to initiating the hydraulic response test;
- A pressure transducer/datalogger was installed in the well to record total pressure and water temperature during the test at a recording frequency of 1 s to 10 s, depending on the rate of recovery;
- Falling head test:
  - A solid slug consisting of a 1 m or 2 m long solid 1-inch diameter PVC pipe filled with sand (slug volume of 0.9 L or 1.8 L, respectively) was lowered quickly into the well and fully submerged to create a quasi-instantaneous rise in water level;
  - The water level recovery was recorded by the pressure transducer/datalogger.
- Rising head test:
  - After the water level had fully recovered, the slug was quickly withdrawn from the well to cause a quasi-instantaneous drop in water level;
  - Alternatively, a bailer was used to remove a slug of water (volume of 1 L) to cause a quasi-instantaneous drop in water level;
  - The water level recovery was recorded by the pressure transducer/datalogger.
- At the end of the testing sequence, the pressure/transducer datalogger was retrieved from the well and the data were downloaded onto a field laptop.

The hydraulic conductivity  $K$  of the aquifer in the vicinity of the monitoring well was inferred from the recovery data using the Bouwer and Rice (1976) method. The hydraulic conductivity is inferred from the test data as follows:

$$K = \frac{r^2 \ln\left(\frac{R_{cont}}{R}\right)}{2L} \cdot \frac{1}{t} \cdot \ln\left(\frac{h_0}{h_t}\right)$$

where

- $r$  – casing radius
- $R$  – radius measured from centre of well to undisturbed aquifer material (borehole radius)
- $R_{cont}$  – contributing radial distance over which the difference in head,  $h_0$ , is dissipated in the aquifer
- $L$  – the length of the screen
- $b$  – length from bottom of well screen to top of the aquifer
- $h_t$  – displacement as a function of time ( $h_t/h_0$  must always be less than one, i.e. water level must always approach the static water level as time increases)
- $h_0$  – initial displacement

Slug test models including the Bouwer and Rice (1976) method neglect storage in the formation and therefore predict that the logarithm of water level change should be a linear function of time. In reality, all formations are compressible to some extent and have some storage capacity. Storage in the formation is manifested by curvature in the data in semilog space. This introduces complications in the interpretation of some of the data sets collected at the site where the curvature in the recovery data makes it difficult to identify an unambiguous straight line fit. For the Bouwer and Rice analysis, Butler (1998) recommends that the straight line be fitted to the interval  $\Delta H/\Delta H_0 = 0.2$  to  $\Delta H/\Delta H_0 = 0.3$  which is judged to be the most representative portion of the response.



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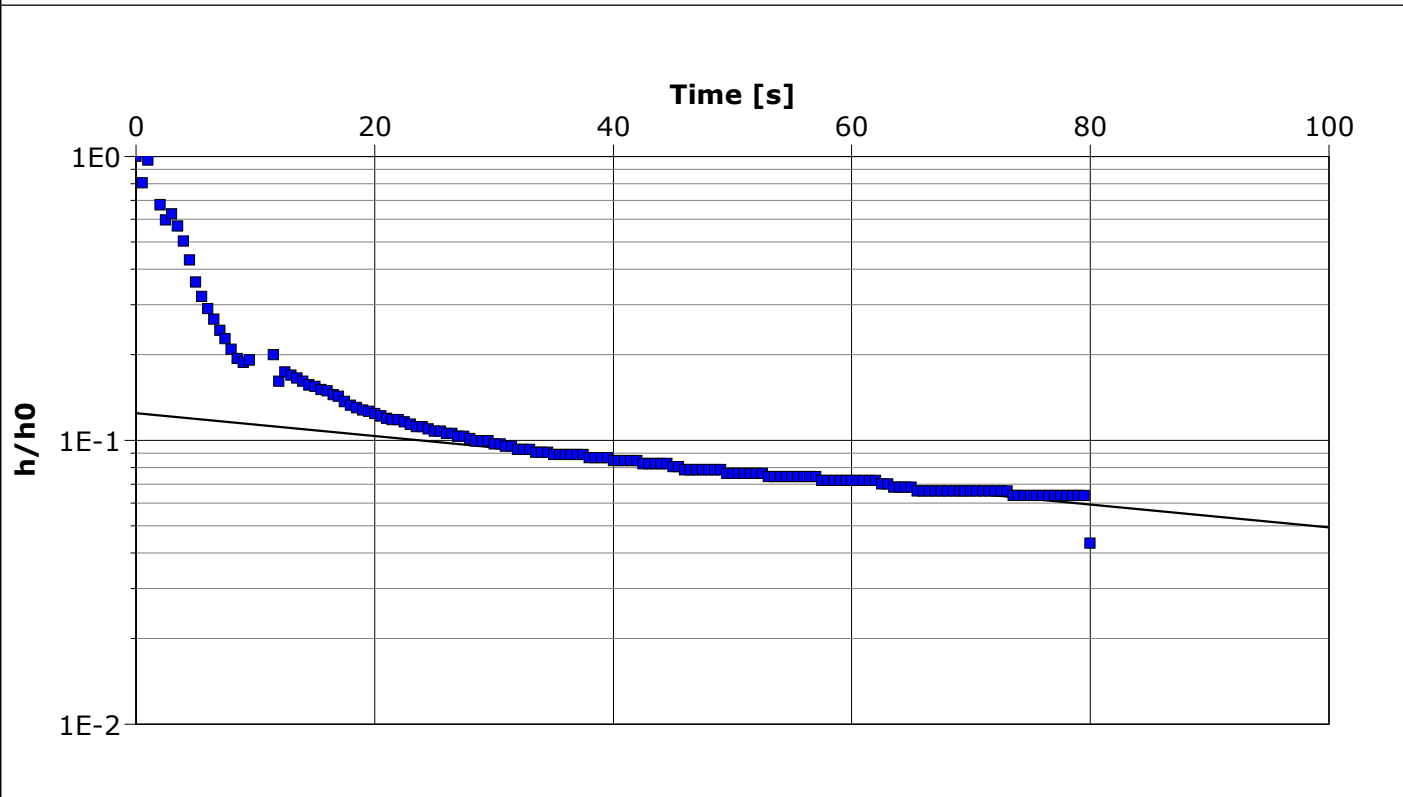
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-01 Slug Test 1	Test Well: MW15-01
Test Conducted by: ER/KR		Test Date: 9/1/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/2/2015
Aquifer Thickness: 10.71 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-01	$7.00 \times 10^{-7}$





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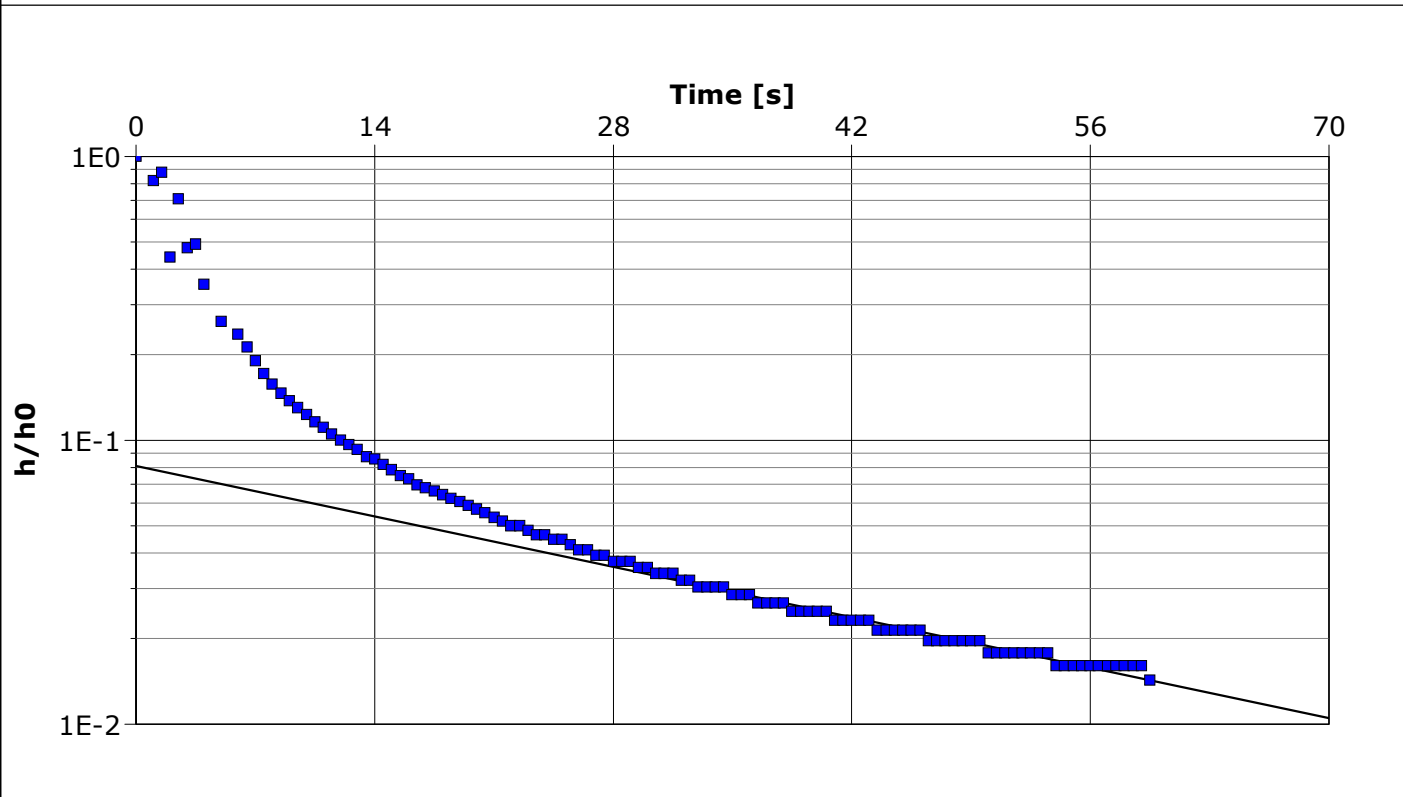
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-01 Slug Test 2	Test Well: MW15-01
Test Conducted by: ER/KR		Test Date: 9/1/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/2/2015
Aquifer Thickness: 10.71 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-01	$2.20 \times 10^{-6}$



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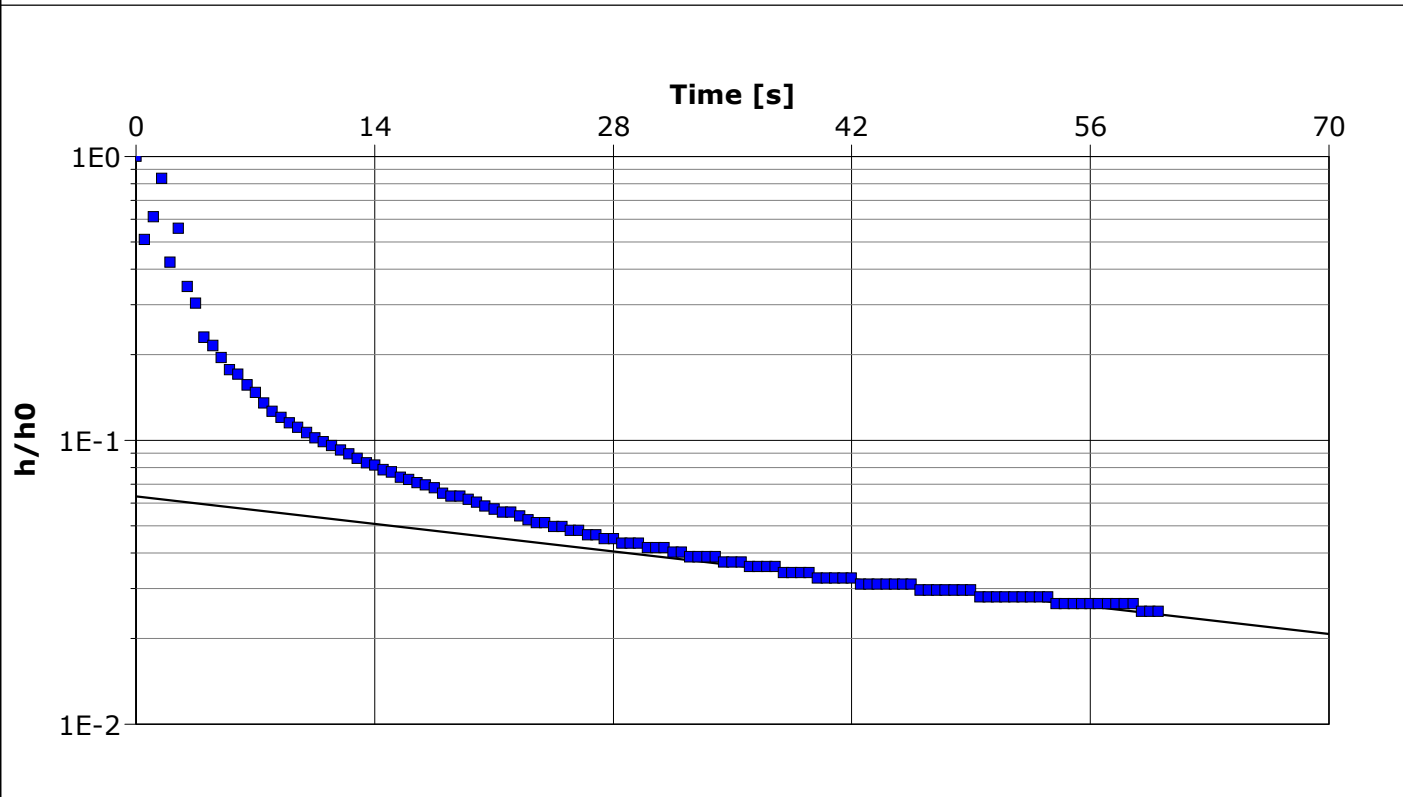
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-01 Slug Test 3	Test Well: MW15-01
Test Conducted by: ER/KR		Test Date: 9/1/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/2/2015
Aquifer Thickness: 10.71 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-01	$1.20 \times 10^{-6}$	



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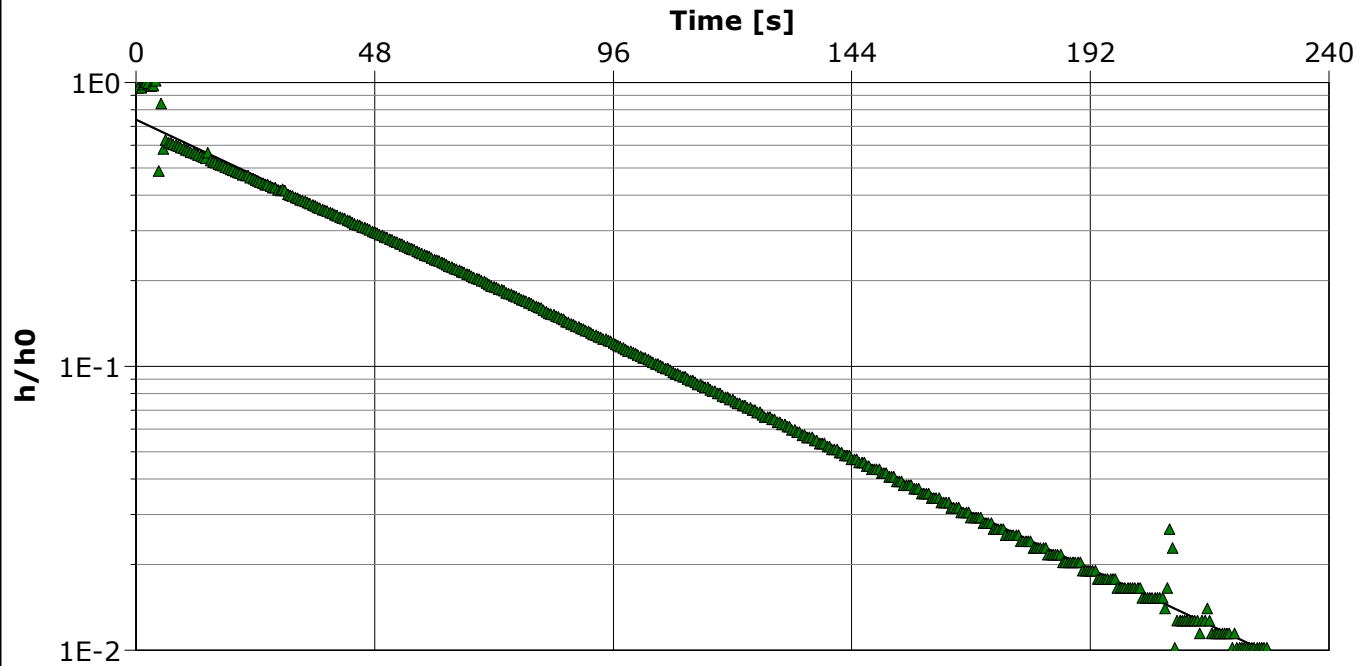
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-03D Slug Test 1	Test Well: MW15-03D
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/2/2015
Aquifer Thickness: 13.84 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-03D	$1.98 \times 10^{-6}$	



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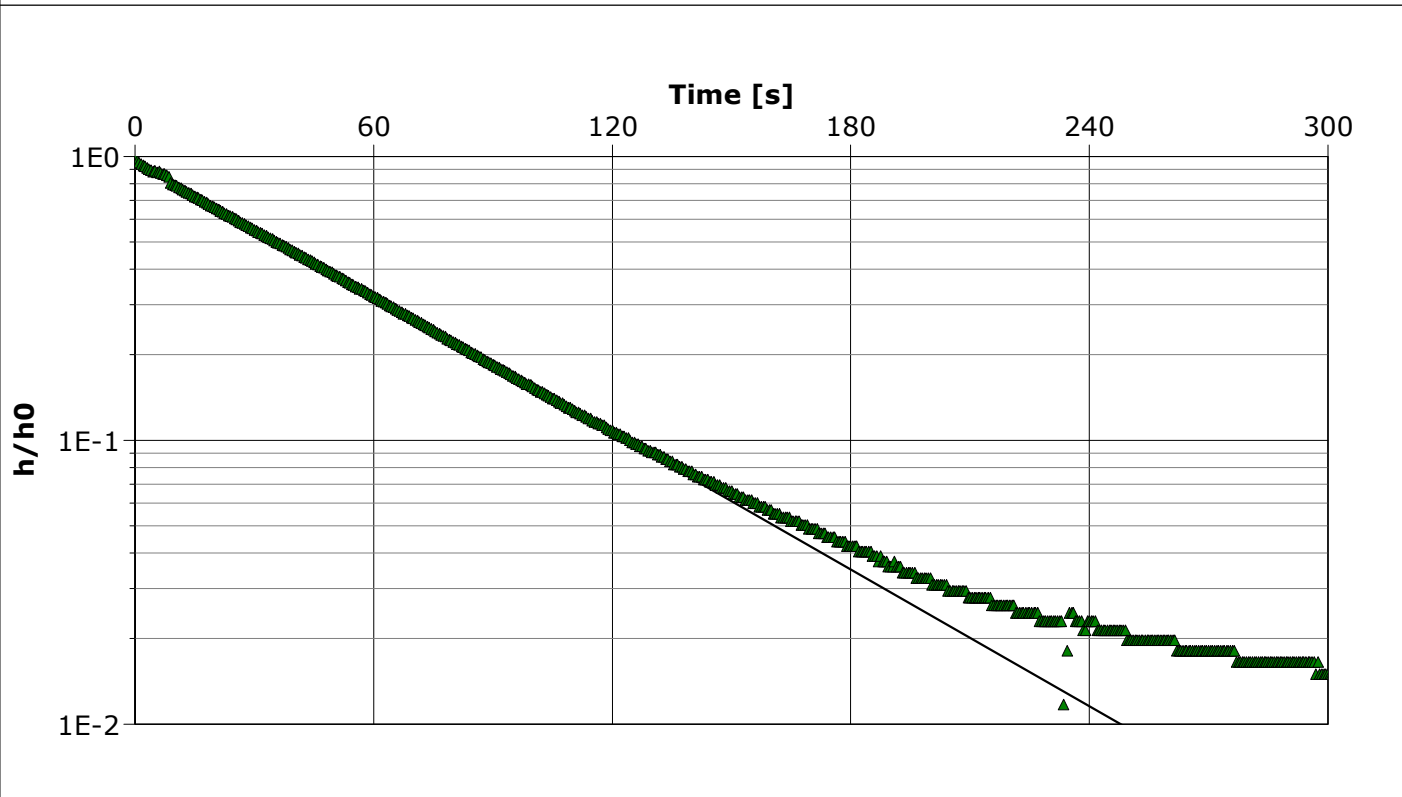
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-03D Slug Test 2	Test Well: MW15-03D
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/2/2015
Aquifer Thickness: 13.84 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-03D	$1.93 \times 10^{-6}$	



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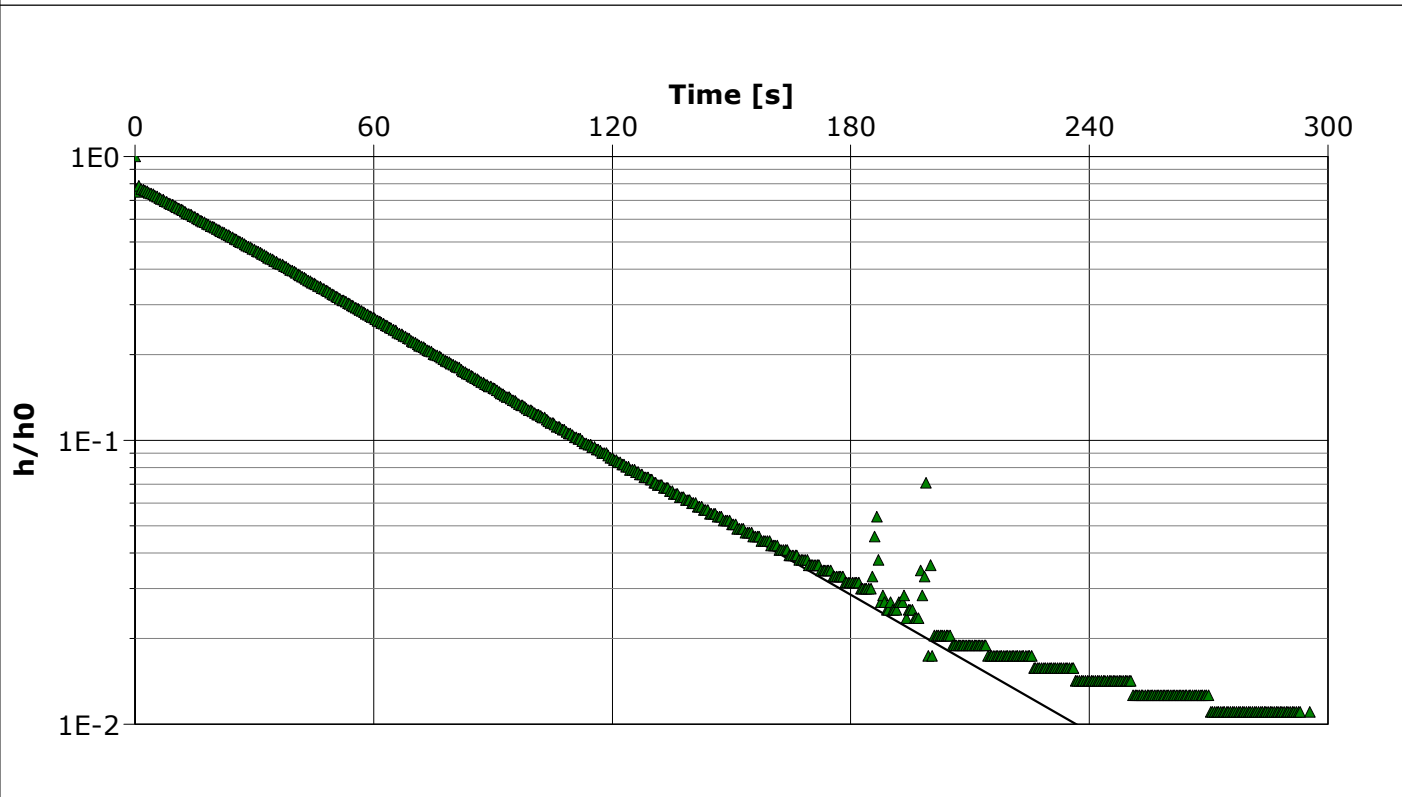
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-03D Slug Test 3	Test Well: MW15-03D
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/2/2015
Aquifer Thickness: 13.84 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-03D	$1.93 \times 10^{-6}$	



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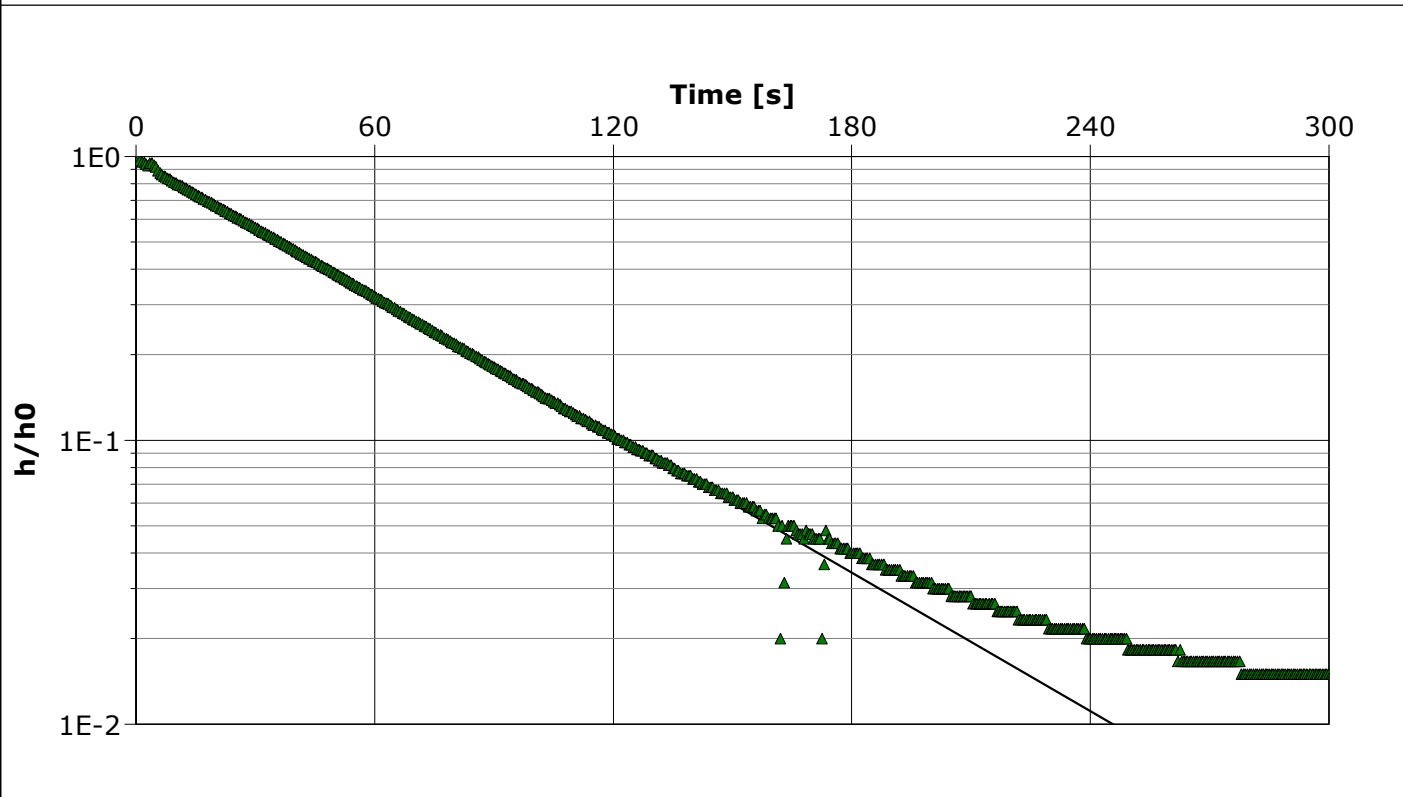
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-03D Slug Test 4	Test Well: MW15-03D
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/2/2015
Aquifer Thickness: 13.84 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-03D	$1.95 \times 10^{-6}$	



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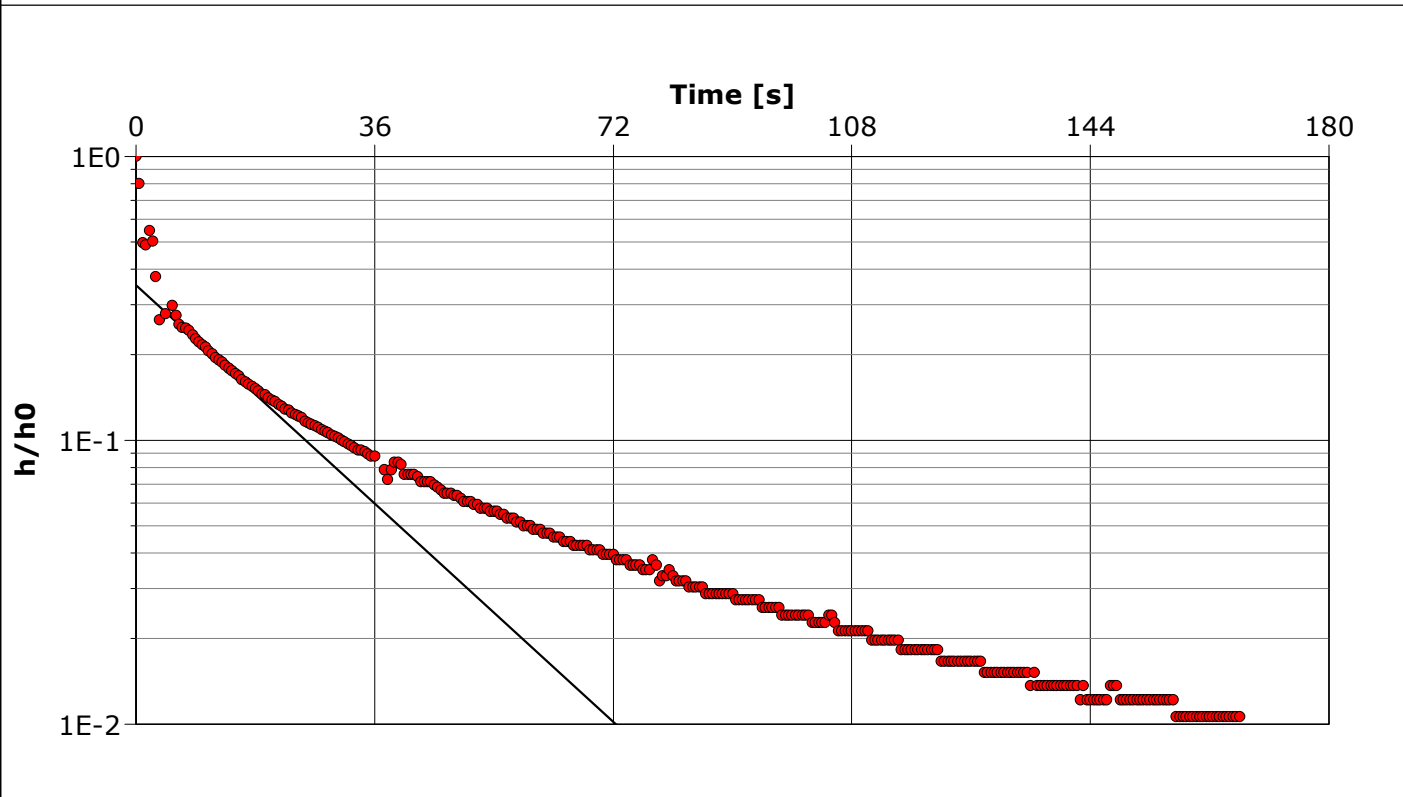
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-03S Slug Test 1	Test Well: MW15-03S
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 3.60 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-03S	$8.85 \times 10^{-6}$	



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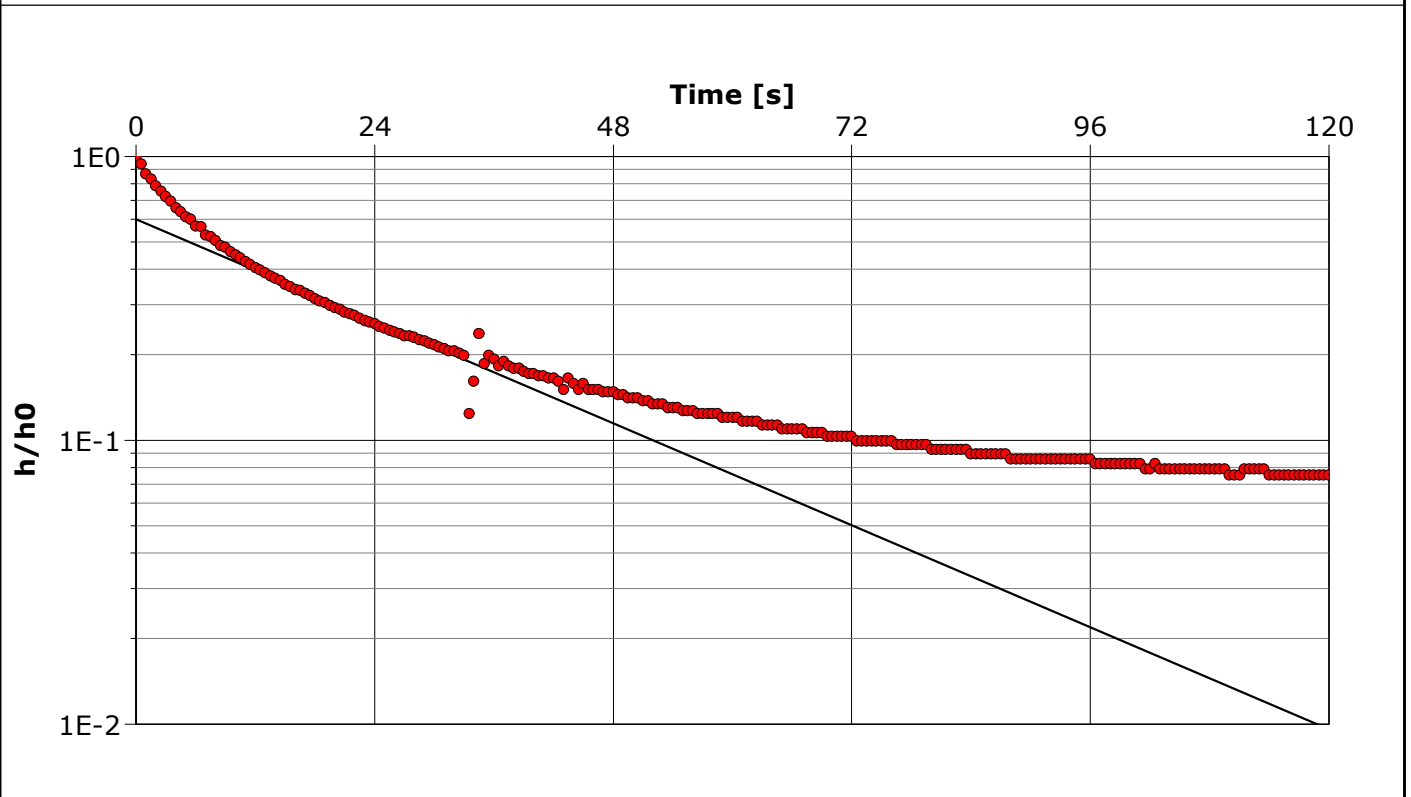
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-03S Slug Test 2	Test Well: MW15-03S
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 3.60 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-03S	$6.20 \times 10^{-6}$	





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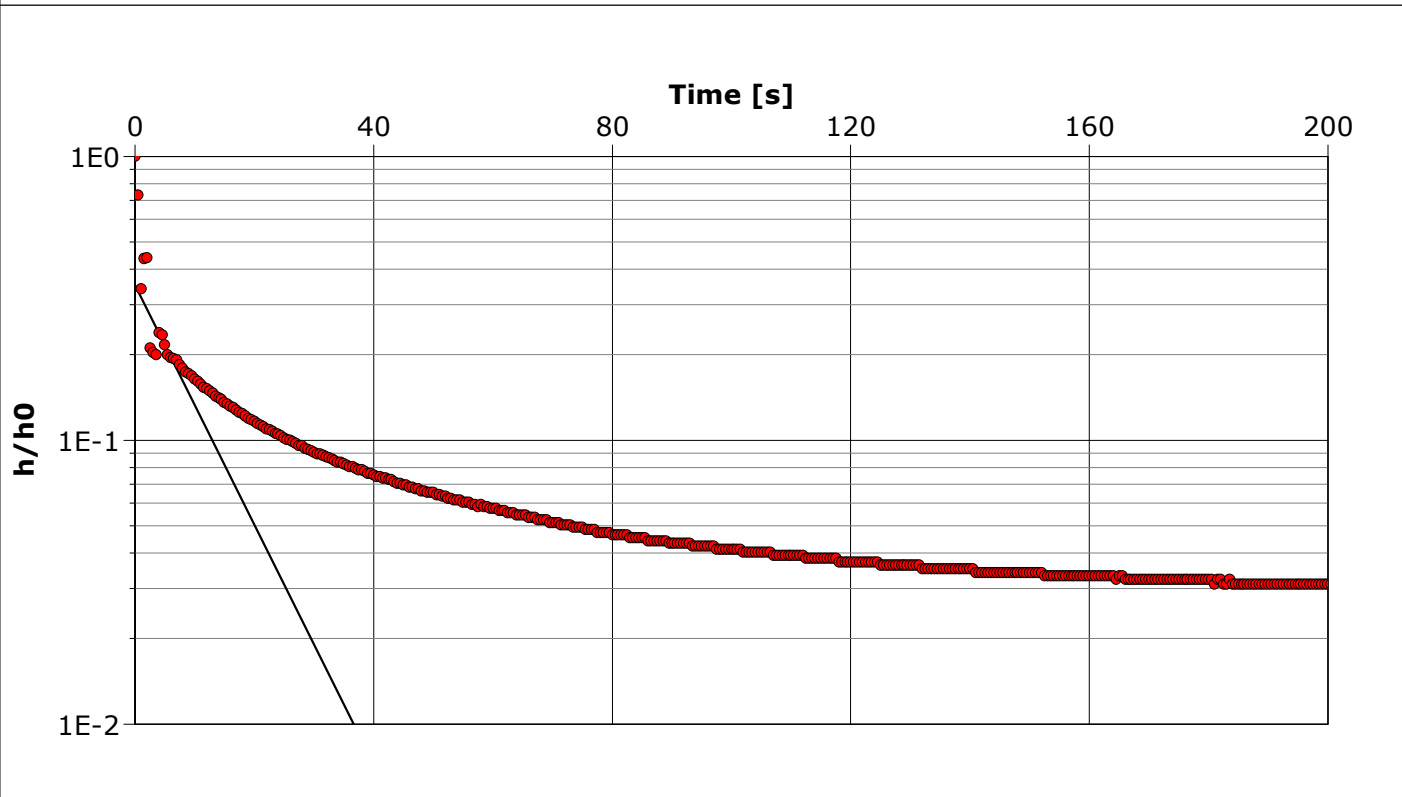
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-03S Slug Test 3	Test Well: MW15-03S
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 3.60 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-03S	$1.75 \times 10^{-5}$



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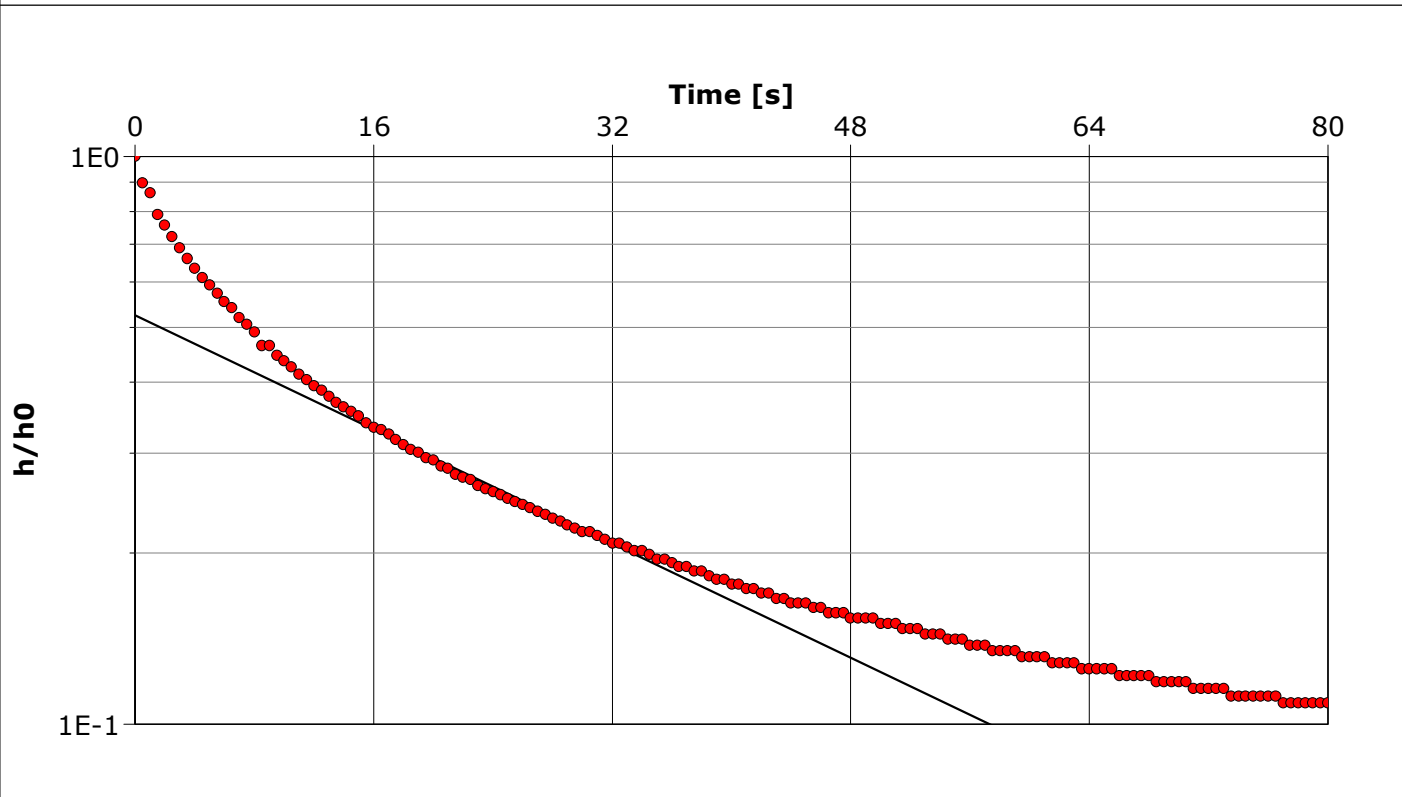
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-03S Slug Test 4	Test Well: MW15-03S
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 3.60 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-03S	$5.20 \times 10^{-6}$



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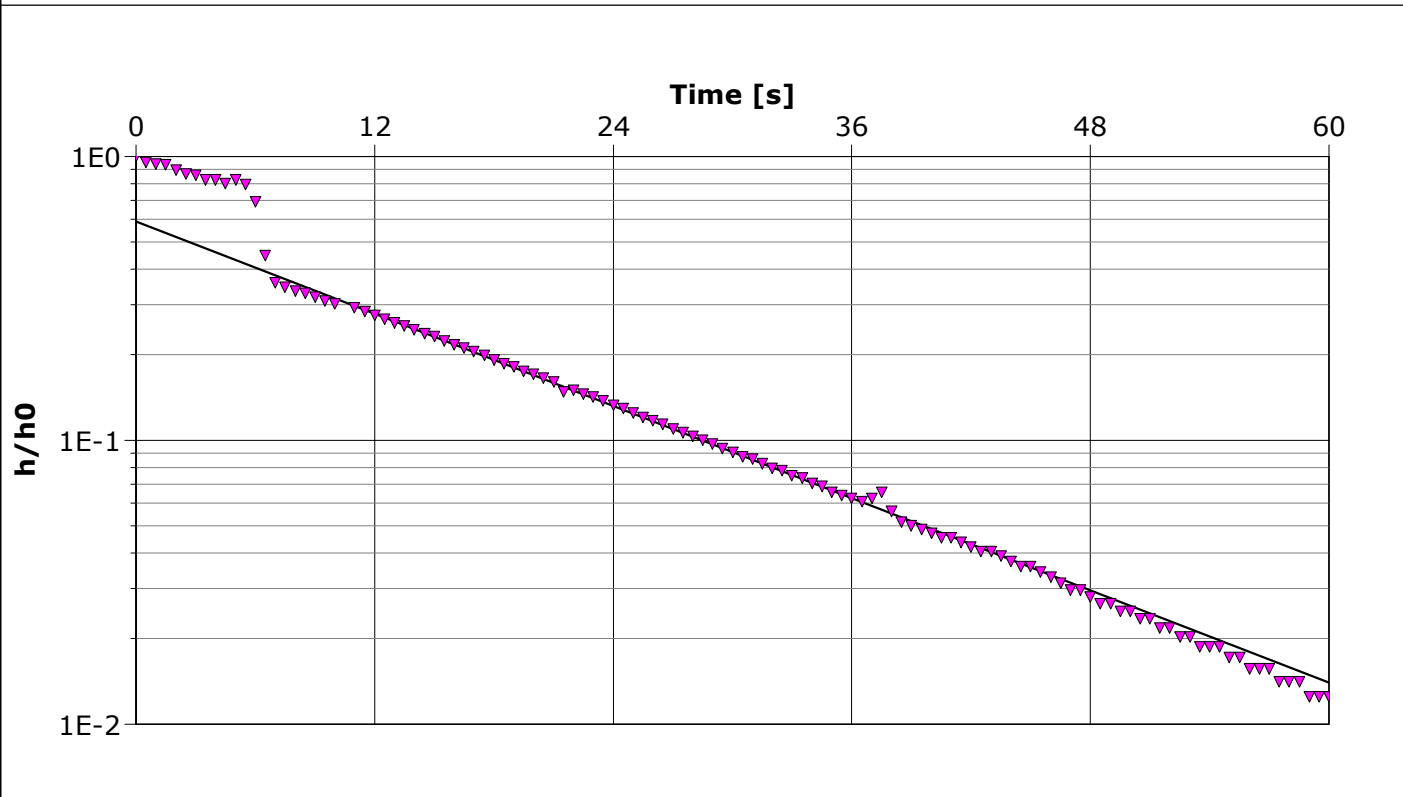
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-04S Slug Test 1	Test Well: MW15-04S
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 7.29 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-04S	$1.12 \times 10^{-5}$	



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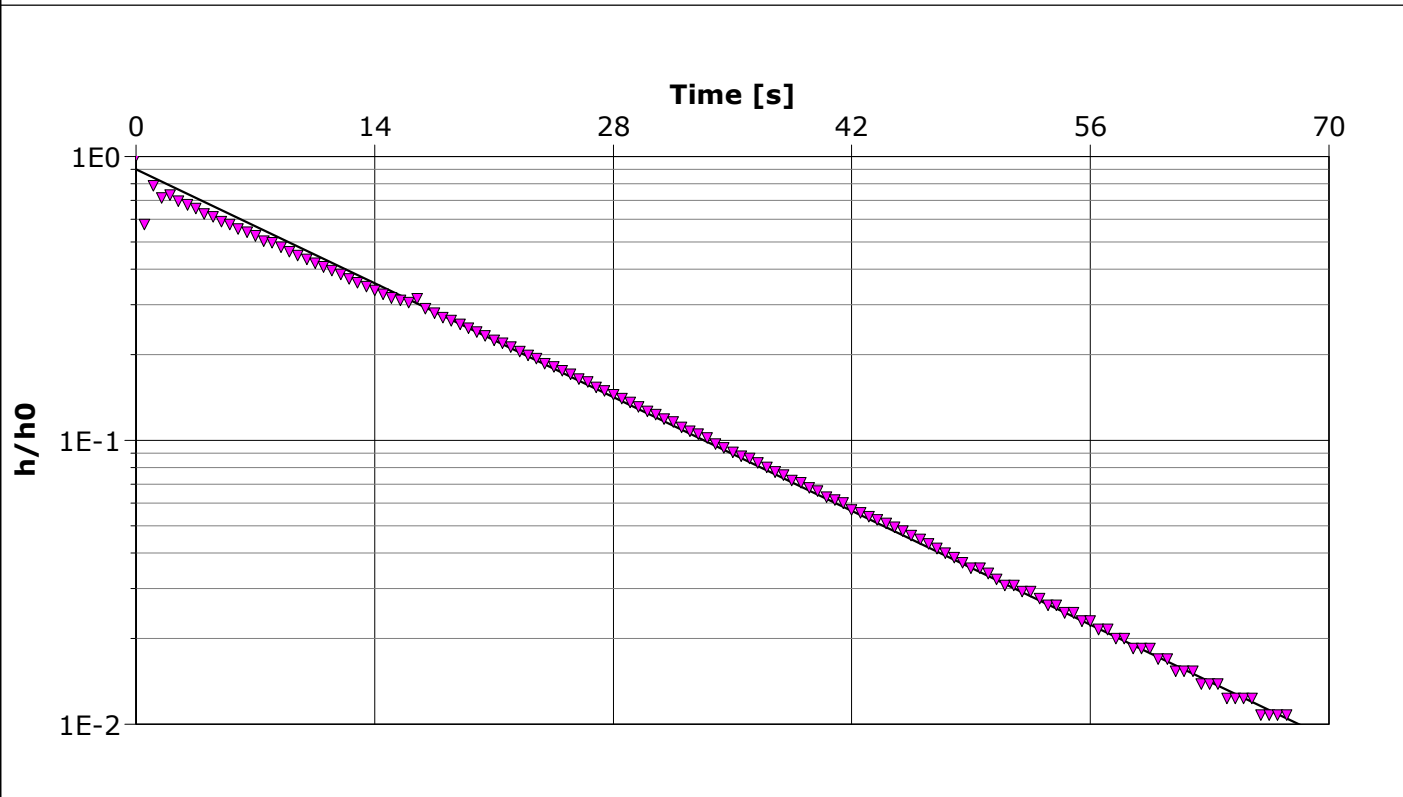
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-04S Slug Test 2	Test Well: MW15-04S
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 7.29 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-04S	$1.19 \times 10^{-5}$	



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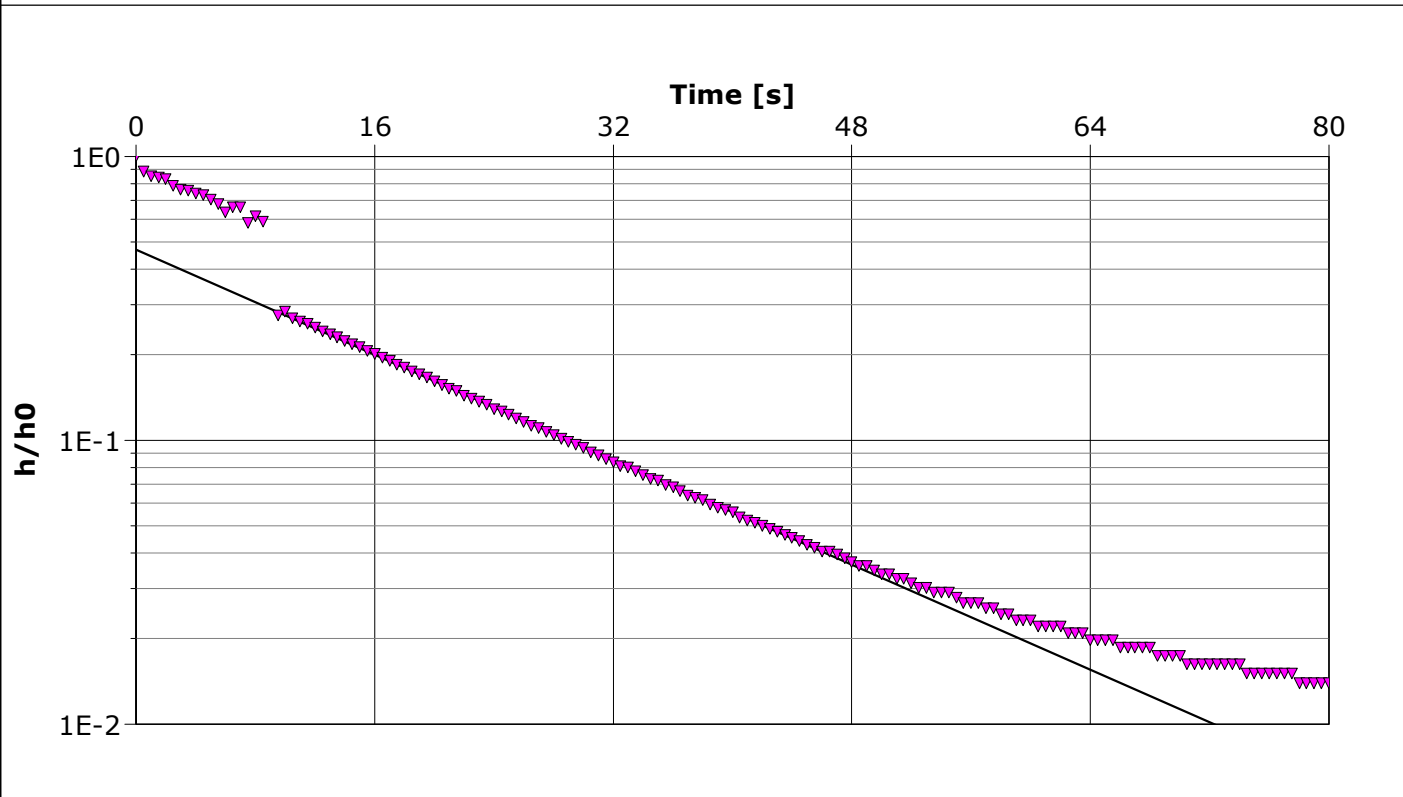
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-04S Slug Test 3	Test Well: MW15-04S
Test Conducted by: ER/KR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 7.29 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-04S	$9.58 \times 10^{-6}$	



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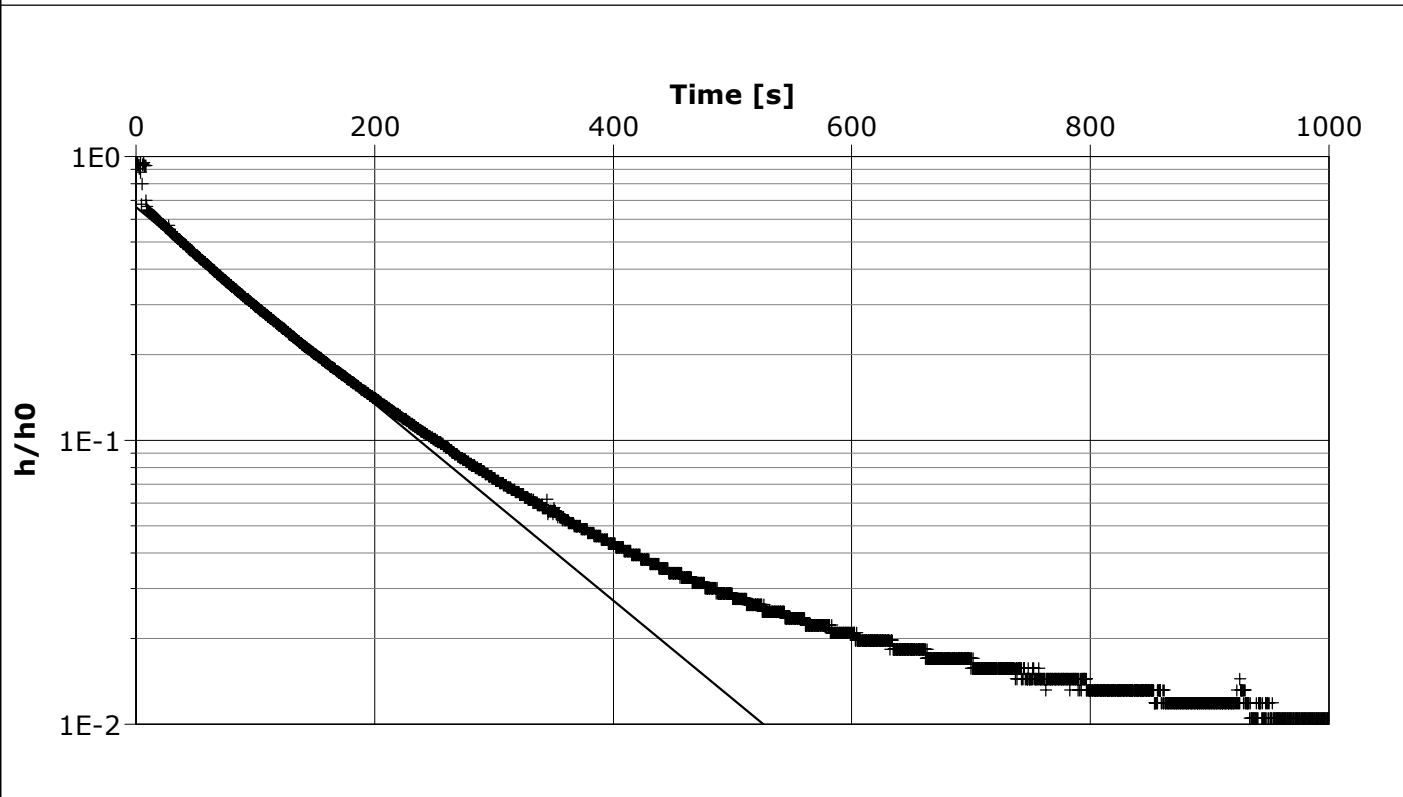
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-04D Slug Test 1	Test Well: MW15-04D
Test Conducted by: ER/KRR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 24.84 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-04D	$8.33 \times 10^{-7}$	



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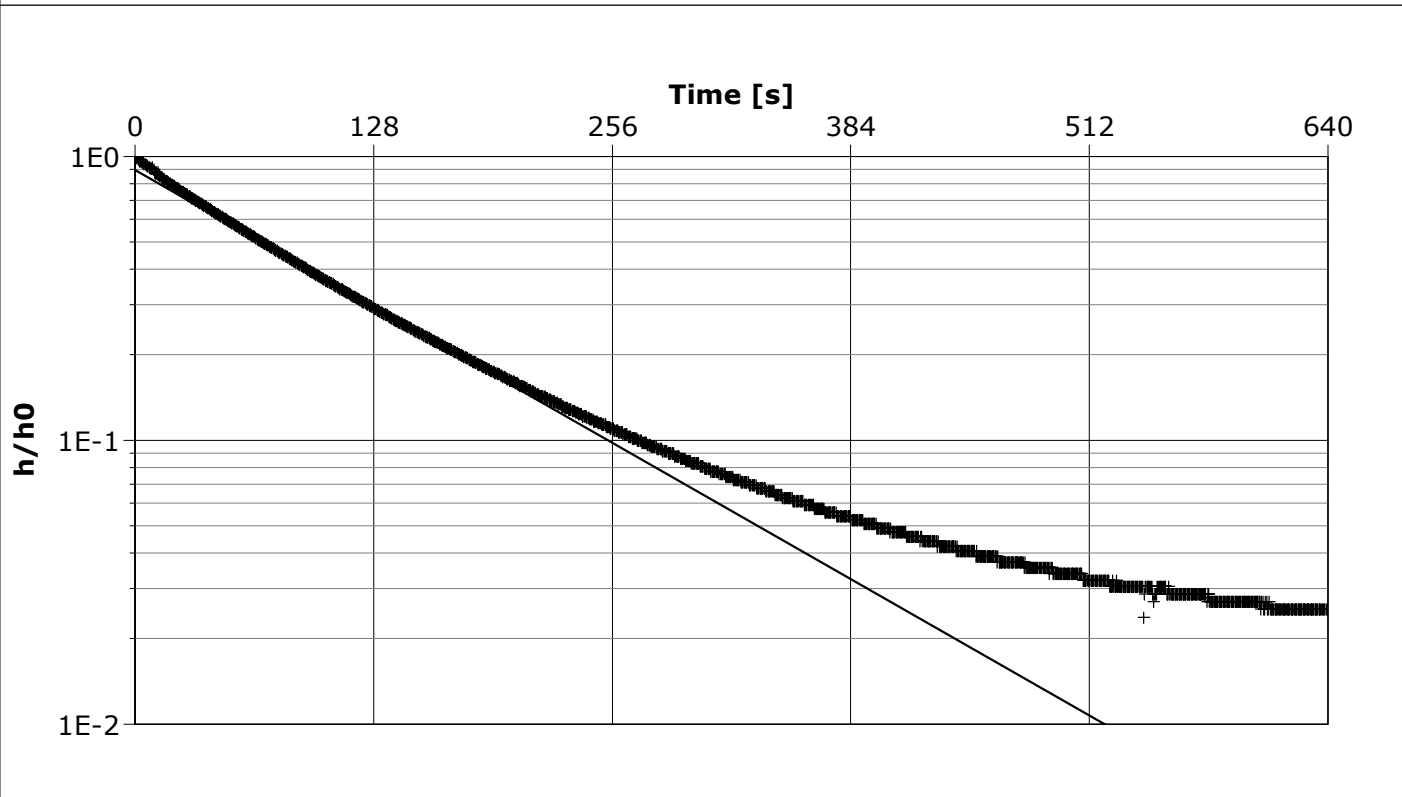
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Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-04D Slug Test 2	Test Well: MW15-04D
Test Conducted by: ER/KRR		Test Date: 9/4/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 24.84 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-04D	$9.02 \times 10^{-7}$	



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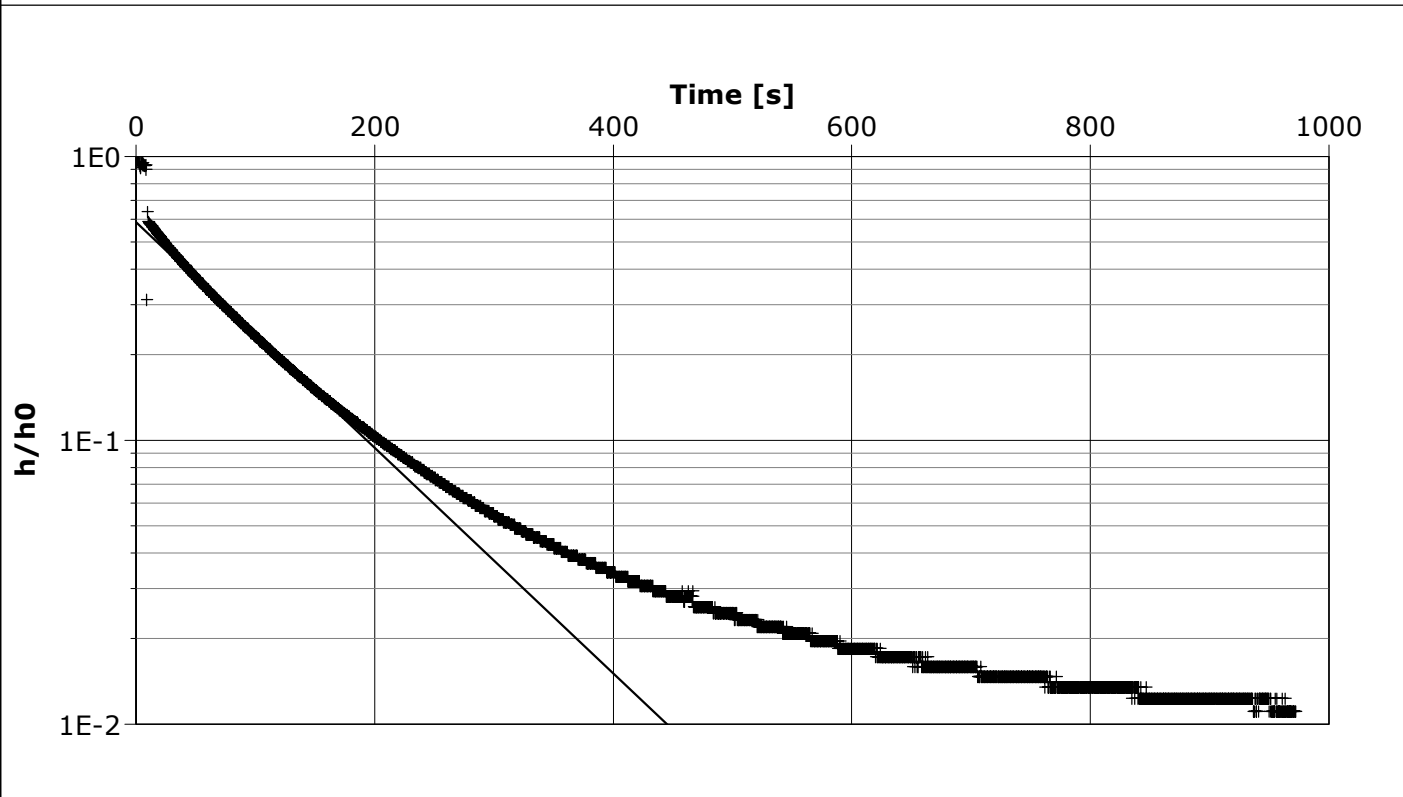
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Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-04D Slug Test 3	Test Well: MW15-04D
Test Conducted by: ER/KRR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 24.84 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-04D	$9.55 \times 10^{-7}$	





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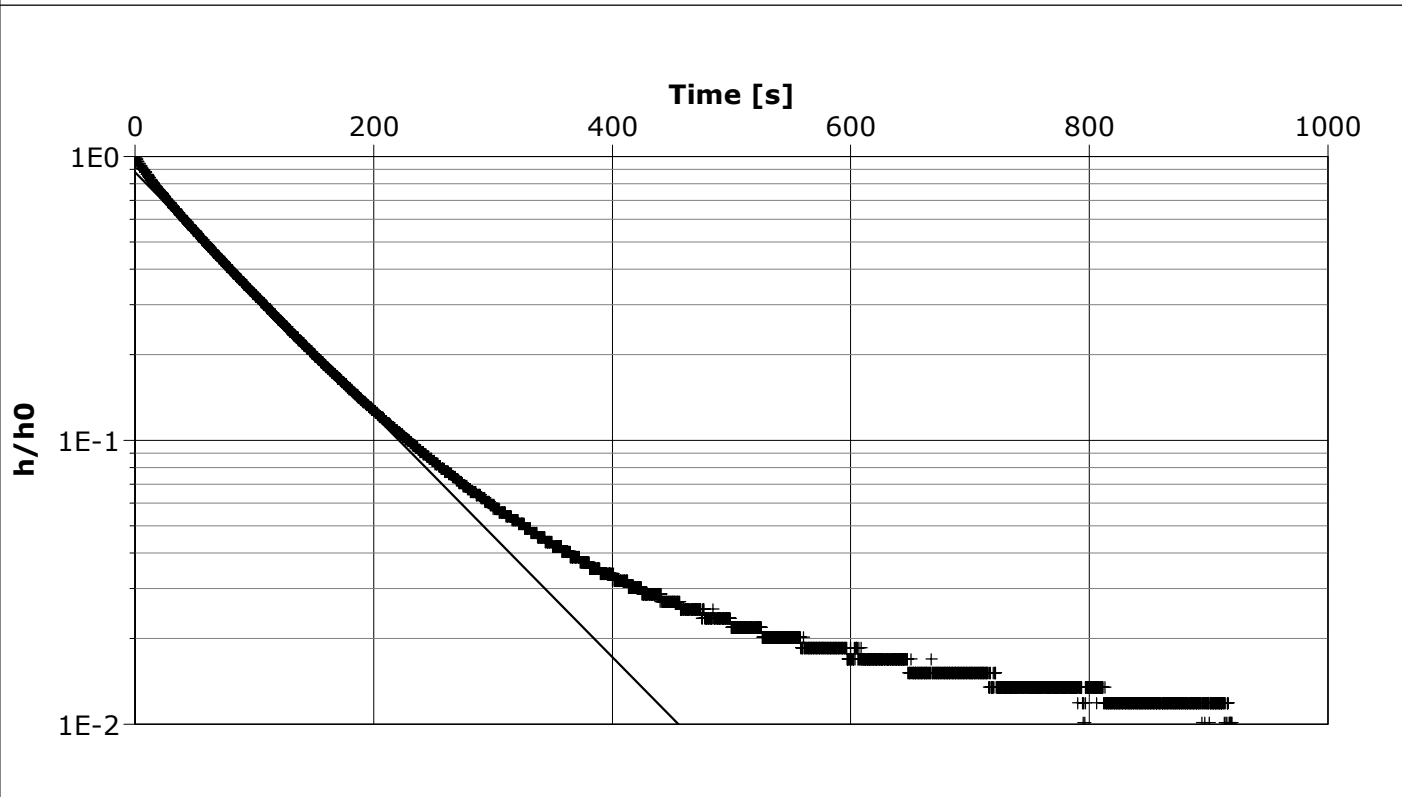
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-04D Slug Test 4	Test Well: MW15-04D
Test Conducted by: ER/KRR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 24.84 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-04D	$1.03 \times 10^{-6}$	



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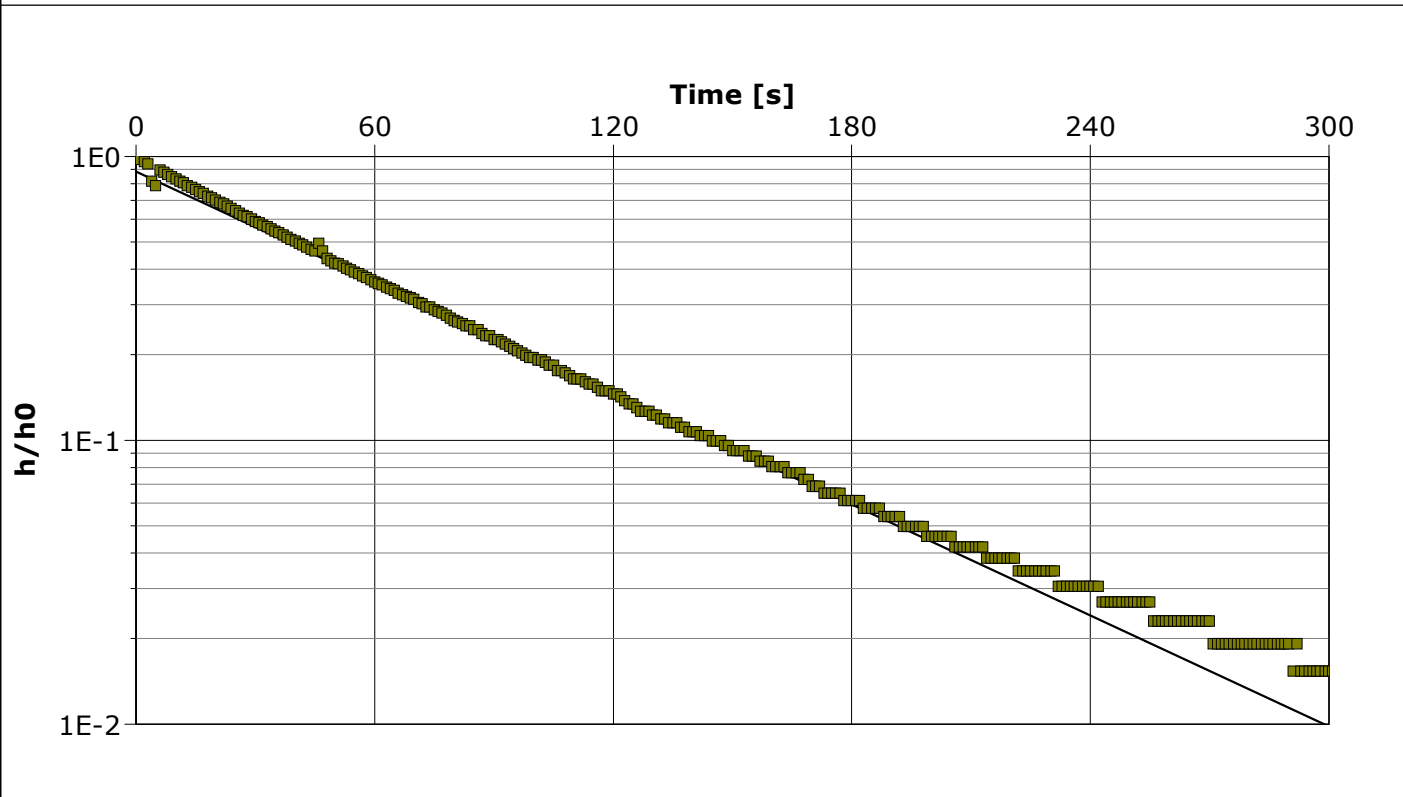
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-05D Slug Test 1	Test Well: MW15-05D
Test Conducted by: ER/KRR		Test Date: 9/7/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/3/2015
Aquifer Thickness: 11.17 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-05D	$1.29 \times 10^{-6}$	



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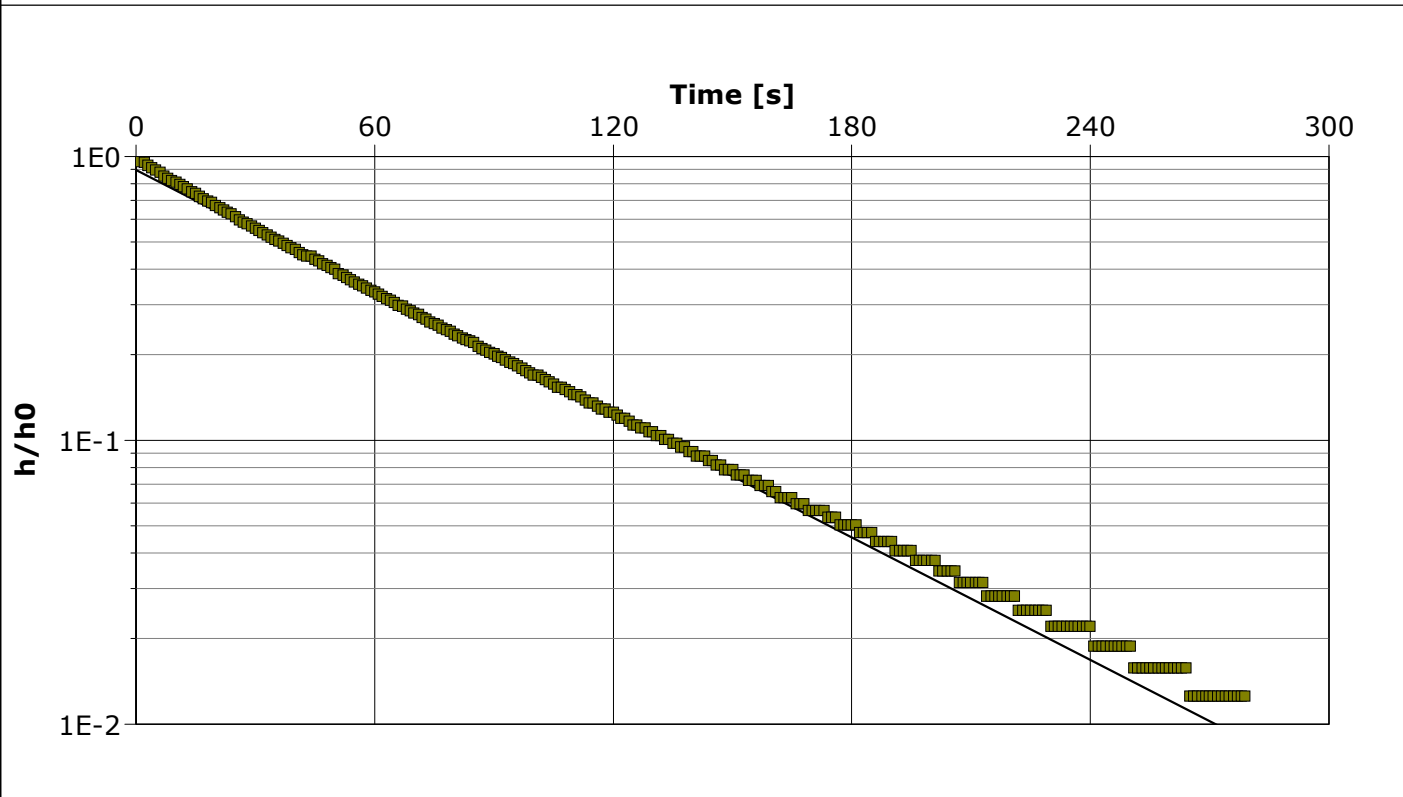
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-05D Slug Test 2	Test Well: MW15-05D
Test Conducted by: ER/KRR		Test Date: 9/7/2015
Analysis Performed by:	New analysis 1	Analysis Date: 10/5/2015
Aquifer Thickness: 11.17 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-05D	$1.43 \times 10^{-6}$	

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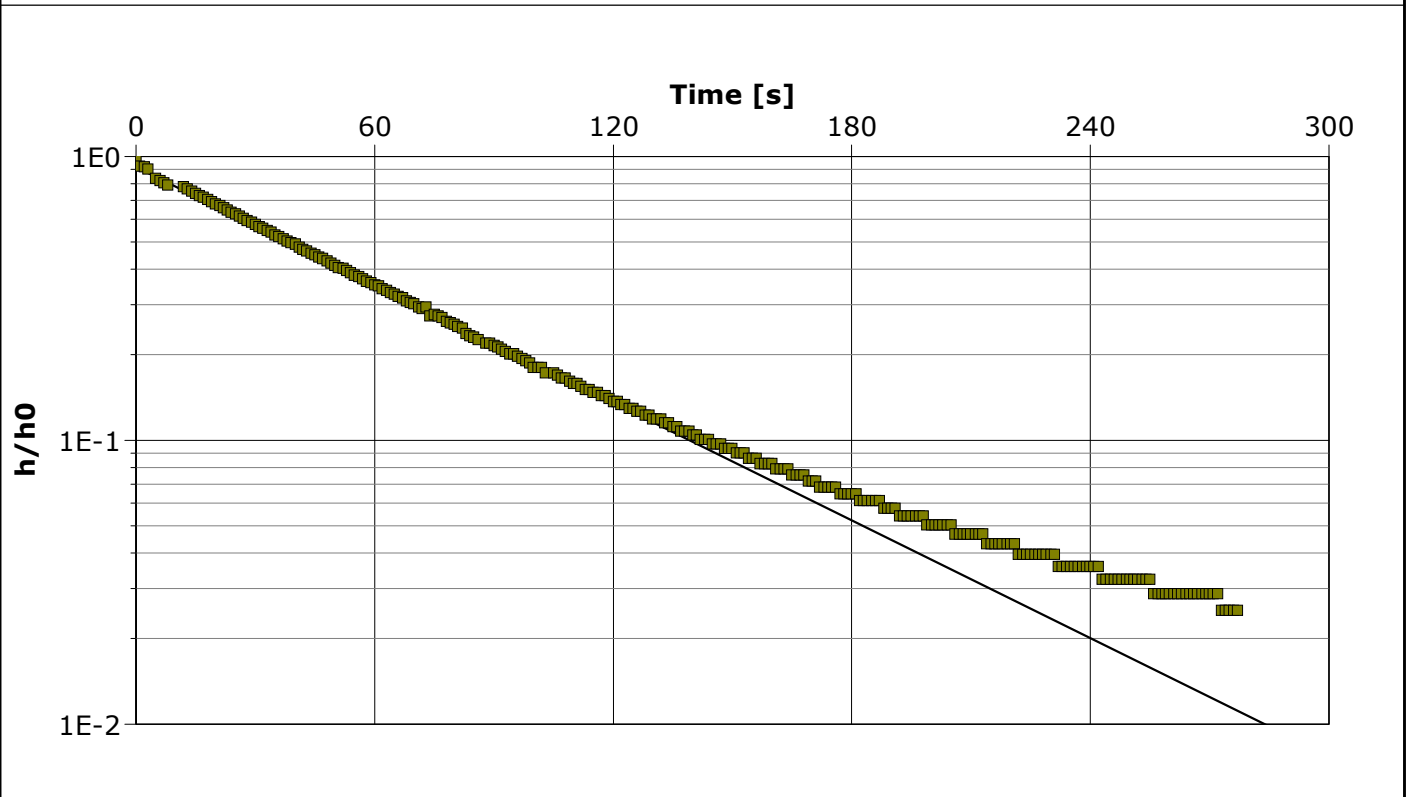
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Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-05D Slug Test 3	Test Well: MW15-05D
Test Conducted by: ER/KRR		Test Date: 9/7/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 10/5/2015
Aquifer Thickness: 11.17 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-05D	$1.37 \times 10^{-6}$	

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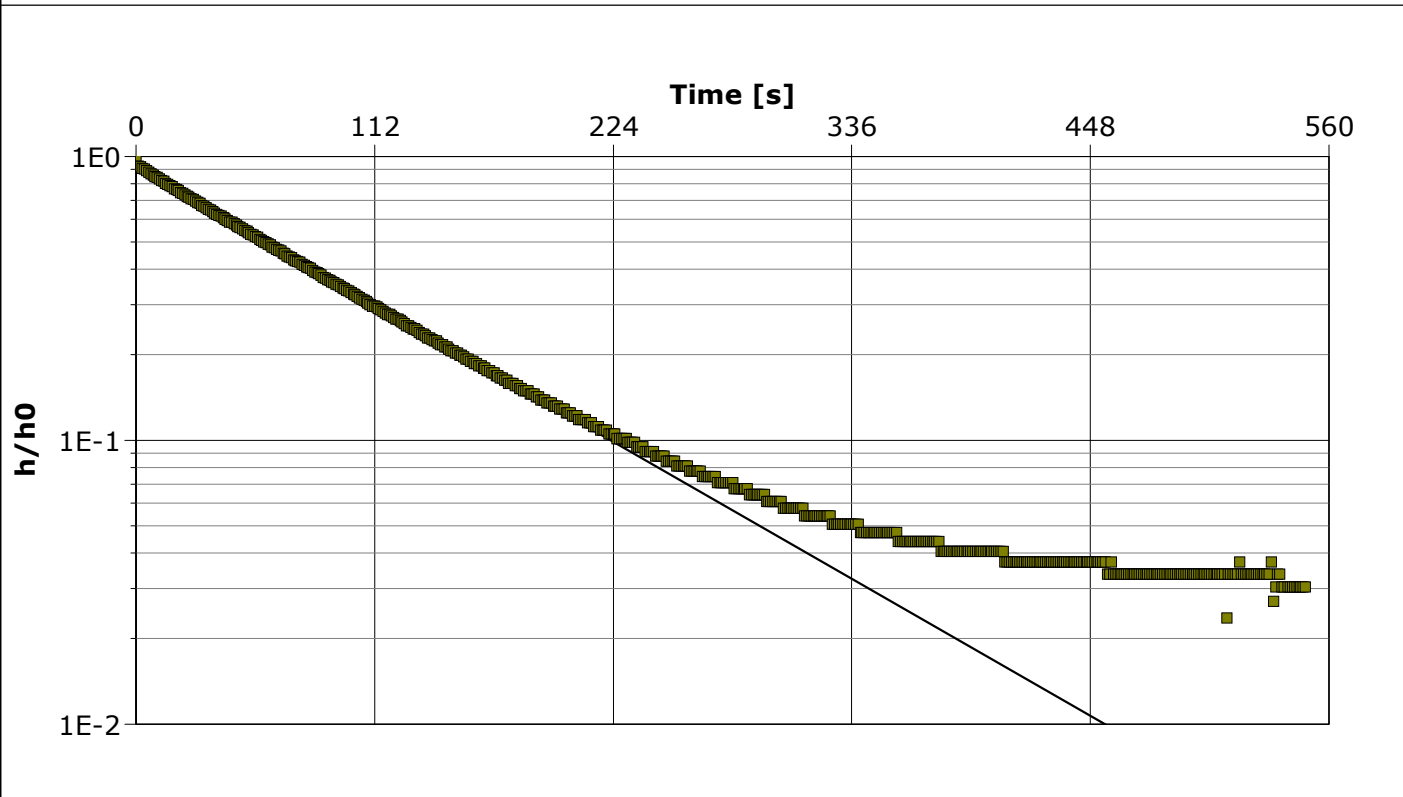
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-05D Slug Test 4	Test Well: MW15-05D
Test Conducted by: ER/KRR		Test Date: 9/7/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 11.17 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-05D	$8.56 \times 10^{-7}$	



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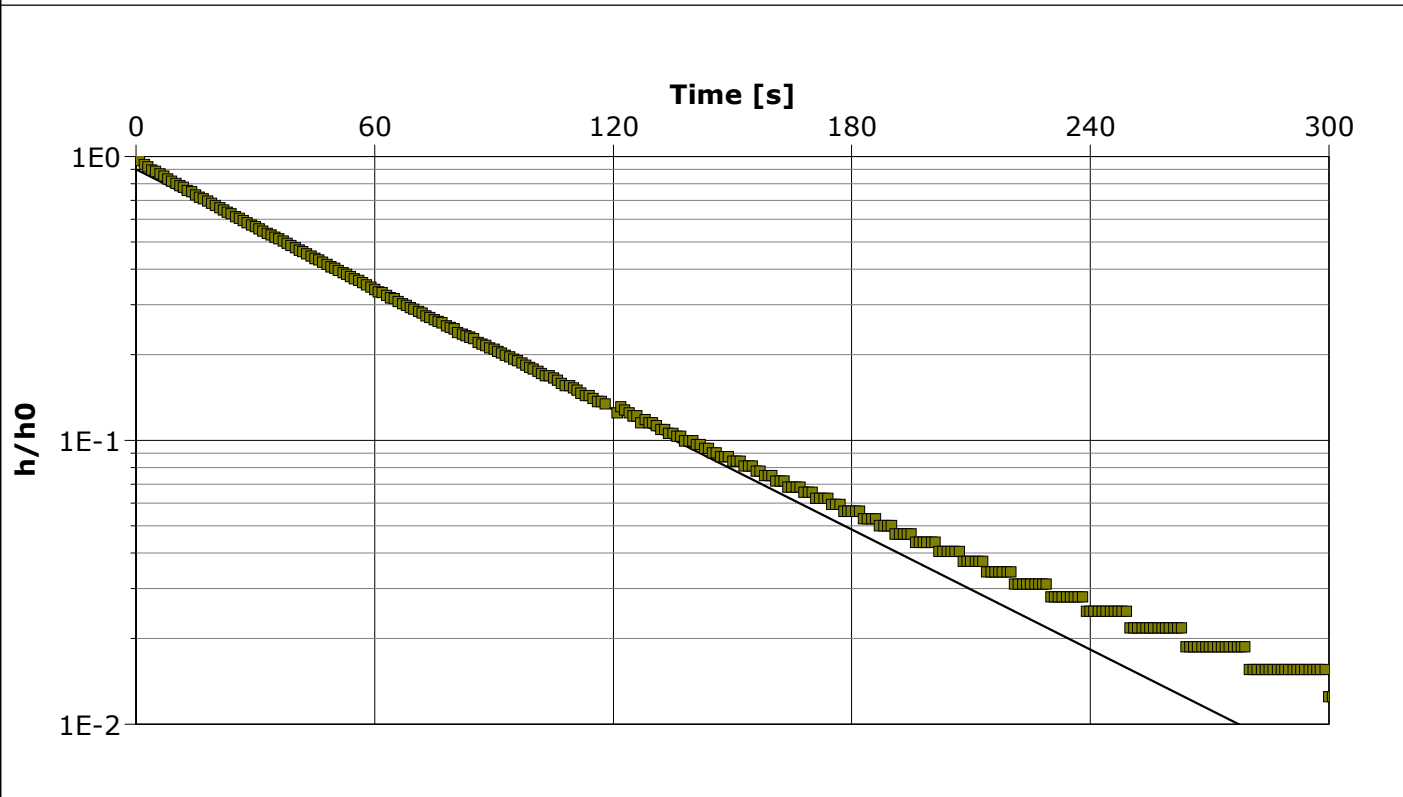
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-05D Slug Test 5	Test Well: MW15-05D
Test Conducted by: ER/KRR		Test Date: 9/7/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 11.17 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-05D	$1.40 \times 10^{-6}$	



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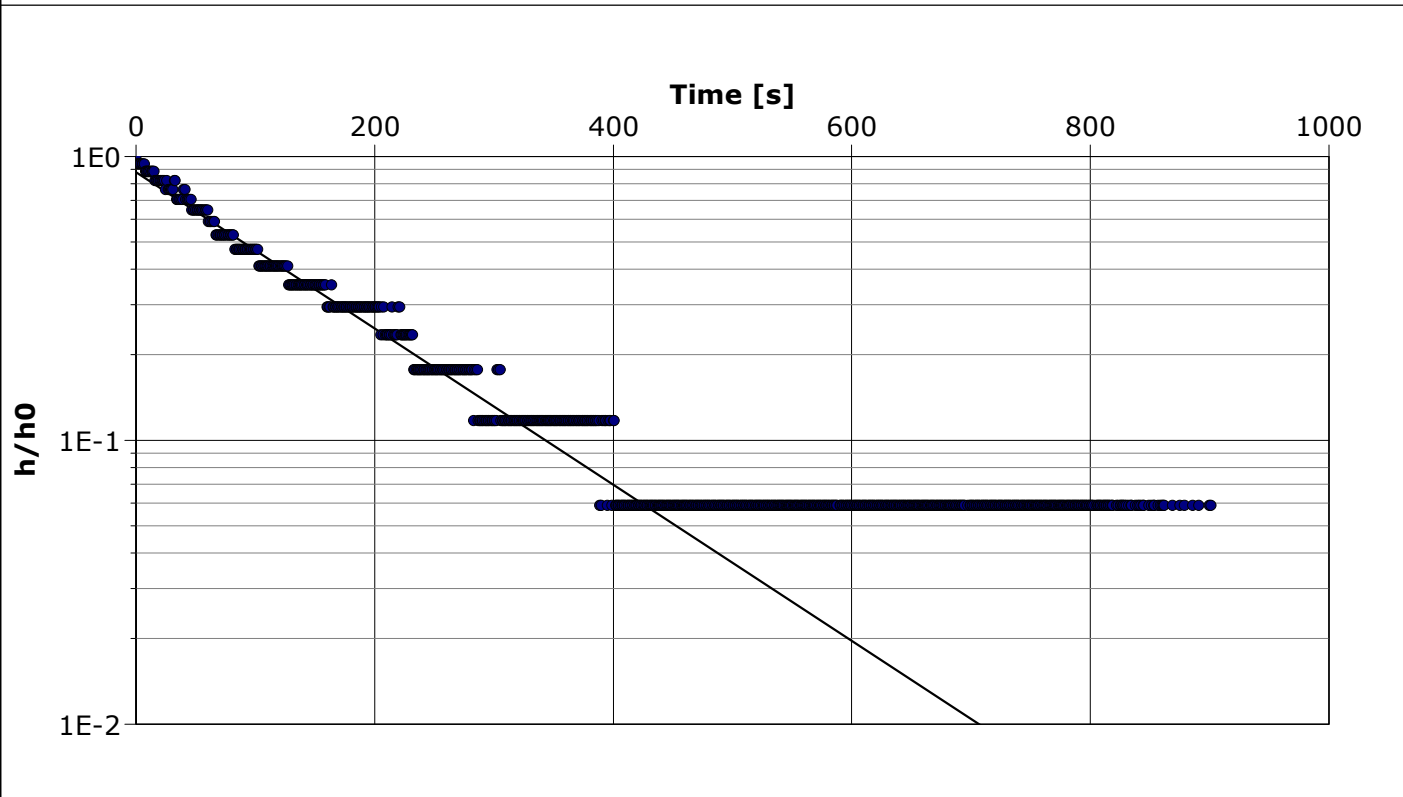
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-06 Slug Test 1	Test Well: MW15-06
Test Conducted by: ER/KRR		Test Date: 9/6/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 9.63 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-06	$1.14 \times 10^{-6}$	



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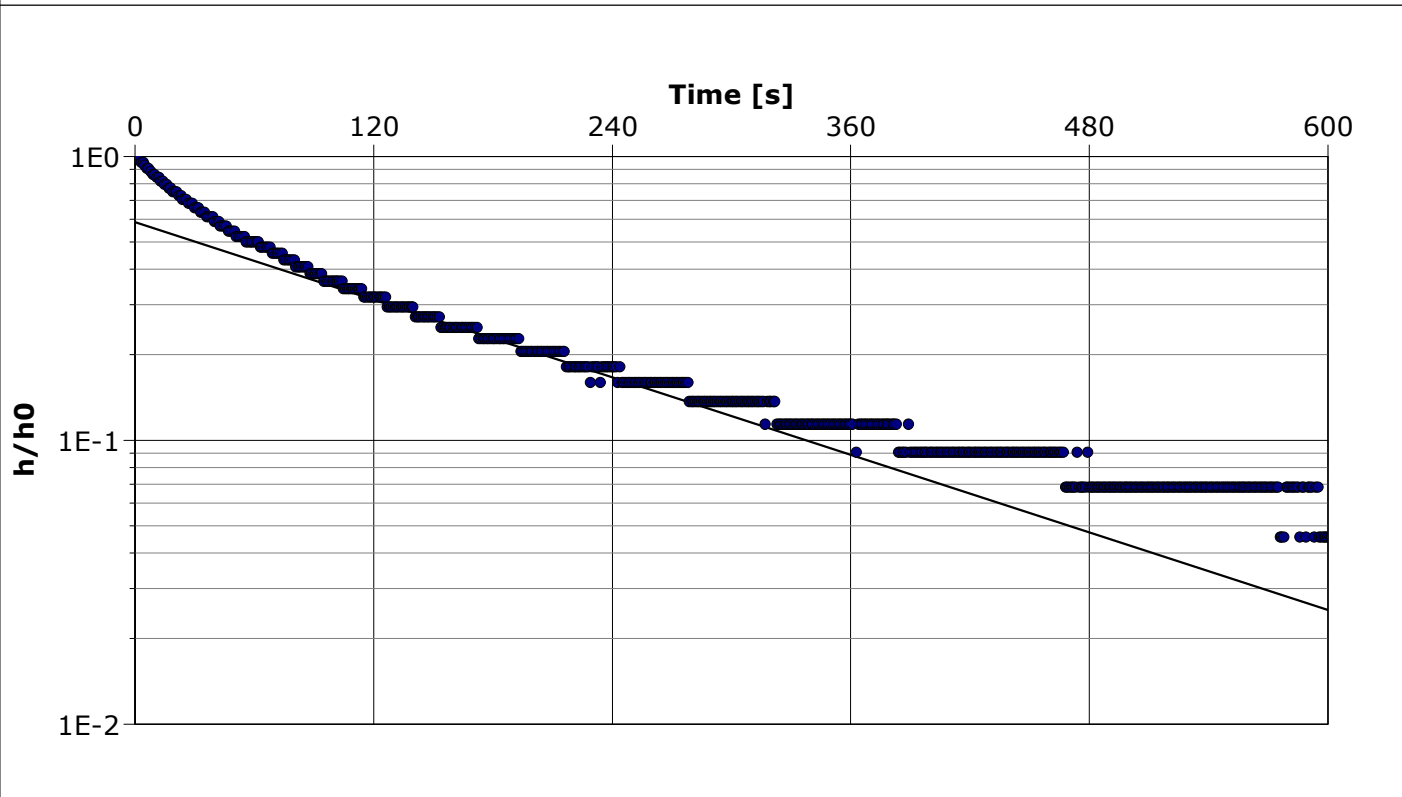
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-06 Slug Test 2	Test Well: MW15-06
Test Conducted by: ER/KRR		Test Date: 9/6/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 9.63 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-06	$9.41 \times 10^{-7}$	





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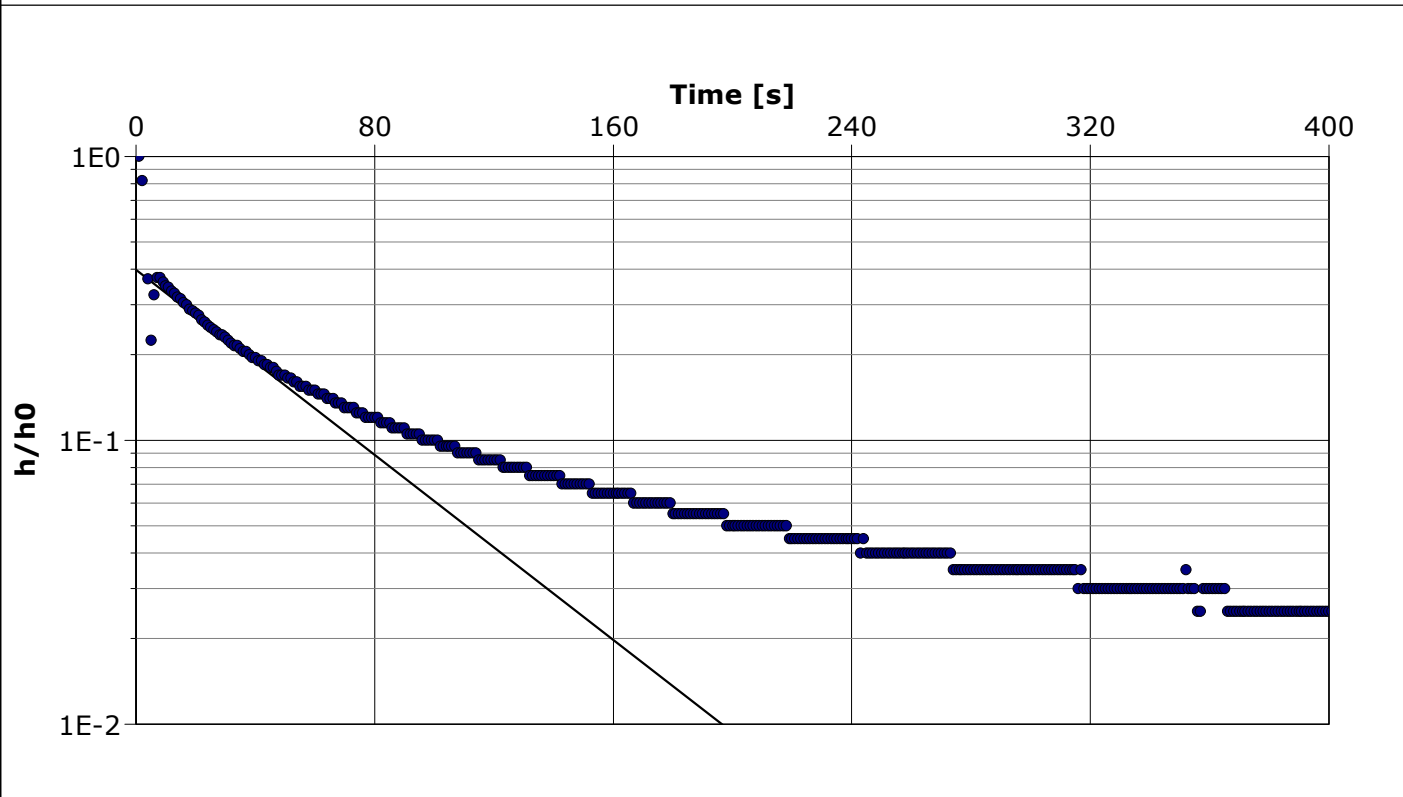
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-06 Slug Test 3	Test Well: MW15-06
Test Conducted by: ER/KRR		Test Date: 9/6/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 9.63 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-06	$3.37 \times 10^{-6}$	



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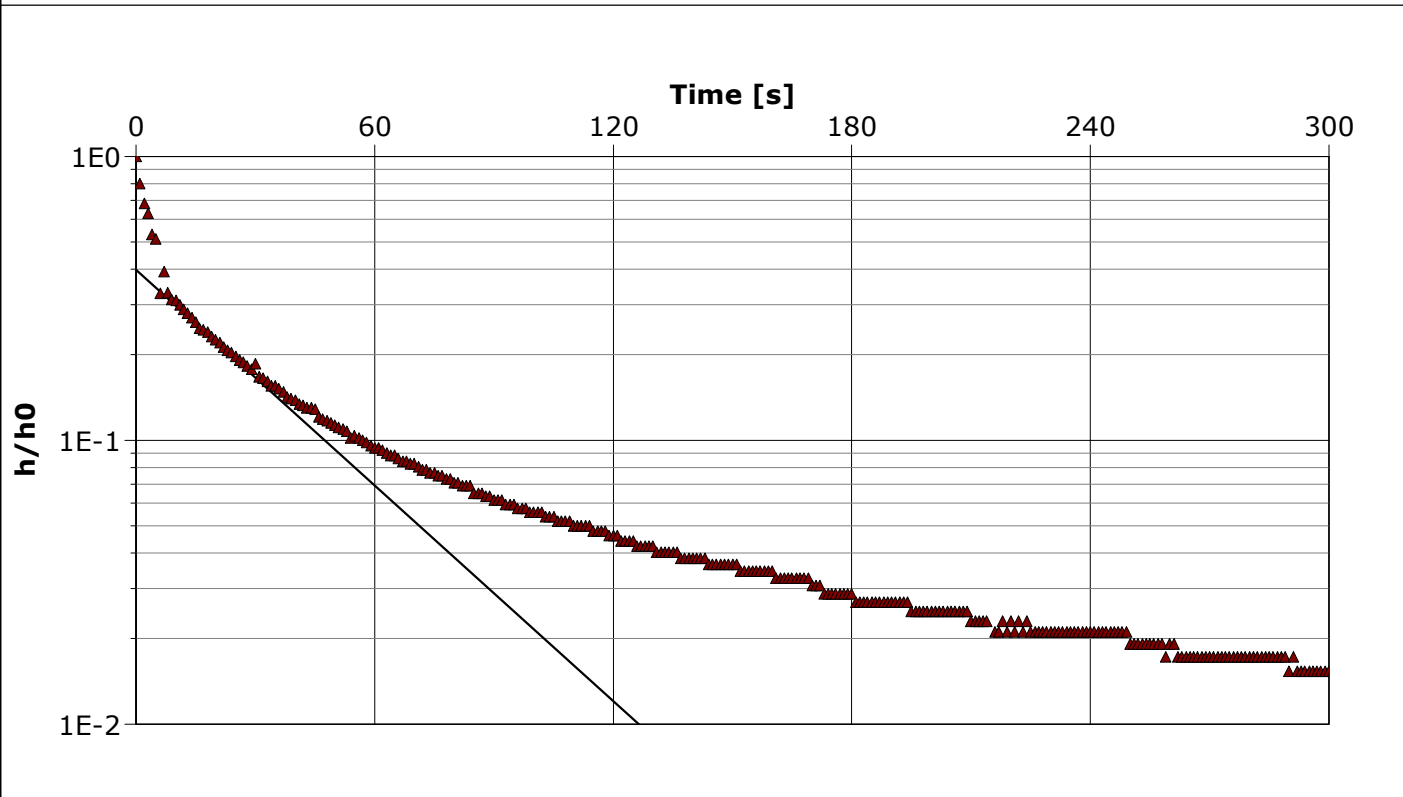
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-07S Slug Test 1	Test Well: MW15-07S
Test Conducted by: ER/KRR		Test Date: 9/6/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 9.45 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-07S	$5.24 \times 10^{-6}$



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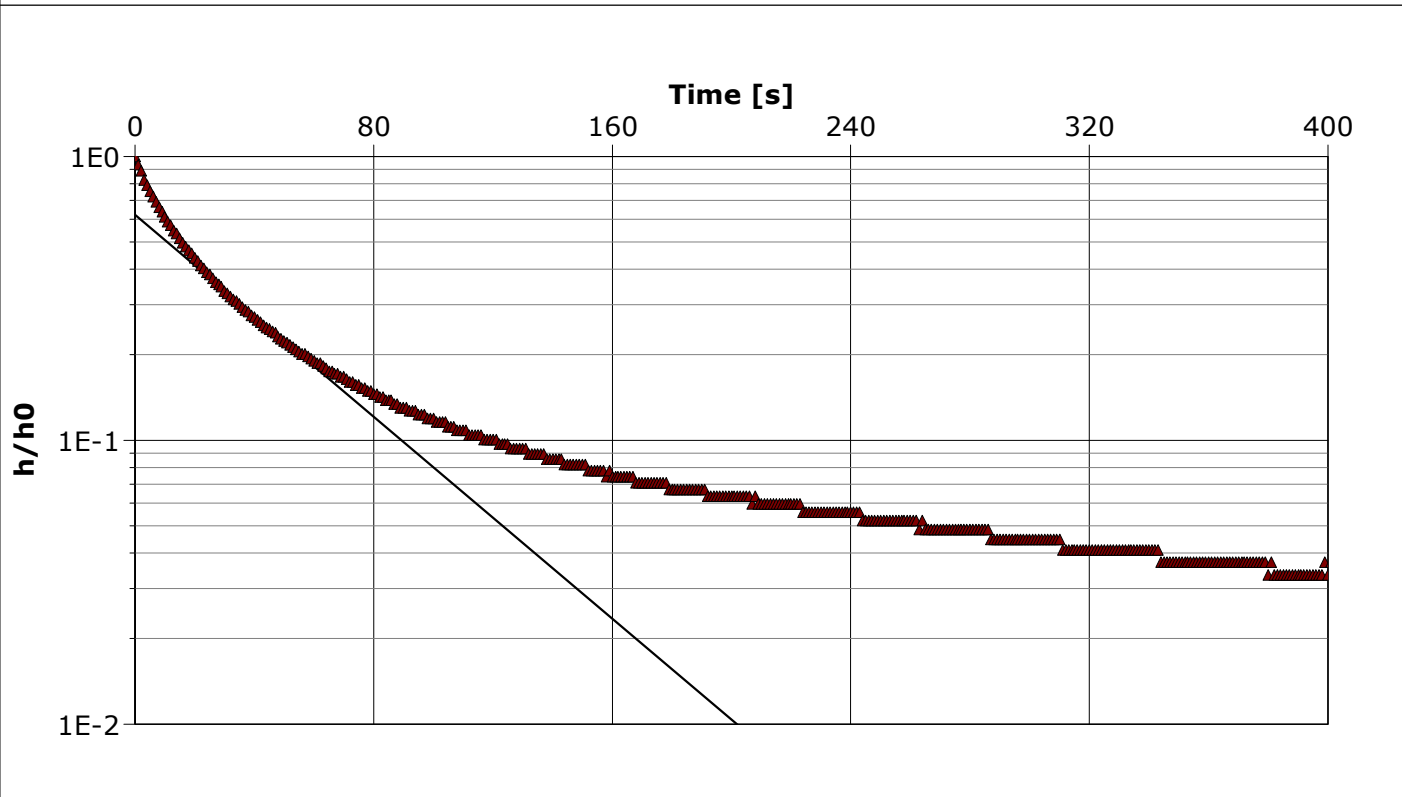
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-07S Slug Test 2	Test Well: MW15-07S
Test Conducted by: ER/KRR		Test Date: 9/6/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 9.45 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-07S	$3.68 \times 10^{-6}$	



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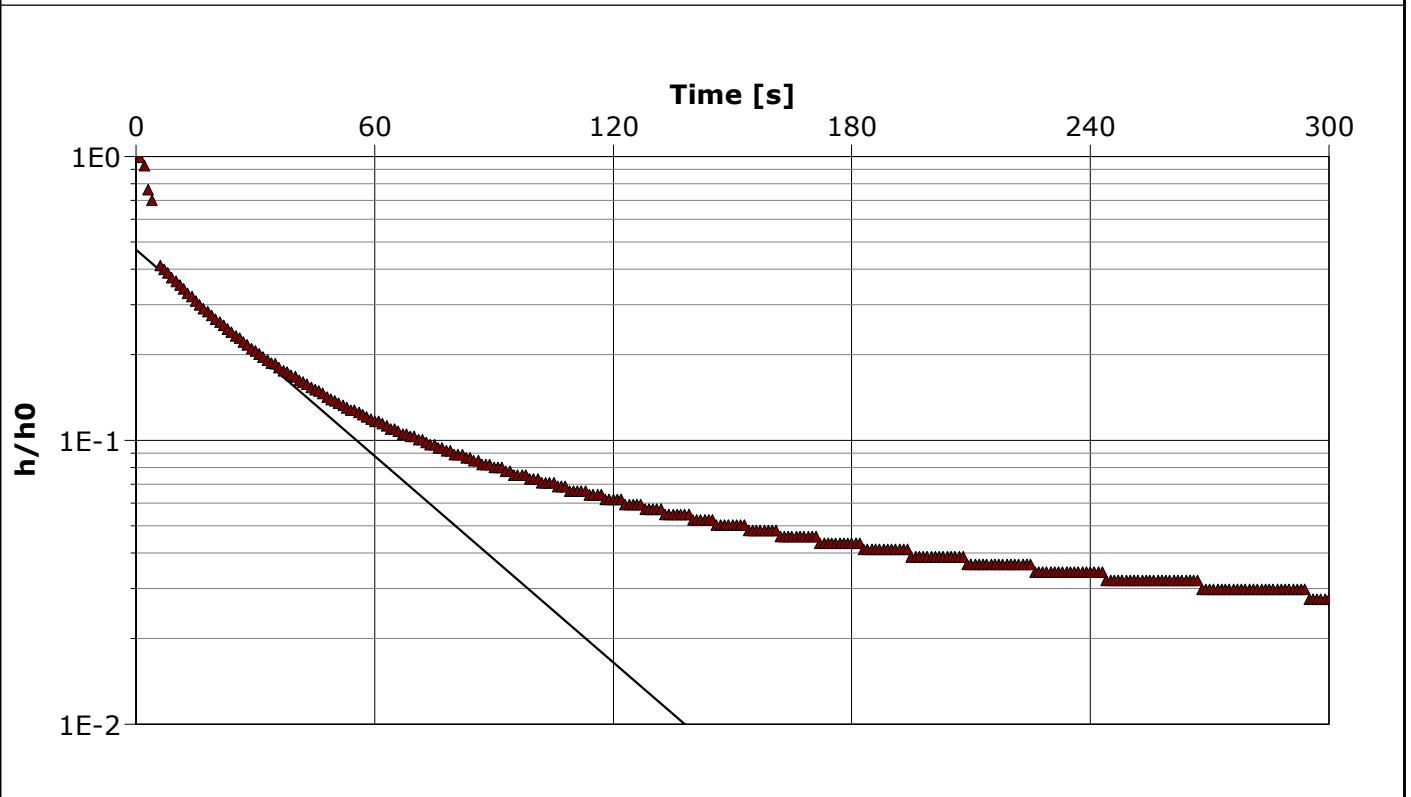
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-07S Slug Test 3	Test Well: MW15-07S
Test Conducted by: ER/KRR		Test Date: 9/6/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 9.45 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-07S	$5.01 \times 10^{-6}$	

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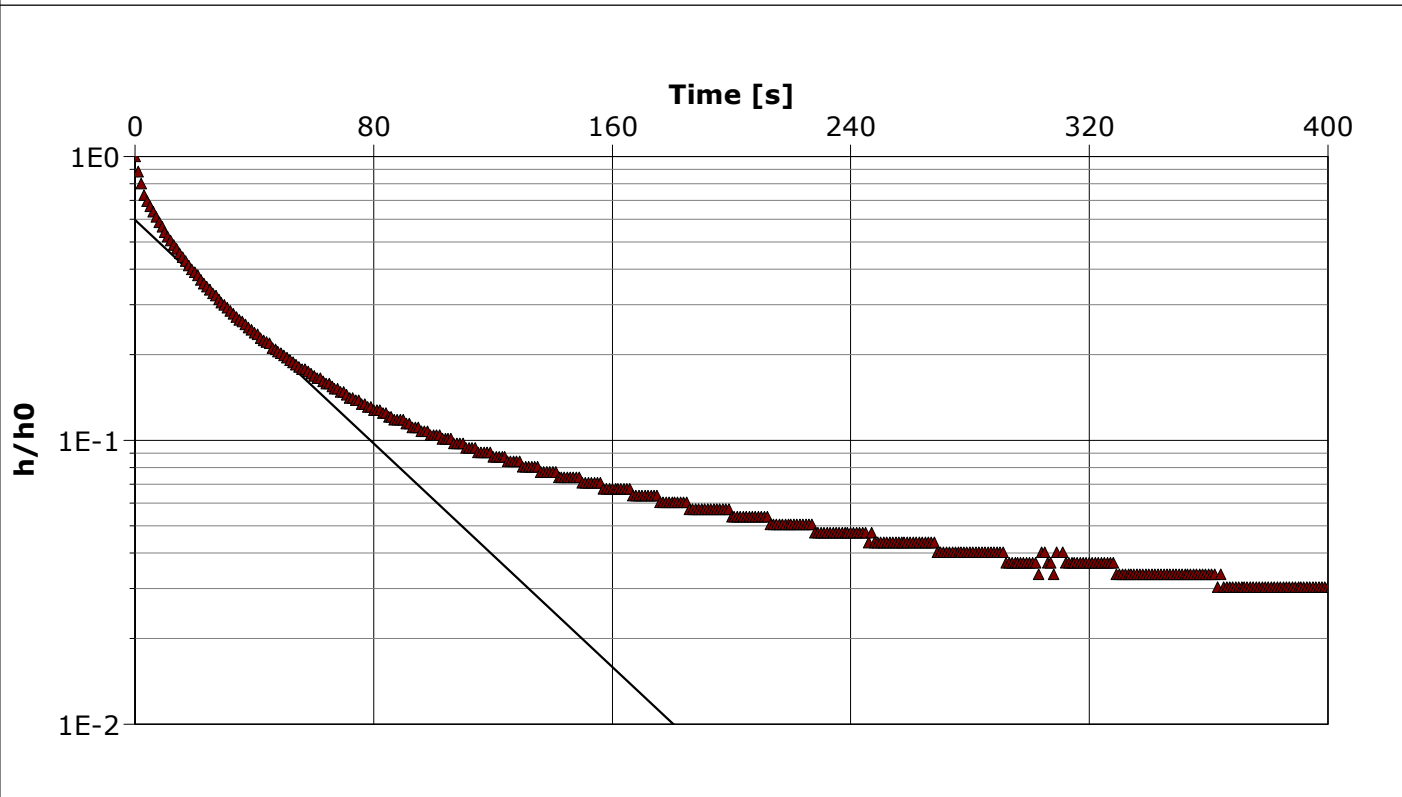
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-07S Slug Test 4	Test Well: MW15-07S
Test Conducted by: ER/KRR		Test Date: 9/6/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 9.45 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-07S	$4.07 \times 10^{-6}$	



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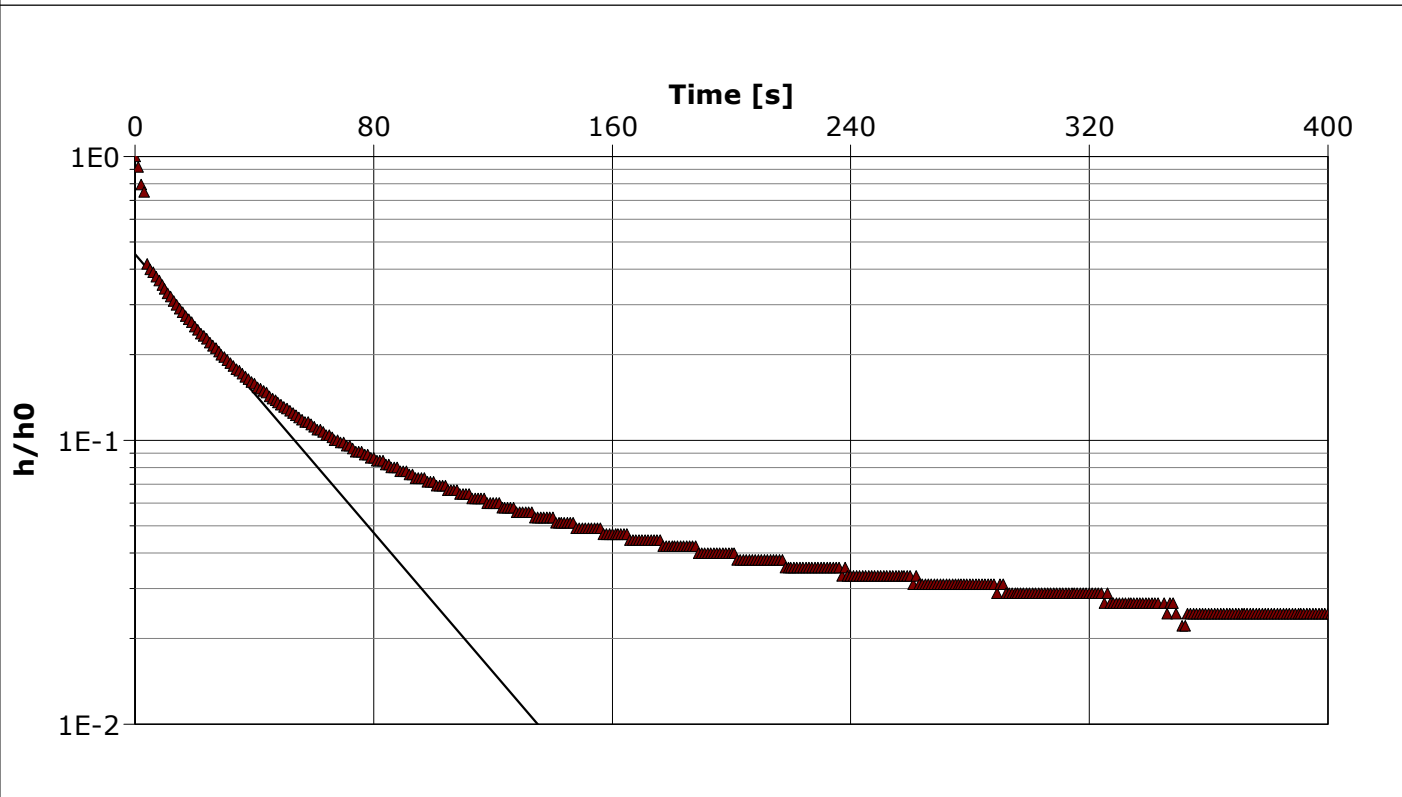
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-07S Slug Test 5	Test Well: MW15-07S
Test Conducted by: ER/KRR		Test Date: 9/6/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 9.45 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-07S	$5.08 \times 10^{-6}$



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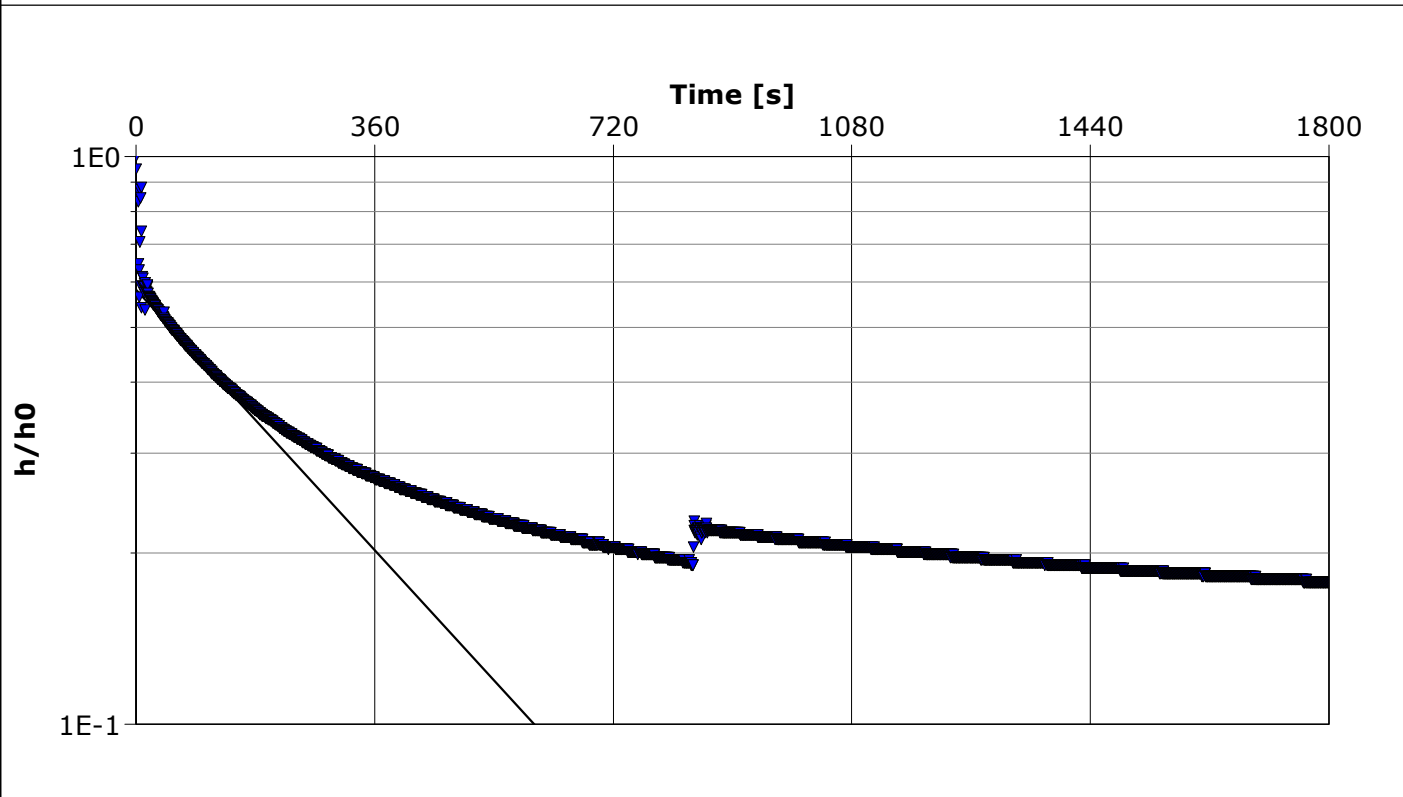
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-08D Slug Test 1	Test Well: MW15-08D
Test Conducted by: ER/KRR		Test Date: 9/2/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 35.48 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-08D	$3.06 \times 10^{-7}$	



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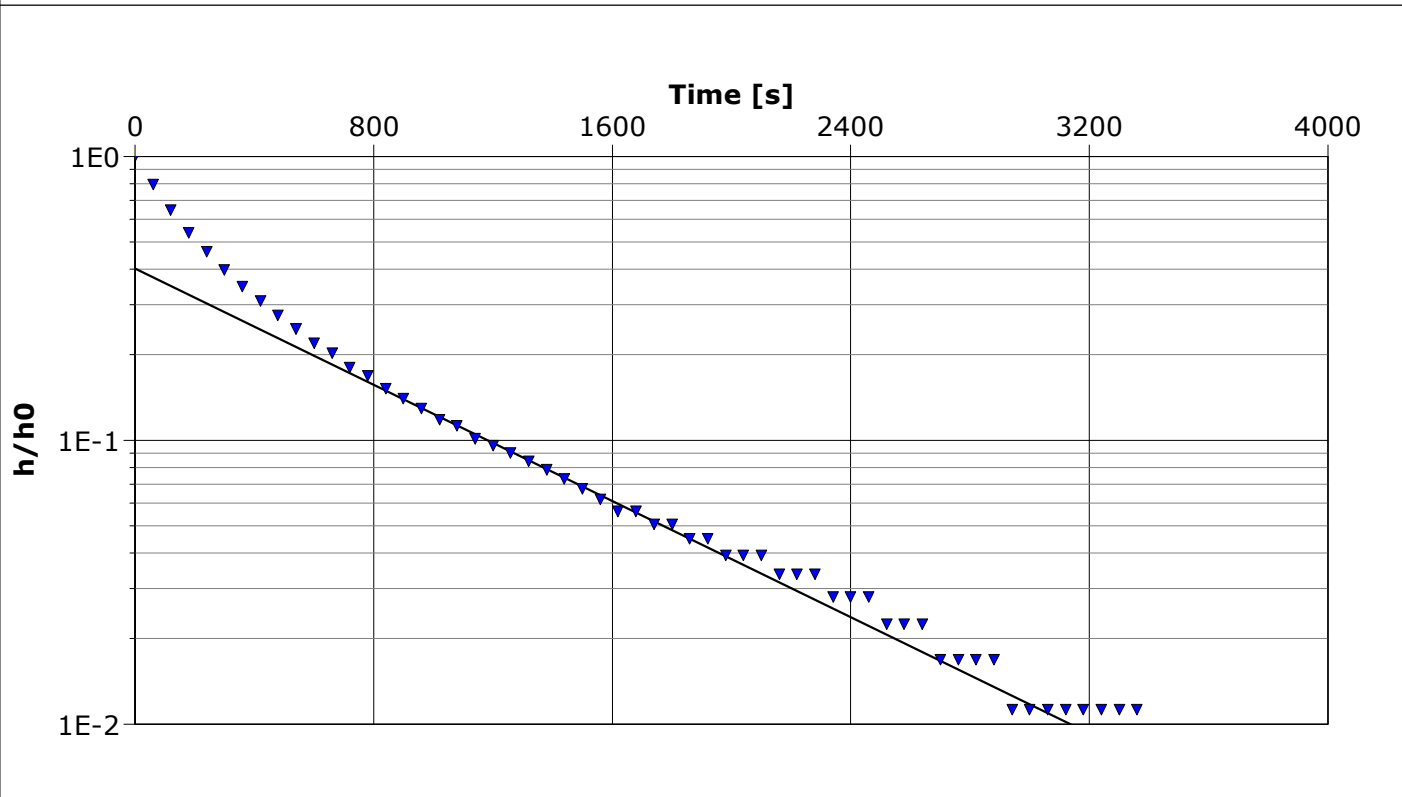
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-08D Slug Test 3	Test Well: MW15-08D
Test Conducted by: ER		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 35.48 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-08D	$1.23 \times 10^{-7}$	

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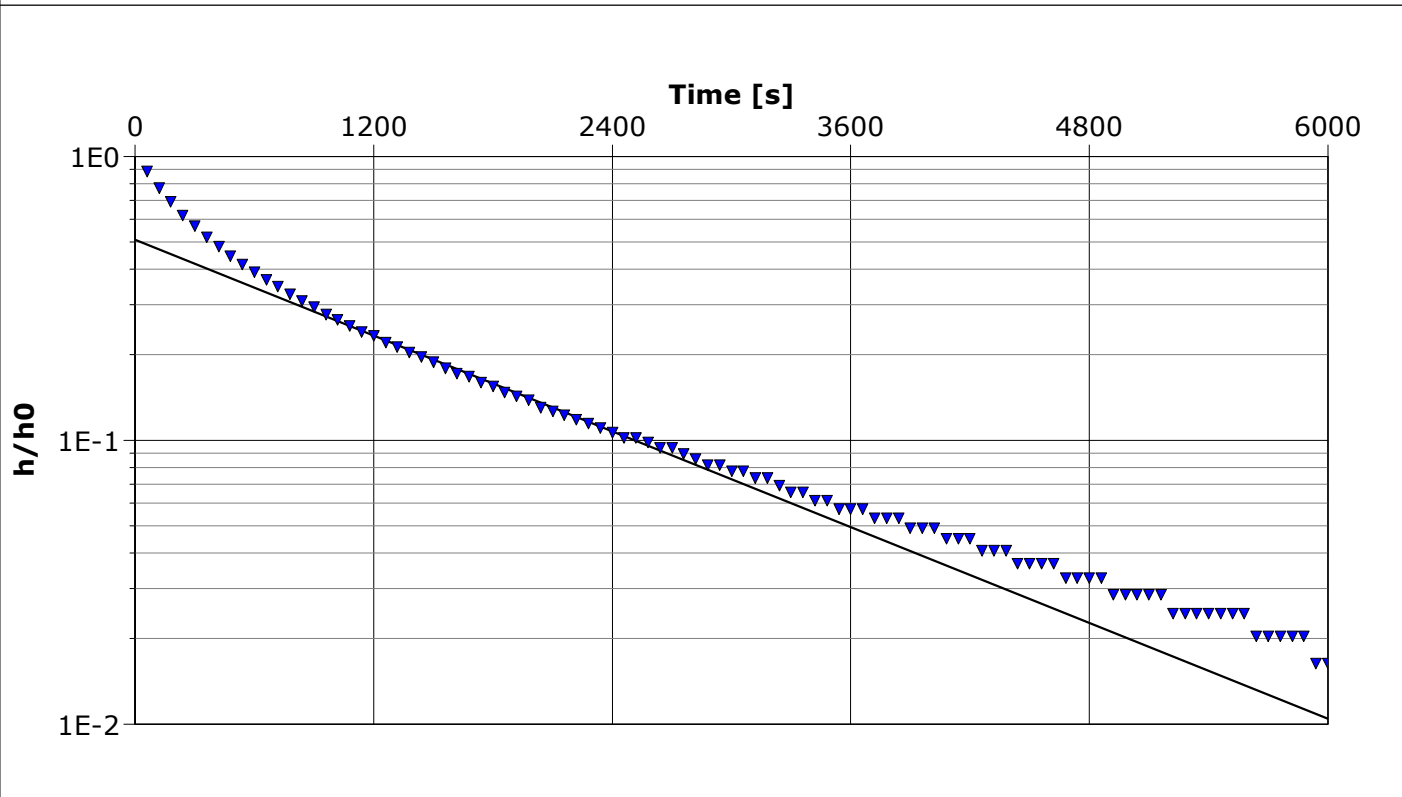
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-08D Slug Test 4	Test Well: MW15-08D
Test Conducted by: KRR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/8/2015
Aquifer Thickness: 35.48 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-08D	$6.76 \times 10^{-8}$	

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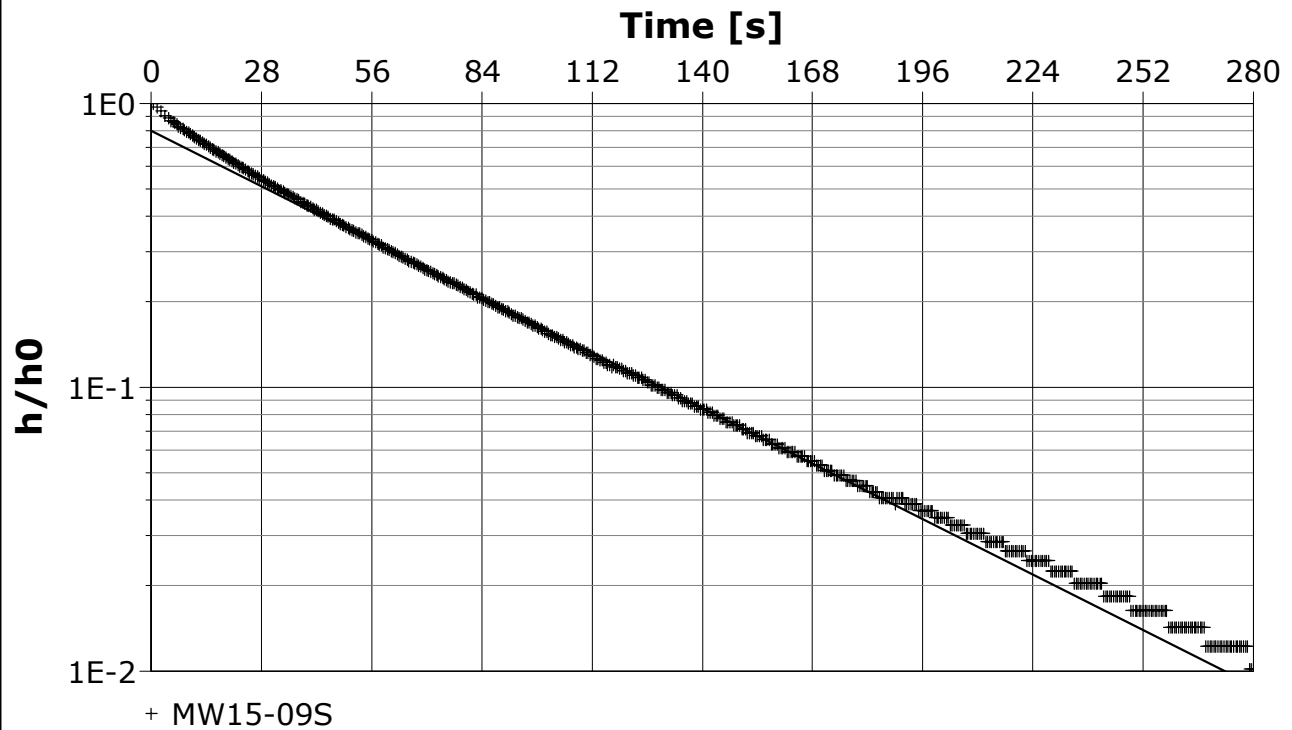
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-09S Slug Test 1	Test Well: MW15-09S
Test Conducted by: ER/KRR		Test Date: 9/5/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/9/2015
Aquifer Thickness: 18.61 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-09S	$1.68 \times 10^{-6}$	



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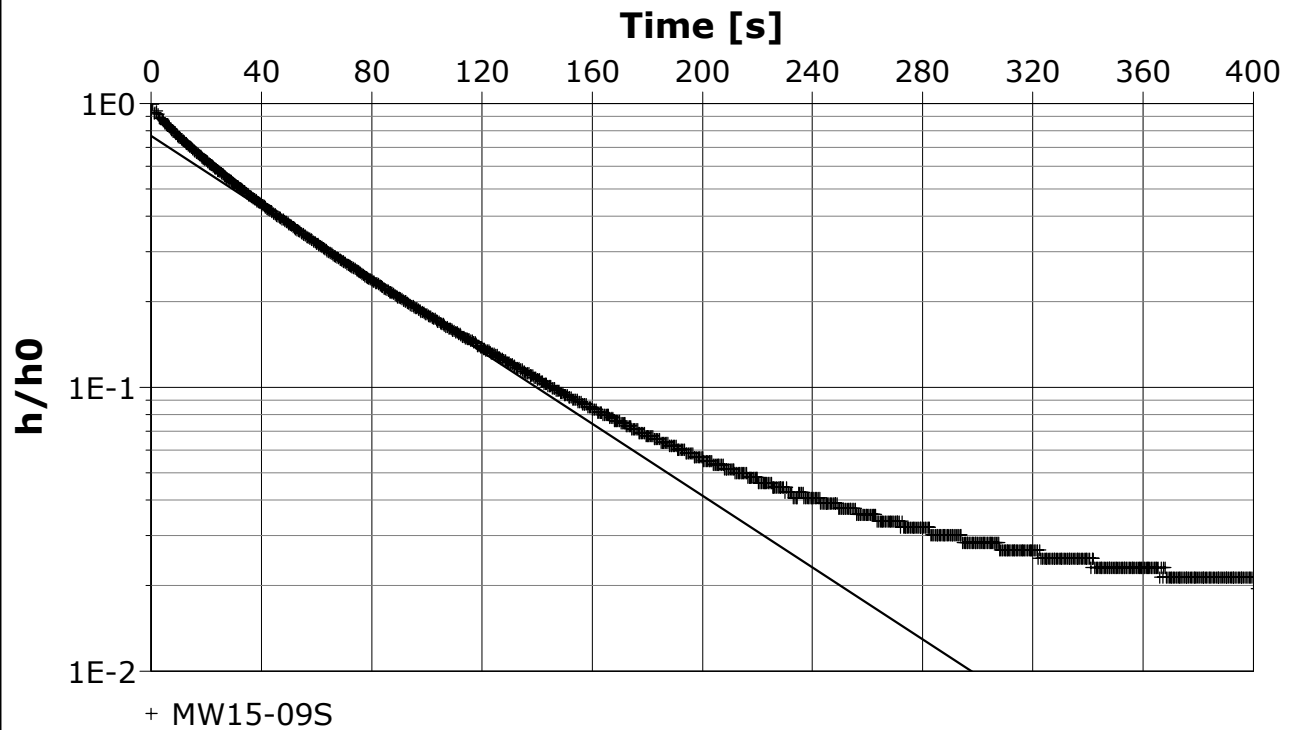
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-09S Slug Test 2	Test Well: MW15-09S
Test Conducted by: ER/KRR		Test Date: 9/5/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/10/2015
Aquifer Thickness: 18.61 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-09S	$1.52 \times 10^{-6}$	



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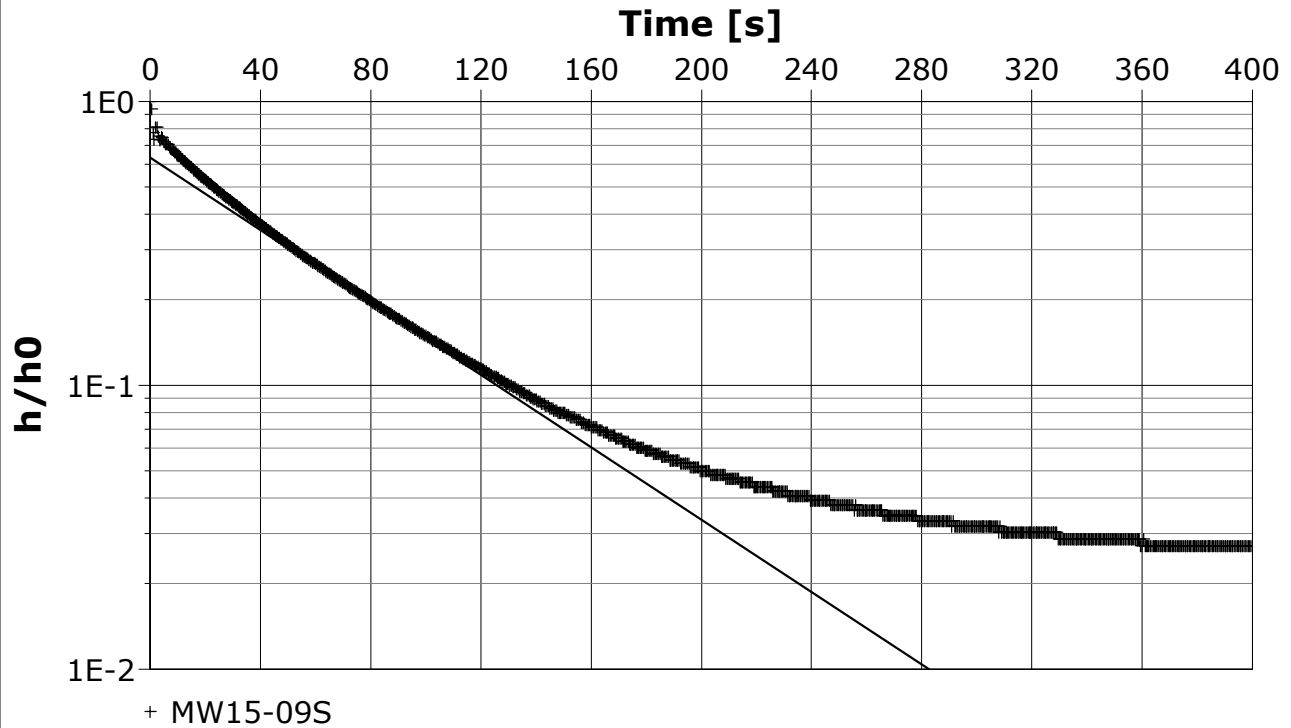
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-09S Slug Test 3	Test Well: MW15-09S
Test Conducted by: ER/KRR		Test Date: 9/5/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/10/2015
Aquifer Thickness: 18.61 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-09S	$1.53 \times 10^{-6}$	



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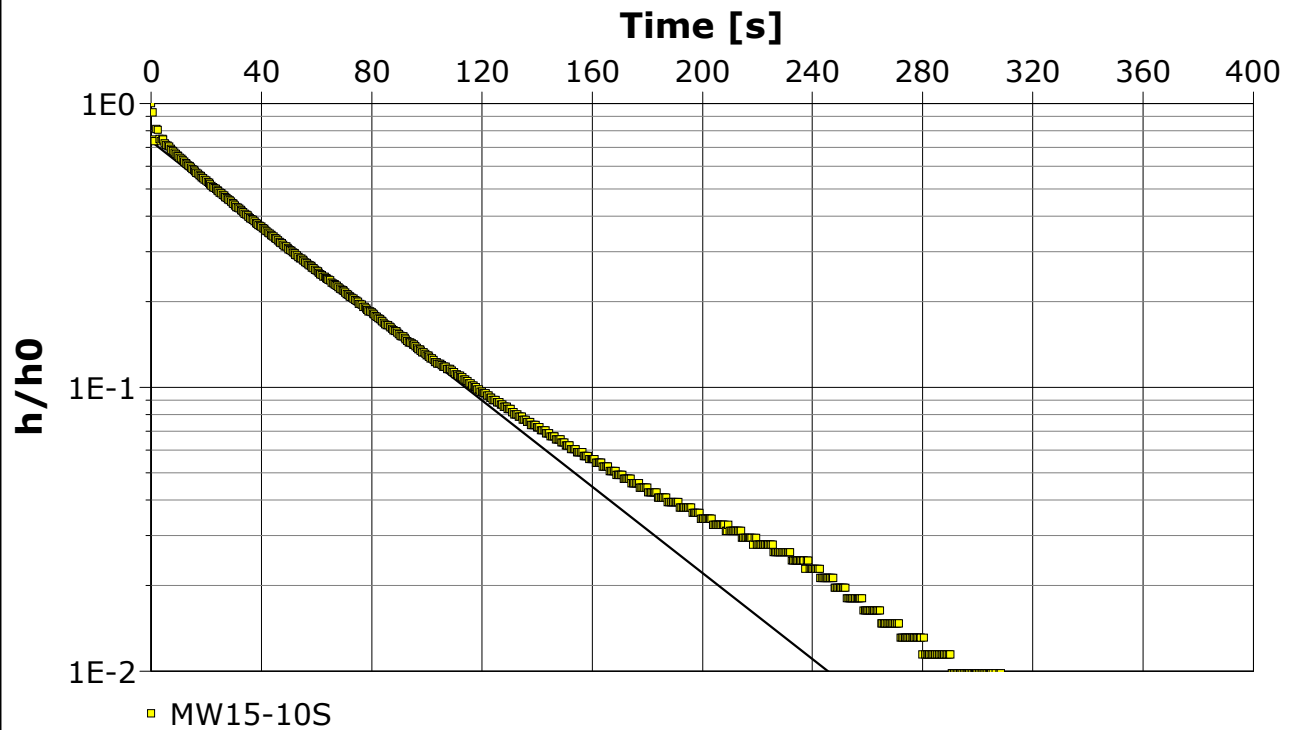
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-10S Slug Test 1	Test Well: MW15-10S
Test Conducted by: ER/KRR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/10/2015
Aquifer Thickness: 10.39 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-10S	$1.83 \times 10^{-6}$



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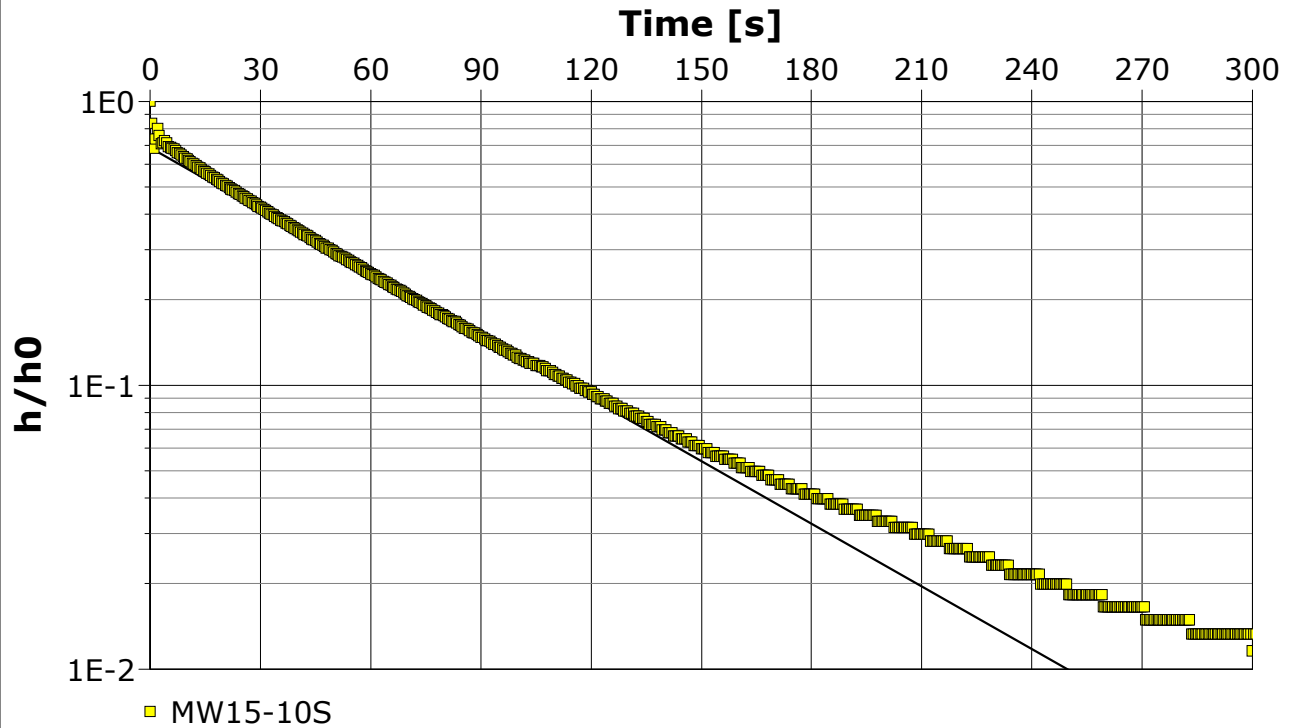
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-10S Slug Test 2	Test Well: MW15-10S
Test Conducted by: ER/KRR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/10/2015
Aquifer Thickness: 10.39 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-10S	$1.77 \times 10^{-6}$



**Tetra Tech**  
 885 Dunsmuir Street  
 Vancouver, BC

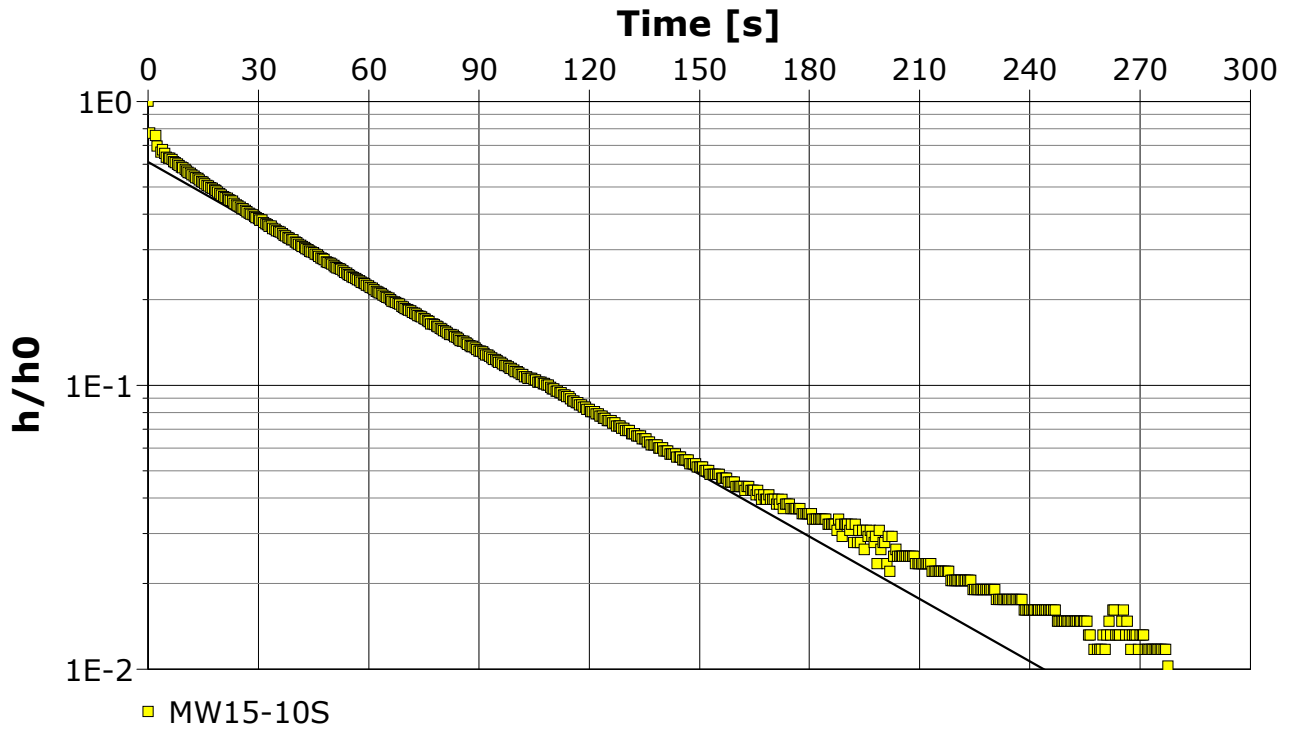
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-10S Slug Test 3	Test Well: MW15-10S
Test Conducted by: ER/KRR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/10/2015
Aquifer Thickness: 10.39 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-10S	$1.76 \times 10^{-6}$



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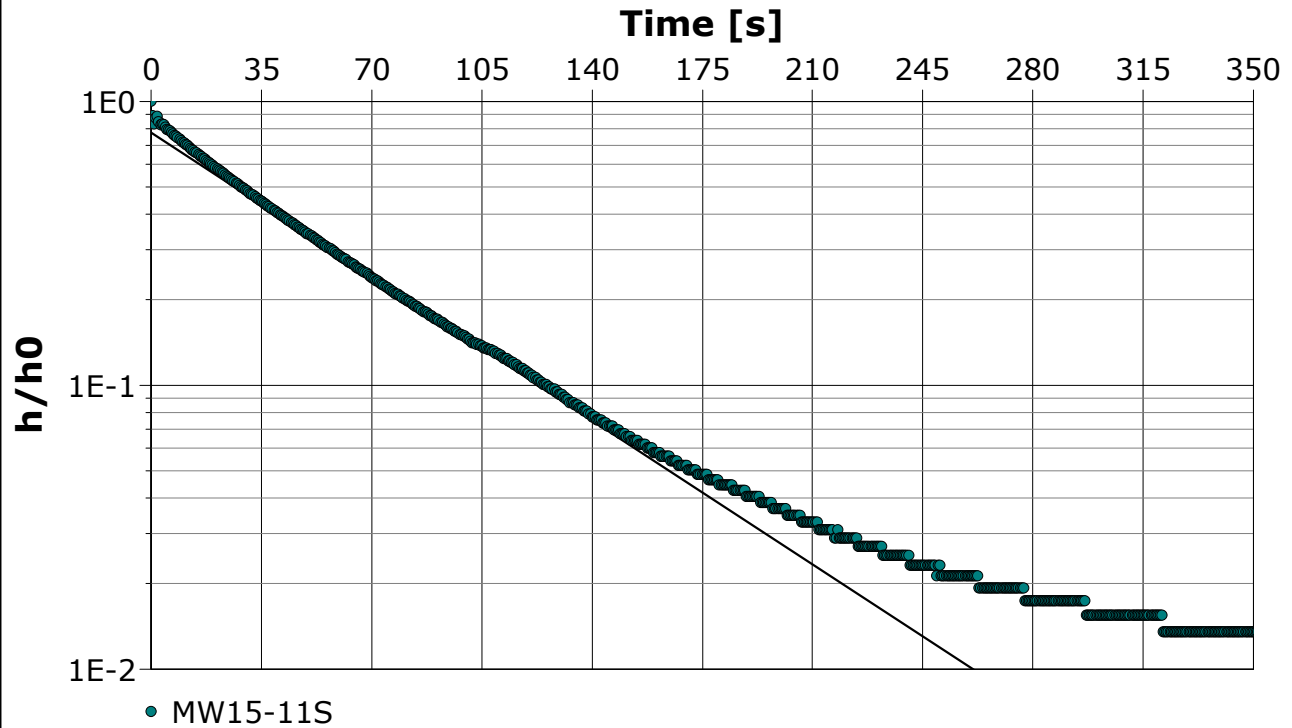
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-10S Slug Test 4	Test Well: MW15-11S
Test Conducted by: ER/KRR		Test Date: 9/4/2015
Analysis Performed by:	New analysis 1	Analysis Date: 12/10/2015
Aquifer Thickness: 10.39 m		



Calculation using Bouwer & Rice

Observation Well	Hydraulic Conductivity [m/s]
MW15-11S	$3.00 \times 10^{-6}$





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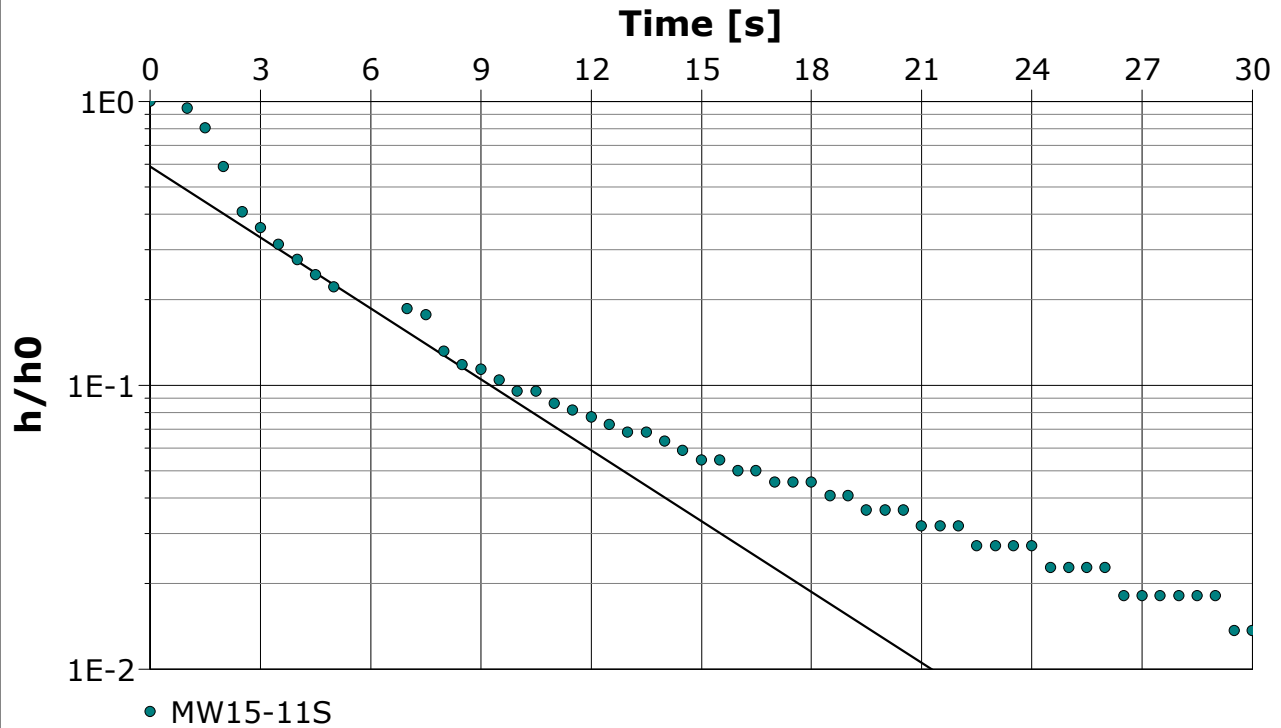
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-11S Slug Test 1	Test Well: MW15-11S
Test Conducted by: ER		Test Date: 11/8/2015
Analysis Performed by: ER	New analysis 1	Analysis Date: 2/2/2016
Aquifer Thickness: 6.01 m		



Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-11S	$3.45 \times 10^{-5}$	



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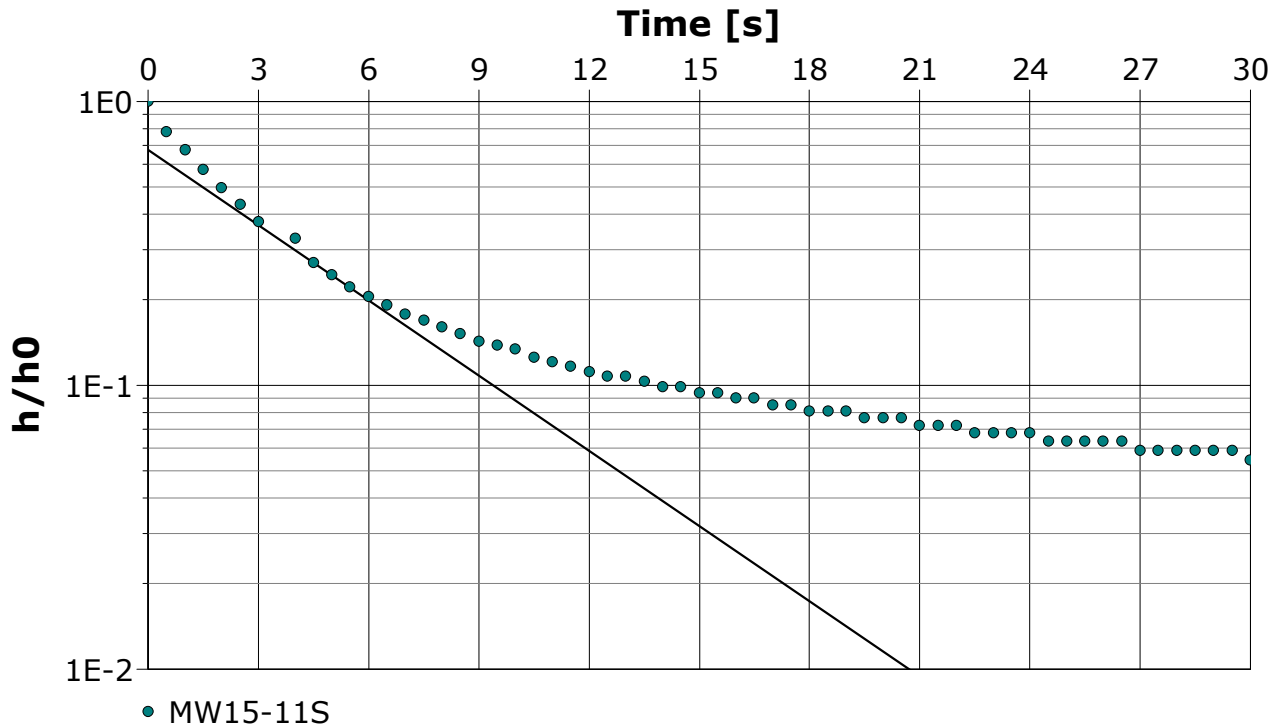
**Slug Test Analysis Report**

Project: Kudz Ze Kayah Hydrogeological Assessment

Number: ENVMIN03071-01

Client: BMC Minerals (No 1)

Location:	Slug Test: MW15-11S Slug Test 3	Test Well: MW15-11S
Test Conducted by: ER		Test Date: 11/8/2015
Analysis Performed by:	New analysis 1	Analysis Date: 2/2/2016
Aquifer Thickness: 6.01 m		

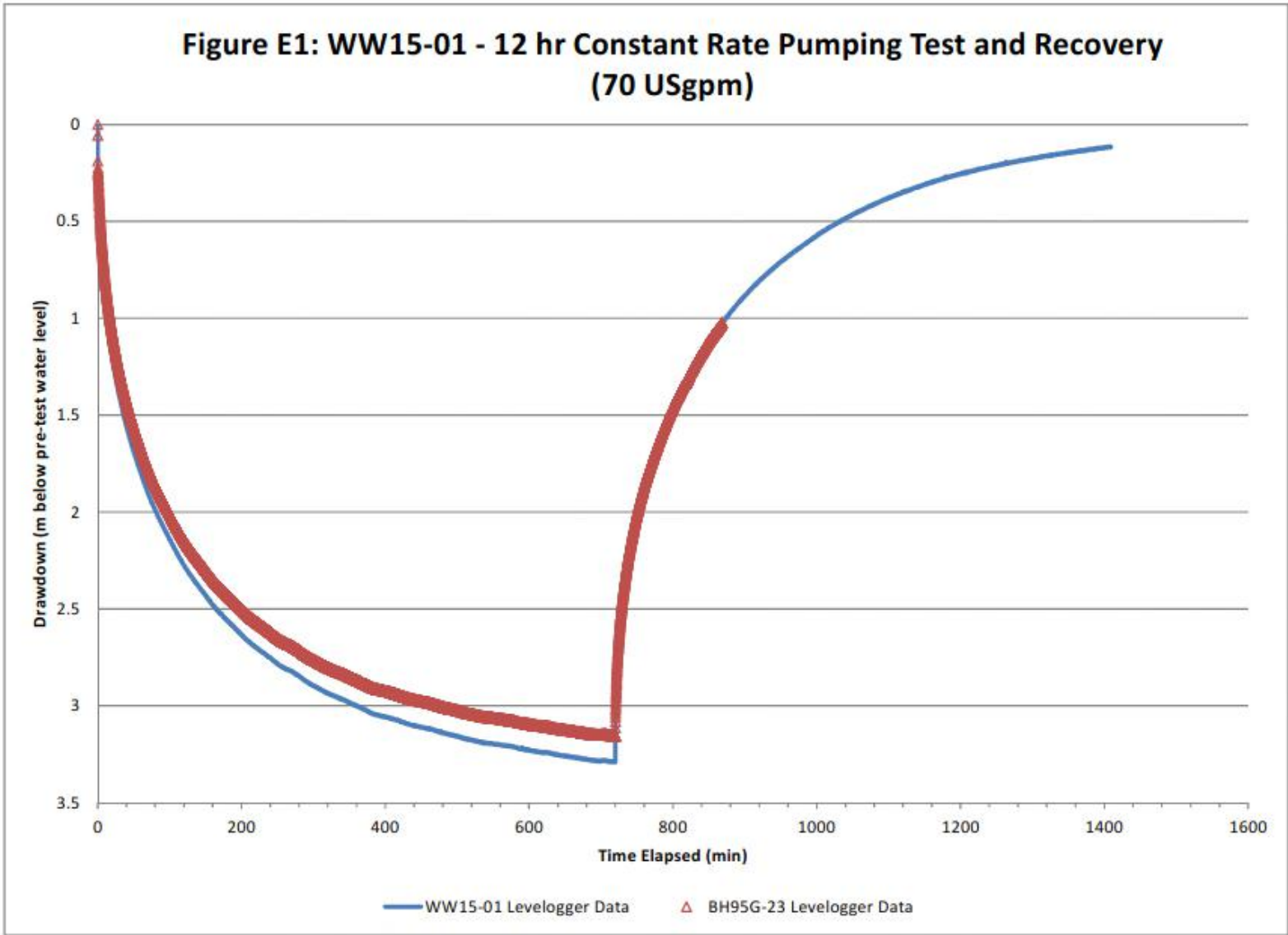


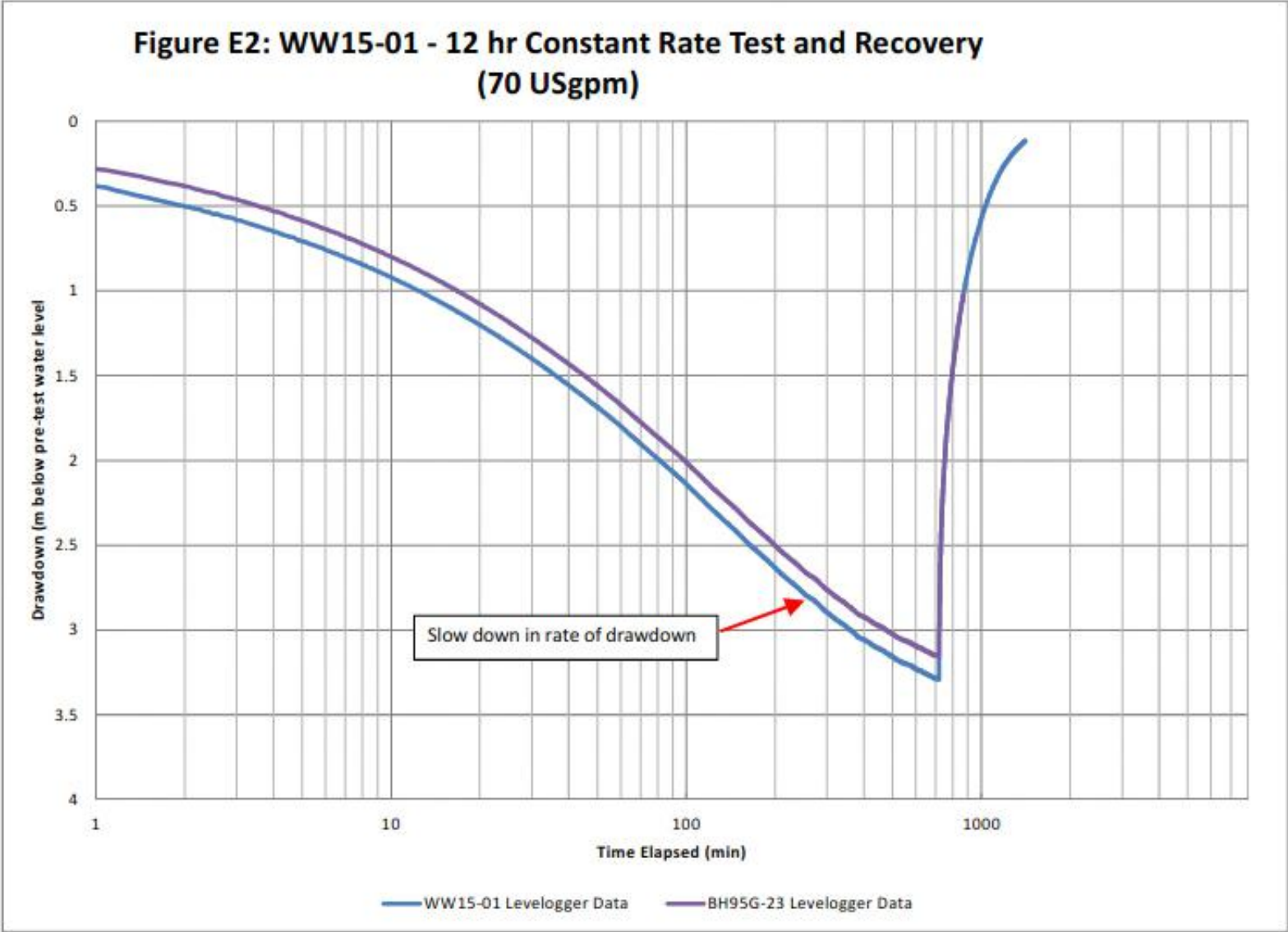
Calculation using Bouwer & Rice		
Observation Well	Hydraulic Conductivity [m/s]	
MW15-11S	$3.66 \times 10^{-5}$	

# APPENDIX E

## PUMPING TEST RESULTS

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**Pumping Test Analysis Report**

Project: Kudz Ze Kayah

Number: ENVMIN03071

Client: BMC Minerals (No. 1) Ltd.

Location: Kudz Ze Kayah

Pumping Test: Pumping Test WW15-01

Pumping Well: WW15-01

Test Conducted by: AJS

Test Date: 10/4/2015

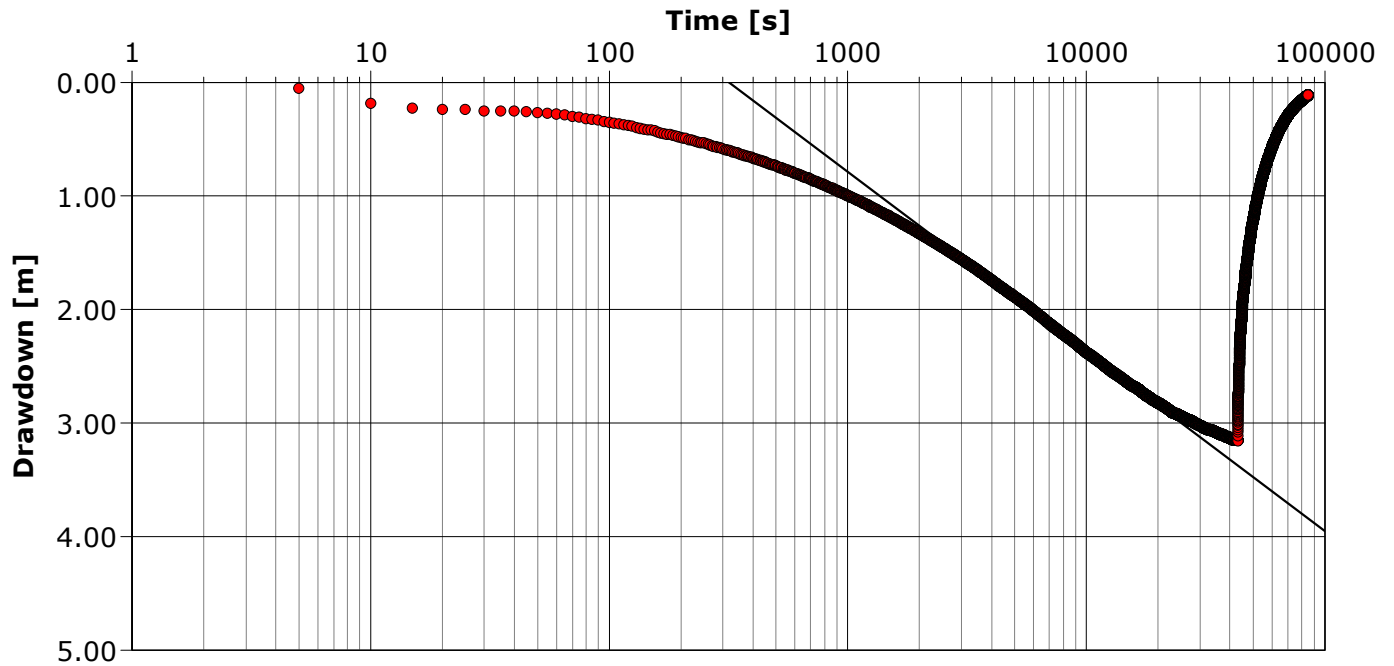
Analysis Performed by: AJS

WW15-01\_Drawdown

Analysis Date: 2/2/2016

Aquifer Thickness: 4.20 m

Discharge: variable, average rate 70 [U.S. gal/min]



Calculation using COOPER & JACOB

Observation Well	Transmissivity [m <sup>2</sup> /s]	Hydraulic Conductivity [m/s]	Storage coefficient	Radial Distance to PW [m]
BH95G-23	$5.11 \times 10^{-4}$	$1.22 \times 10^{-4}$	$6.32 \times 10^{-4}$	24.0

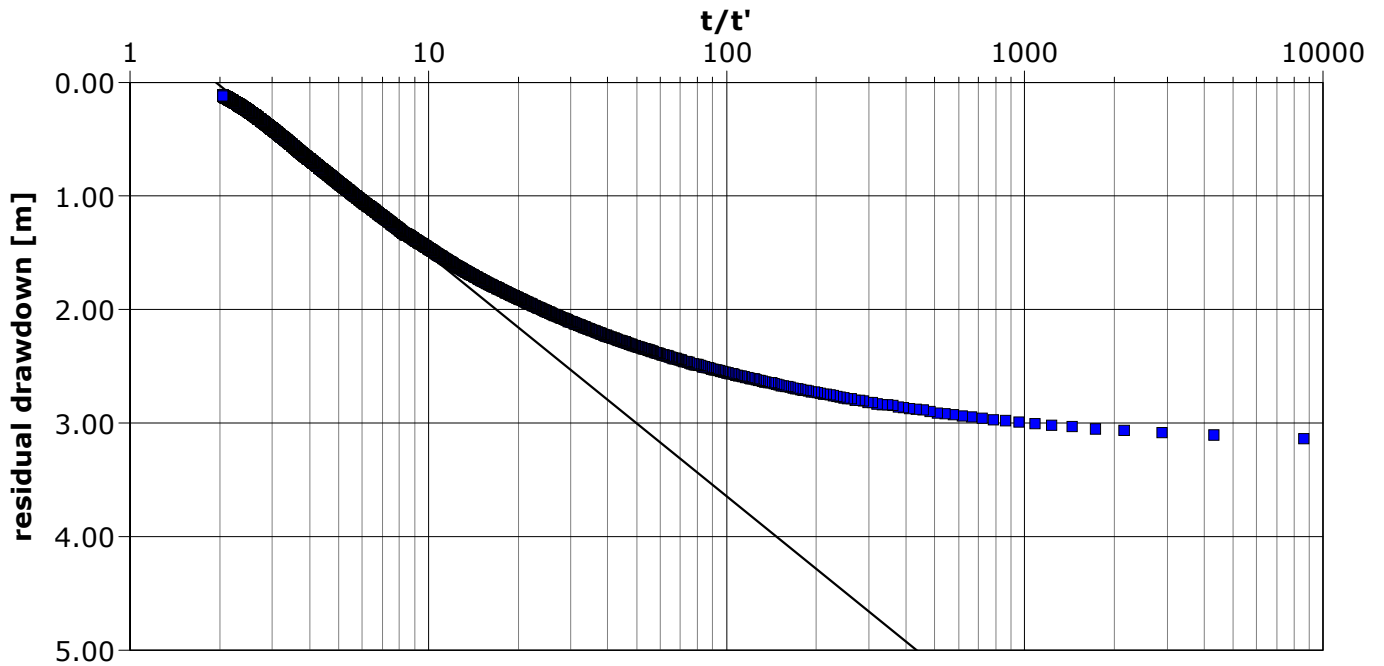
**Pumping Test Analysis Report**

Project: Kudz Ze Kayah

Number: ENVMIN03071

Client: BMC Minerals (No. 1) Ltd.

Location: Kudz Ze Kayah	Pumping Test: Pumping Test WW15-01	Pumping Well: WW15-01
Test Conducted by: AJS		Test Date: 10/4/2015
Analysis Performed by: AJS	WW15-01_Residual Drawdown	Analysis Date: 10/30/2015
Aquifer Thickness: 4.20 m	Discharge: variable, average rate 70 [U.S. gal/min]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [m <sup>2</sup> /s]	Hydraulic Conductivity [m/s]	Radial Distance to PW [m]
WW15-01	$3.80 \times 10^{-4}$	$9.04 \times 10^{-5}$	0.18

**Pumping Test Analysis Report**

Project: Kudz Ze Kayah

Number: ENVMIN03071

Client: BMC Minerals (No. 1) Ltd.

Location: Kudz Ze Kayah

Pumping Test: Pumping Test WW15-01

Pumping Well: WW15-01

Test Conducted by: AJS

Test Date: 10/4/2015

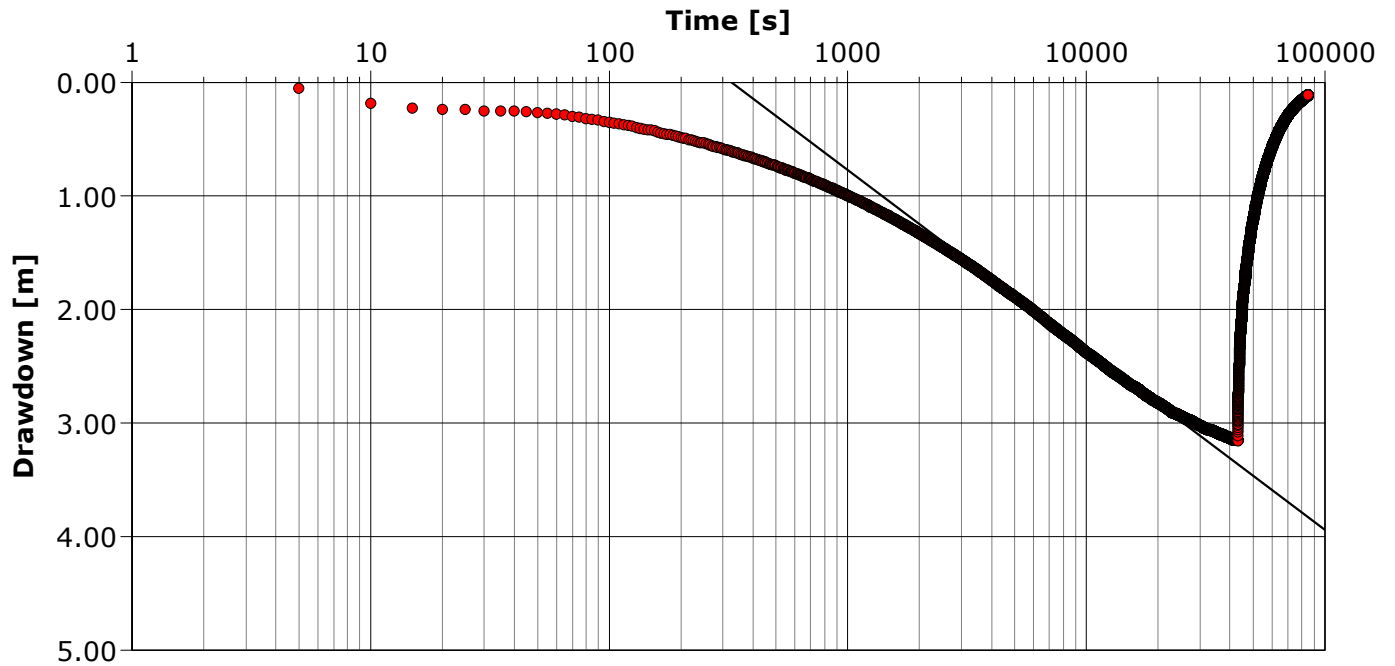
Analysis Performed by: AJS

BH95G-23\_Drawdown

Analysis Date: 1/29/2016

Aquifer Thickness: 4.20 m

Discharge: variable, average rate 70 [U.S. gal/min]





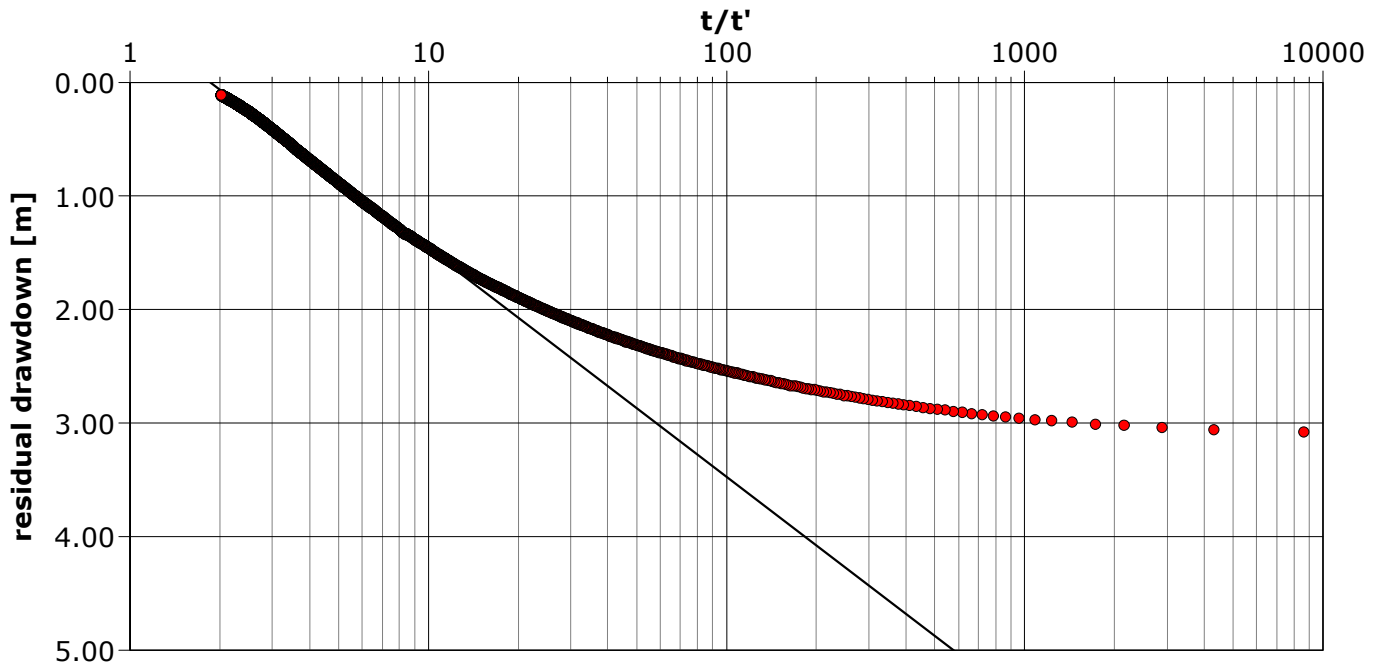
**Pumping Test Analysis Report**

Project: Kudz Ze Kayah

Number: ENVMIN03071

Client: BMC Minerals (No. 1) Ltd.

Location: Kudz Ze Kayah	Pumping Test: Pumping Test WW15-01	Pumping Well: WW15-01
Test Conducted by: AJS		Test Date: 10/4/2015
Analysis Performed by: AJS	BH95G-23_Residual Drawdown	Analysis Date: 1/29/2016
Aquifer Thickness: 4.20 m	Discharge: variable, average rate 70 [U.S. gal/min]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [m <sup>2</sup> /s]	Hydraulic Conductivity [m/s]	Radial Distance to PW [m]
BH95G-23	$4.03 \times 10^{-4}$	$9.60 \times 10^{-5}$	24.0

**Pumping Test Analysis Report**

Project: Kudz Ze Kayah

Number: ENVMIN03071

Client: BMC Minerals (No. 1) Ltd.

Location: Kudz Ze Kayah

Pumping Test: Pumping Test WW15-01

Pumping Well: WW15-01

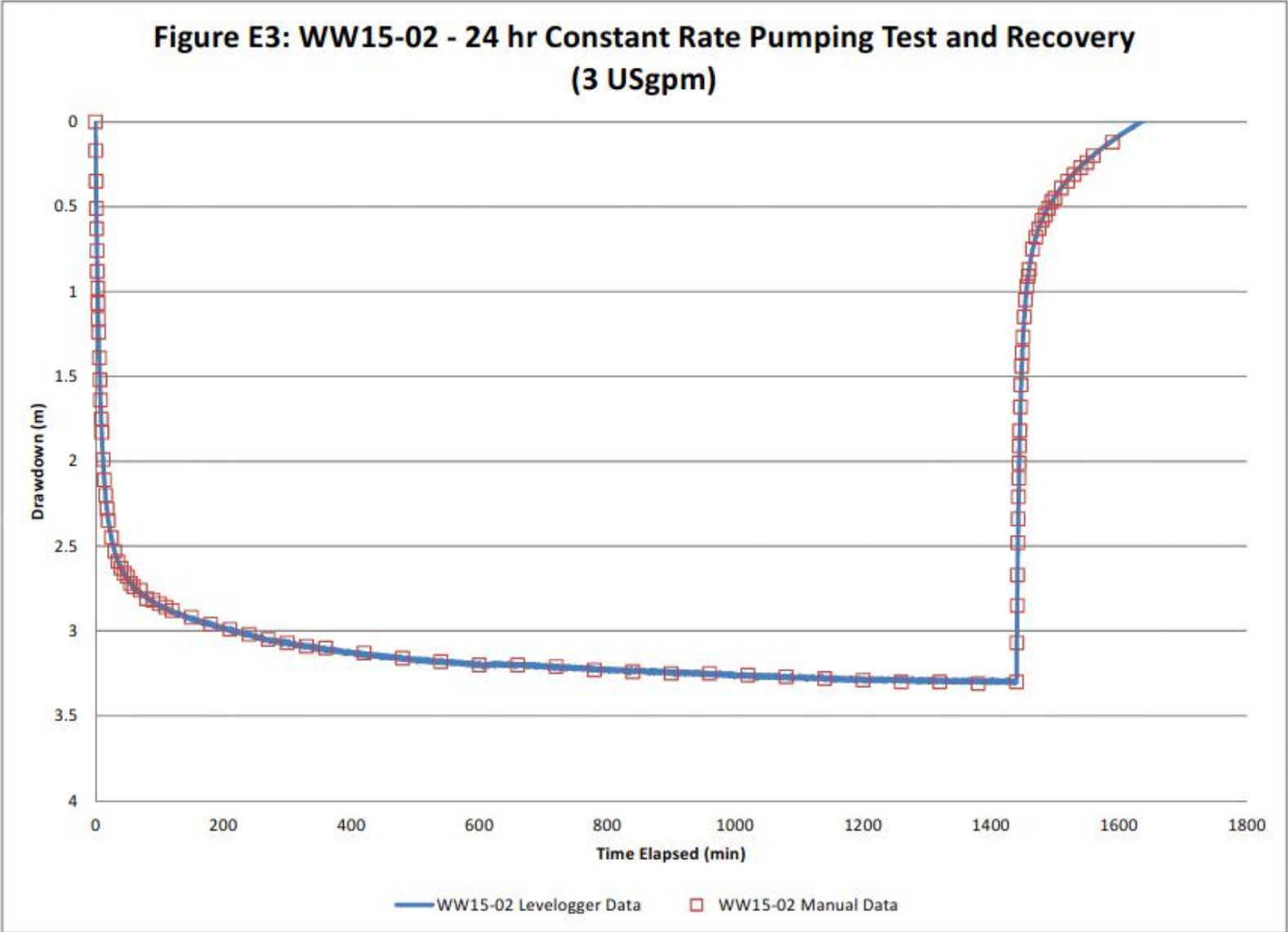
Test Conducted by: AJS

Test Date: 10/4/2015

Aquifer Thickness: 4.20 m

Discharge: variable, average rate 70 [U.S. gal/min]

	Analysis Name	Analysis Performed	Analysis Date	Method name	Well	T [m <sup>2</sup> /s]	K [m/s]	S
1	WW15-01_Drawdown	AJS	2/2/2016	Cooper & Jacob I	BH95G-23	$5.11 \times 10^{-4}$	$1.22 \times 10^{-4}$	$6.32 \times 10^{-4}$
2	WW15-01_Residual	AJS/down	10/30/2015	Theis Recovery	WW15-01	$3.80 \times 10^{-4}$	$9.04 \times 10^{-5}$	
3	BH95G-23_Drawdown	AJS	1/29/2016	Cooper & Jacob I	BH95G-23	$5.10 \times 10^{-4}$	$1.22 \times 10^{-4}$	$6.47 \times 10^{-4}$
4	BH95G-23_Residual	AJS/down	1/29/2016	Theis Recovery	BH95G-23	$4.03 \times 10^{-4}$	$9.60 \times 10^{-5}$	



**Pumping Test Analysis Report**

Project: Kudz Ze Kayah

Number: ENVMIN03071

Client: BMC Minerals (No. 1) Ltd.

Location: Kudz Ze Kayah

Pumping Test: Pumping Test WW15-02

Pumping Well: WW15-02

Test Conducted by: AJS

Test Date: 10/8/2015

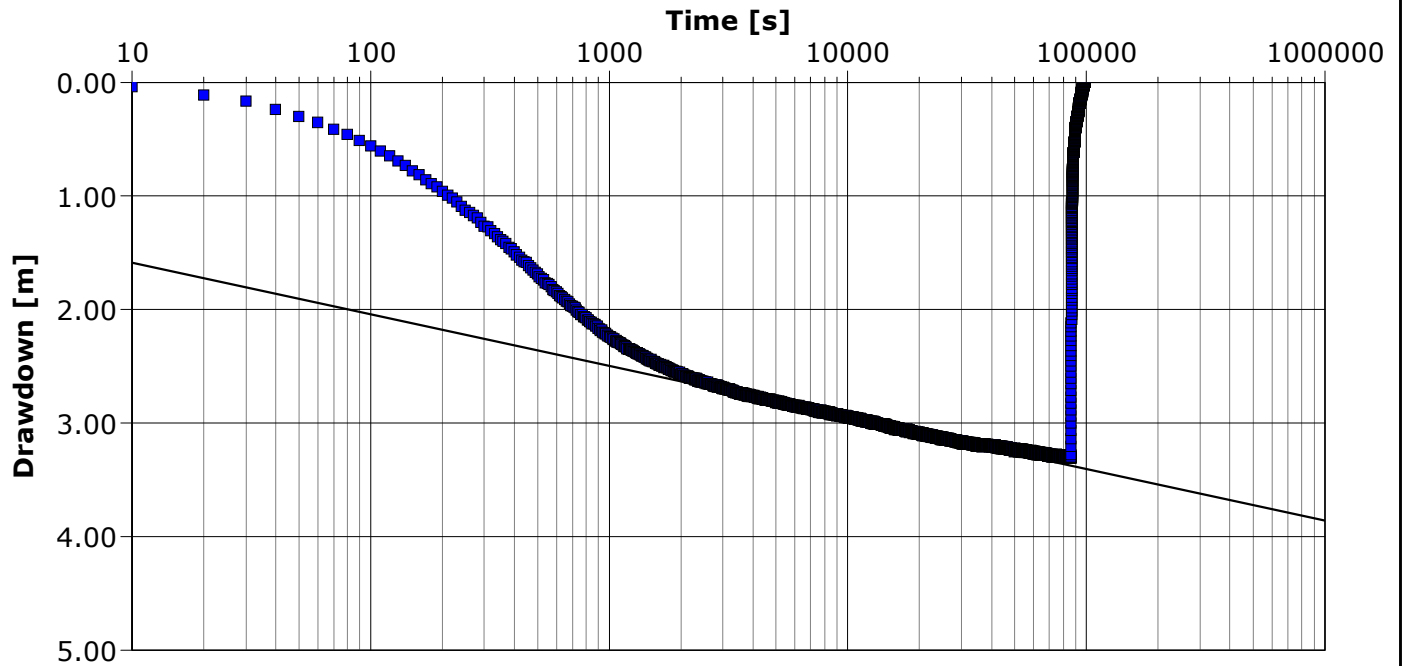
Analysis Performed by:

New analysis 1

Analysis Date: 11/2/2015

Aquifer Thickness: 34.70 m

Discharge: variable, average rate 3 [U.S. gal/min]



Calculation using COOPER & JACOB

Observation Well	Transmissivity [m <sup>2</sup> /s]	Hydraulic Conductivity [m/s]	Well-bore storage coefficient	Radial Distance to PW [m]
WW15-02	$7.63 \times 10^{-5}$	$2.20 \times 10^{-6}$	$1.32 \times 10^{-5}$	0.2

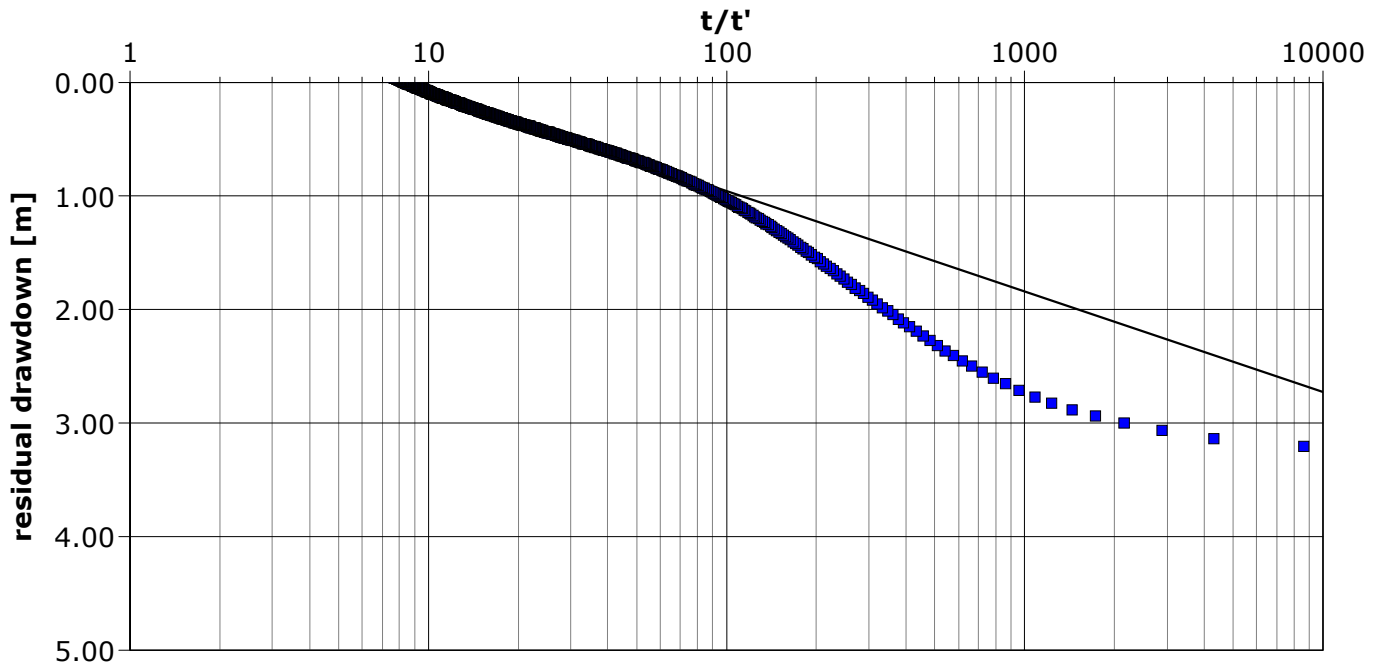
**Pumping Test Analysis Report**

Project: Kudz Ze Kayah

Number: ENVMIN03071

Client: BMC Minerals (No. 1) Ltd.

Location: Kudz Ze Kayah	Pumping Test: Pumping Test WW15-02	Pumping Well: WW15-02
Test Conducted by: AJS		Test Date: 10/8/2015
Analysis Performed by:	New analysis 1	Analysis Date: 11/2/2015
Aquifer Thickness: 34.70 m	Discharge: variable, average rate 3 [U.S. gal/min]	



Calculation using THEIS & JACOB

Observation Well	Transmissivity [m <sup>2</sup> /s]	Hydraulic Conductivity [m/s]	Radial Distance to PW [m]
WW15-02	$3.91 \times 10^{-5}$	$1.13 \times 10^{-6}$	0.2



---

<b>To:</b>	Kelli Bergh	<b>Date:</b>	November 9, 2015
<b>c:</b>		<b>Memo No.:</b>	
<b>From:</b>	Name REDACTED	<b>File:</b>	ENVMIN03071-01
<b>Subject:</b>	Pumping Test Program – WW15-01 and WW15-02, Kudz Ze Kayah, October 2015.		

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## 1.0 INTRODUCTION

This technical memo presents the scope of work, methodology and results of the pumping test program conducted on the groundwater test wells WW15-01 and WW15-02 at Kudz Ze Kayah in October 2015.

Long-term pumping tests (12 hours in overburden, 24 hours in shallow bedrock) were undertaken in order to determine the bulk hydraulic conductivities of the different hydrostratigraphic units (permeable overburden and shallow fractured bedrock) to better determine anticipated dewatering rates for a possible future open pit.

The pumping tests also provided the opportunity to identify aquifer boundaries that may be present given the topography in the vicinity of the proposed open pit and collect groundwater quality samples.

## 2.0 SCOPE OF WORK

The scope of work undertaken for the pumping test program included:

- Review regulatory and permit requirements to design and conduct the pumping test program in consideration of these requirements;
- Conduct step drawdown pumping tests at WW15-01 and WW15-02 in order to estimate a pumping rate for the constant rate pumping tests;
- Monitor recovery of water levels following the step drawdown tests;
- Conduct constant rate pumping tests at WW15-01 and WW15-02;
- Monitor recovery of water levels following the constant rate test;
- Monitor response of water levels in observation wells during the pumping test program;
- Monitor discharge and ensure water did not flow directly into surface water bodies.

## 3.0 REGULATIONS

BMC Minerals (No. 1) Ltd. (BMC) currently hold a Type A Water Licence No. QZ97-026 (the Licence) for the Kudz Ze Kayah project that was issued on November 2, 1999 and expires on September 28, 2018. Under this Licence, the licensee is authorized to dewater the overburden and bedrock in the area of the proposed open pit and discharge the water to Geona Creek (Part D.43, p. 10).

Both test wells WW15-01 and WW15-02 are located in the area of the proposed open pit and were completed so they can potentially be used as future dewatering wells. Tetra Tech EBA, in consultation with BMC, therefore determined that the pumping tests can be completed under the existing Type A Water Licence.

Even though the Licence permits direct discharge of groundwater from the overburden and bedrock aquifers within the open pit area into Geona Creek, all groundwater produced during the pumping tests was discharged to ground and returned to the same aquifers it was extracted from to minimize or eliminate any potential environmental impact.

The pumping tests were also designed to minimize the amount of groundwater extracted during each of the pumping tests. The total extraction rate was below 300 m<sup>3</sup>/day for all pumping tests conducted, i.e., below the threshold for the requirement of a water licence for water use associated with a quartz mining undertaking. However, a Schedule 3 notice (Notification of Water Use Without a Licence) was not required because BMC holds a valid Type A Water Licence for the project which allows the overburden and bedrock aquifers in the area of the proposed open pit to be dewatered.

## 4.0 WELL SUMMARY

### 4.1 Pumping Wells

Pumping tests were conducted on test wells WW15-01 and WW15-02 (200 mm / 8" diameter). These two wells were drilled, installed and developed under the direction of Tetra Tech EBA in July and August 2015. A summary of well construction details is provided in Table 1.

**Table 1: Well Construction Summary**

Well ID	Unit Completed In	Total Depth (m bg)	Aquifer Thickness (m)	Screen Location (m bg)	Notes
WW15-01	Overburden (Sandy GRAVEL)	15.2	4.2	11.9 - 15.2	<ul style="list-style-type: none"> <li>Drilled to the top of bedrock.</li> <li>Screened (80-slot) in permeable sand and gravel unit overlying bedrock.</li> </ul>
WW15-02	Bedrock (fractured schist)	38.1	35.1	22.9 - 35.0	<ul style="list-style-type: none"> <li>Open hole from 3.4 to 38.1 mbg.</li> <li>PVC liner installed with 20-slot screen from 22.9 to 35 mbg.</li> </ul>

### 4.2 Observation Wells

Wells in the vicinity of WW15-01 and WW15-02 were identified as observation wells and groundwater elevations in these wells measured over the course of the pumping test program. A summary of wells used as observation wells is provided in Table 2.

**Table 2: Observation Wells**

Pumping Well ID	Observation Well	Unit Observation Well Completed In	Distance From Pumping Well (m)	Direction From Pumping Well
WW15-01	BH95-23	Overburden	24	SE
WW15-02	BH95-21	Bedrock	132	SSW
	BH95-22	Bedrock	97	ESE

## 5.0 PUMPING TEST PROGRAM

### 5.1 WW15-01

#### 5.1.1 Step drawdown Pumping Test

A step drawdown pumping test consisting of four 1 hour steps of 37.5, 75, 150 and 250 USgpm was undertaken at WW15-01 on October 4, 2015. The maximum drawdown during the 250 USgpm step was 5.09 m (16.7 ft) below the static water level, at which point the water level was drawn down to the pump inlet. This occurred approximately two minutes into the 250 USgpm step and the test was halted at this point.

After completing the step drawdown test, Tetra Tech EBA determined that the well could be pumped at 70 USgpm for a 12 hour constant rate test.

#### 5.1.2 Constant Rate Pumping Test

A constant rate pumping test was conducted on October 5, 2015 after the well had recovered to 96% of the pre-test water level (see Figure 2). The well was pumped at 70 USgpm for 12 hours and the maximum drawdown during this test was 3.29 m (10.8 ft).

The groundwater level had recovered to 91 percent of drawdown (from static) after 11.5 hours, at which point the pump and associated pipework was removed from the well.

#### 5.1.3 Water Discharge

Water pumped from the well during the pumping test program was directed to ground approximately 40 m from WW15-01 via lay flat hosing to a vegetated and low lying area to the north of WW15-01 (Figure 1, Photos 1-4). This was considered far enough from the pumping and observation wells for re-circulation of the pumped water into the aquifer not to be of concern. This location also maximised the distance to nearby surface water bodies (the closest a lake approximately 200 m north of WW15-01), allowing for higher pumping rates with less chance of overland flow reaching the lake.

The discharge area sloped gently to the north and discharged water was observed to flow in a generally northerly direction away from WW15-01 and BH95G-23. The extent of the discharged water and potential for environmental impact was closely monitored over the course of the pumping test program. The maximum extent of water flow on surface after the cessation of the constant rate test was approximately 150 m to the north of WW15-01, within the footprint of a former drill pad. There was no evidence of water discharged during the pumping test program directly or indirectly migrating to the closest nearby surface water body, the lake approximately 50 m to the north of the maximum water extent (Figure 1, Photo 4).



Overland flow was noted to be passive and there was no observable transportation of particulate matter (i.e. silt, sand, organic matter) between the discharge point and the maximum extent of flow.

Table 3 details the volumes discharged from WW15-01 during the pumping test program.

**Table 3: Pumping Test Program Discharge Volumes – WW15-01**

Date	Test Type	Volume Discharged (L)	Total Volume Discharged in Day (m3)
4-Oct-15	Step Drawdown Test	8,517	66
		17,034	
		34,069	
		6,624	
5-Oct-15	Constant Rate Test	190,784	191

## 5.2 Pumping Test Results

Water levels were recorded during the step drawdown and constant rate tests at WW15-01. Observed drawdown and recovery in WW15-01 during the constant rate pumping test is shown in Figure 2. The maximum drawdown observed in WW15-01 during the constant rate pumping test was 3.49 m (11.5 ft). As shown in Figure 2, the water level continued to fall throughout the 12-hour pumping test, although the data indicated the level was close to stabilising when the test was completed.

A datalogger was installed in nearby groundwater monitoring well BH95G-23 during the pumping test conducted on WW15-01. BH95G-23 is a small diameter (32 mm) well which is screened in the same aquifer as WW15-01. The data recorded at this well (presented in Figure 2) shows a direct and rapid hydraulic connection between the two wells.

Tetra Tech EBA completed a preliminary analysis of the pumping test data. The full data analysis will be included with the hydrogeological baseline report. The preliminary inferred aquifer transmissivity and hydraulic conductivity for the overburden aquifer in the area of the test well WW15-01 and observation well BH95G-23 are shown in Table 4.

**Table 4: Pumping Test Results WW15-01**

Well	Method	Transmissivity T	Hydraulic Conductivity K
		[m <sup>2</sup> /s]	[m/s]
WW15-01	Cooper-Jacob	5E-04	1E-04

## 5.3 WW15-02

### 5.3.1 Step drawdown Pumping Test

A step drawdown pumping test consisting of four 1-hour steps of 2, 4, 12 and 30 USgpm was undertaken at WW15-02 on October 9, 2015. The maximum drawdown during the 30 USgpm step was 24.4 m (80 ft) below the static water level. At approximately 3.5 minutes into the fourth step (30 USgpm), the drawdown increased rapidly

and the pumping rate dropped, even with the discharge valve fully open. As the water level dropped, the pumping rate also dropped as the pump worked harder to overcome the increasing head. The step drawdown test was halted after 18 min in the fourth step as useful data was no longer being collected.

After completing the step drawdown, Tetra Tech EBA determined that the well could be pumped at 11 USgpm for the 24-hour constant rate test.

### 5.3.2 Constant Rate Pumping Test

A constant rate pumping test was conducted on October 9, 2015 after the well had recovered to 94% of the pre-test water level (see Figure 3). The well was pumped at 11 USgpm for 2 hours, at which point the water level had drawn down approximately 28 m (92 ft), which was a markedly different response to being pumped at this rate to what had been observed during the step drawdown test. With drawdown showing no signs of levelling out and the water level nearing the pump inlet, the test was halted at this point.

The well was left to recover to 95% of the pre-test water level and a second constant rate test commenced on October 10, 2015. The well was pumped at 3 USgpm for a 24 hour period and the maximum drawdown during this test was 3.30 m (10.8 ft).

The groundwater level had recovered to 75 percent of drawdown (from static) after 6 hours, at which point the pump and associated pipework was removed from the well.

### 5.3.3 Water Discharge

Water pumped from the well during the pumping test program was directed via lay flat hosing to a vegetated area approximately 60 m to the southeast of WW15-02 (Figure 1, Photos 5 and 6). This was considered far enough from the pumping and observation wells for re-circulation of the pumped water into the aquifer not to be of concern. This location also maximised the distance to nearby surface water bodies (the closest a creek on the valley floor approximately 200 m east of WW15-02), allowing for higher pumping rates with less chance of overland flow reaching the creek.

At the point of discharge, the ground sloped gently to the east towards the creek. Discharged water was observed to flow in a generally easterly direction for several metres prior to flowing beneath thick vegetation. The extent of the discharged water was monitored over the course of the pumping test program. Over the length of the pumping test program, discharge water was not observed to daylight within 200 m downslope of the point where it entered the vegetation. There was no evidence of discharged water directly or indirectly migrating and discharging to the creek.

Overland flow was noted to be passive and there was no observable transportation of particulate matter (i.e. silt, sand, organic matter) between the discharge point and the maximum observed extent of flow.

Table 5 details the volumes discharged from WW15-02 during the pumping test program.

**Table 5: Pumping Test Program Discharge Volumes - WW15-02**

Date	Test Type	Volume Discharged (L)	Total Volume Discharged in Day (m3)
7-Oct-15	Step Drawdown Test	1,703	1.7
9-Oct-15	Step Drawdown Test	454	8.1
		908	
		2,725	
		2,044	
	Constant Rate Test	1,999	
10-Oct-15	Constant Rate Test	2,998	14.7
	Constant Rate Test	11,663	
11-Oct-15	Constant Rate Test	4,690	4.7

## 5.4 Pumping Test Results

Water levels were recorded during the step drawdown and constant rate tests at WW15-02. Observed drawdown and recovery in WW15-02 during the constant rate pumping test is shown in Figure 3. The maximum drawdown observed during the constant rate pumping test was 3.30 m (10.8 ft) below the static water level. As shown in Figure 3, the water level continued to fall throughout the 24-hour pumping test, although the data shows there was very little change in level during the last 14 hours of the test (< 0.1 m).

Dataloggers were installed in nearby groundwater wells BH95G-21 and BH95G-22 during the pumping test program conducted on WW15-02. Both of these wells are small diameter (32 mm) monitoring wells. BH95G-21 is screened in bedrock from approximately 6 to 9 m bg while BH95G-22 is screened across the overburden and bedrock aquifers. The data recorded from these two wells showed no response to the pumping of WW15-02 during the step drawdown or constant rate tests. While this infers there may not be a hydraulic connection between these wells, the pumping rates during the program, particularly during the 24-hour constant rate test (3 USgpm) may not have been sufficient to induce a response in the observation wells.

Tetra Tech EBA completed a preliminary analysis of the pumping test data. The full data analysis will be included with the hydrogeological baseline report. The preliminary inferred aquifer transmissivity and hydraulic conductivity for the overburden aquifer in the area of the test well WW15-01 and observation well BH95G-23 are shown in Table 6.

**Table 6: Pumping Test Results WW15-02**

Well	Method	Transmissivity T	Hydraulic Conductivity K
		[m <sup>2</sup> /s]	[m/s]
WW15-02	Cooper-Jacob	8E-5	2E-6

## 6.0 CONCLUSIONS

The pumping test program at WW15-01 and WW15-02 was successfully completed by Tetra Tech EBA in October 2015. To minimize any potential for environmental damage, groundwater was discharged to ground and returned to the same aquifer that it originated from. The discharge was monitored closely during the pumping tests to verify that the discharge water did not directly or indirectly migrate into nearby surface water bodies.

The following conclusions are based on the data collected during this program:

- Pumping test results from WW15-01 indicates the overburden aquifer at this location has a transmissivity in the order of  $5 \times 10^{-4}$  m<sup>2</sup>/s and a hydraulic conductivity in the order of  $1 \times 10^{-4}$  m/s which are typical values for a highly permeable sand and gravel aquifer.
- Pumping test results from WW15-02 indicates the overburden aquifer at this location has a transmissivity in the order of  $8 \times 10^{-5}$  m<sup>2</sup>/s and a hydraulic conductivity in the order of  $2 \times 10^{-6}$  m/s which are typical values for a fractured bedrock aquifer.

## 7.0 LIMITATIONS OF REPORT

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### Attachments:

- Tetra Tech EBA's General Conditions
- Figure 1: Test and Observation Wells for Pumping Test Program
- Figure 2: WW15-01 Constant Rate Pumping Test and Recovery
- Figure 3: WW15-02 Constant Rate Pumping Test and Recovery
- Appendix A – Photographs

# GENERAL CONDITIONS

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## GEOENVIRONMENTAL REPORT

This report incorporates and is subject to these “General Conditions”.

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### 1.0 USE OF REPORT AND OWNERSHIP

This report pertains to a specific site, a specific development, and a specific scope of work. It is not applicable to any other sites, nor should it be relied upon for types of development other than those to which it refers. Any variation from the site or proposed development would necessitate a supplementary investigation and assessment.

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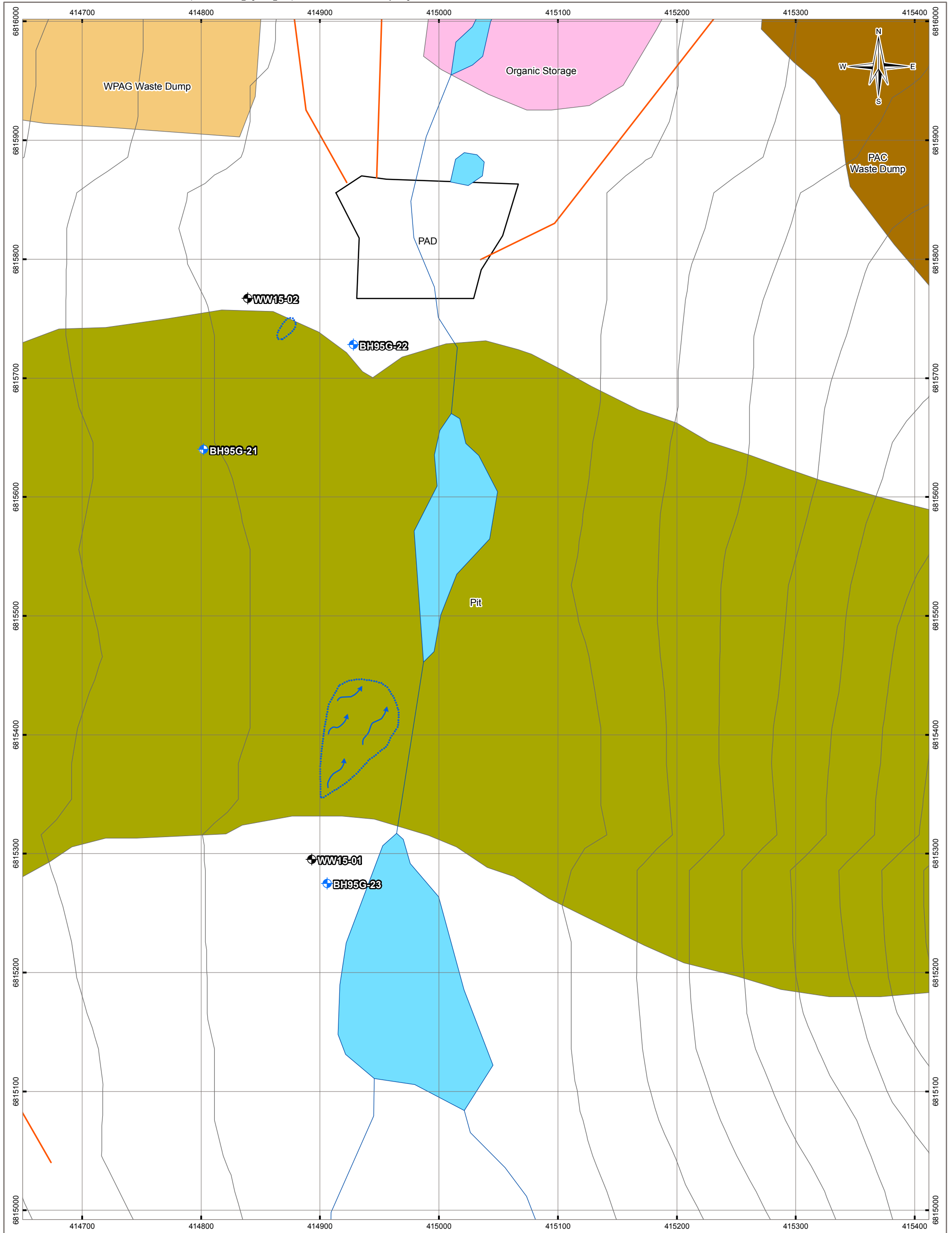
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**LEGEND**

- Maximum Observed Extent of Overland Flow of Discharge Water
- General Flow Direction
- New Monitoring Well
- Existing Monitoring Well

**Proposed Mining Infrastructure**

- PAC Waste Dump
- WPAG Waste Dump
- Organic Storage
- Pit
- Building/Structure
- Road

Contour (20 m)

- Watercourse
- Waterbody

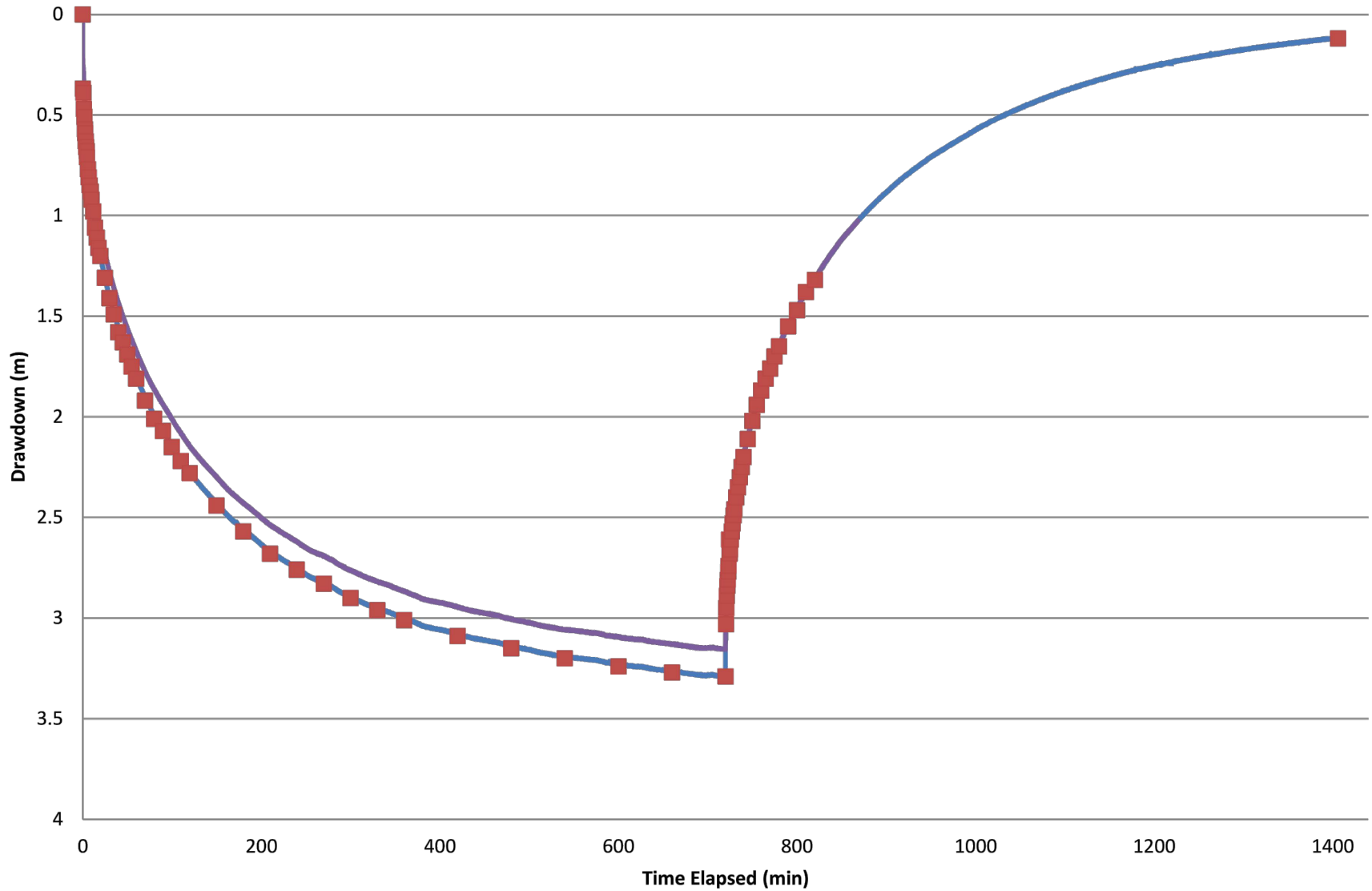
**NOTES**  
 1. Base data source: CanVec 1:50,000  
 2. Some locations are approximate

**ENVIRONMENTAL BASELINE AND PERMITTING  
 KUDZ ZE KAYAH, YK**

**Test and Observation Wells  
 for Pumping Test Program**

<b>PROJECTION</b> UTM Zone 9		<b>DATUM</b> NAD83		<b>CLIENT</b> <b>BMC Minerals (No.1) Ltd.</b>	
Scale: 1:3,000					
<b>FILE NO.</b> MIN03071-01_Figure01_PumpTest.mxd					
<b>PROJECT NO.</b> ENVMIN03071-01	<b>DWN</b> MEZ	<b>CKD</b> SL	<b>APVD</b> SK	<b>REV</b> 0	<b>Figure 1</b>
<b>OFFICE</b> TLEBA-VANC	<b>DATE</b> November 9, 2015				


**STATUS**  
ISSUED FOR USE



- LEGEND**
- WW15-01 Levellogger Data
  - WW15-01 Manual Data
  - BH95G-23 Levellogger Data

CLIENT

**BMC MINERALS (No. 1)**



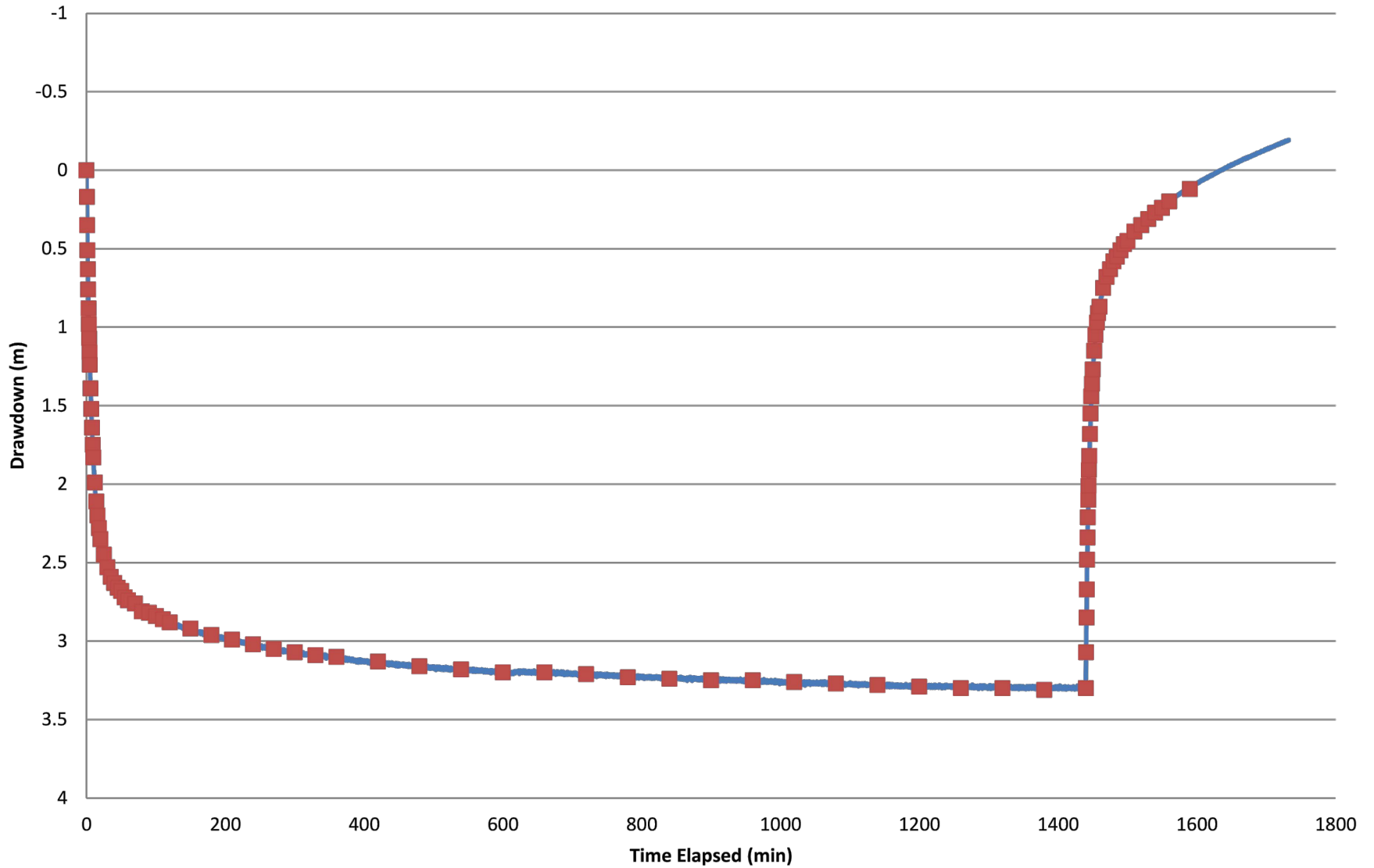
**KUDZ ZE KAYAH PRELIMINARY HYDROGEOLOGICAL ASSESSMENT**

**WW15-01 CONSTANT RATE PUMPING TEST AND RECOVERY**

PROJECT NO. ENVMIN03071-01	DWN CB	CKD AJS	REV 0
OFFICE EBA-WHSE	DATE November 4, 2015		

**Figure 2**





**LEGEND**  
 — WW15-02 Levellogger Data  
 ■ WW15-02 Manual Data

CLIENT  
**BMC MINERALS (No. 1)**

**KUDZ ZE KAYAH PRELIMINARY  
 HYDROGEOLOGICAL ASSESSMENT**

**WW15-02 CONSTANT RATE  
 PUMPING TEST AND RECOVERY**



PROJECT NO. ENVMIN03071-01	DWN CB	CKD AJS	REV 0
OFFICE EBA-WHSE	DATE November 4, 2015		

**Figure 3**



**Photo 1:** WW15-01 (view north) Pumping test setup, view towards closest applicable surface waterbody, lake approximately 200 m away.



**Photo 2:** WW15-01 (view north) discharge hose laid out to the north of WW15-01





**Photo 3:** WW15-01 - Discharge to ground



**Photo 4:** WW15-01 (view north) Maximum extent of overland flow (red line; approximately 50 m from surface waterbody). Water observable next to drill pipe (pipe with orange tip in centre of photograph) believed to be artesian flow from borehole and not related to pumping test program.





**Photo 5:** WW15-02 (view east) Pumping test setup, nearest surface waterbody (creek on the valley floor) is visible at the top of photograph. The red line shows the approximate extent of overland flow during water discharge.



**Photo 6:** WW15-02, discharge to ground. After discharged water flowed under the vegetation seen at the top of this photograph, it did not daylight between this point and the creek to the east (about 200 m away).

# APPENDIX F

## PACKER TEST DATA

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## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1491 m  
**Trend:** 180 deg  
**Plunge:** -90 deg  
**Date:** 11-Aug-15

**Hole #:** MW15-01  
**Hole Size:** HQ  
**Design Test Interval:** 12.5 to 20 m  
**Test #:** 1

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	60.0	102.4935	-
1	60.0	102.5005	0.0070
2	60.0	102.5020	0.0015
3	60.0	102.5125	0.0105
4	60.0	102.5185	0.0060
5	60.0	102.5240	0.0055
6	60.0	102.5305	0.0065
7			
8			
9			
10			

Stable Ave. 60.0 0.0062

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	100.0	102.5400	-
1	100.0	102.5485	0.0085
2	100.0	102.5555	0.0070
3	100.0	102.5635	0.0080
4	100.0	102.5705	0.0070
5	100.0	102.5780	0.0075
6	100.0	102.5857	
7			
8			
9			
10			

Stable Ave. 100.0 0.0076

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	150	102.5932	-
1	150	102.6050	0.0118
2	150	102.6265	0.0215
3	150	102.6362	0.0097
4	150	102.6460	0.0098
5	150	102.6570	0.0110
6			
7			
8			
9			
10			

Stable Ave. 150.0 0.0128

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	100	102.6680	-
1	100	102.6775	0.0095
2	100	102.6850	0.0075
3	100	102.6935	0.0085
4	100	102.7020	0.0085
5	100	102.7097	0.0077
6			
7			
8			
9			
10			

Stable Ave. 100.0 0.0083

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	60	102.7155	-
1	60	102.7220	0.0065
2	60	102.7282	0.0062
3	60	102.7347	0.0065
4	60	102.7400	0.0053
5	60	102.7455	0.0055
6			
7			
8			
9			
10			

Stable Ave. 60.0 0.0060

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

Depth to Water from Top of Stickup: 9.3 m toc  
 Top of Packer Interval: 12.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 20.00 m ah  
 Packer Inflation Pressure: 590 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
\* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

Start Flushing: -  
 End Flushing: -  
 Start Packer Testing: -  
 End Packer Testing: 9:10 PM

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Packer test on potential screen interval

Hole #: MW15-01  
 Test #: 1



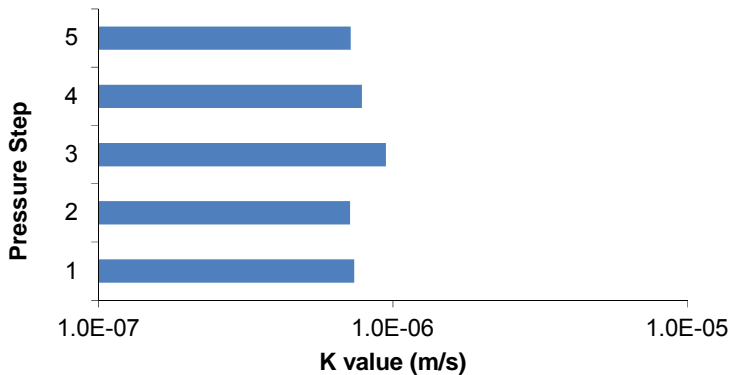
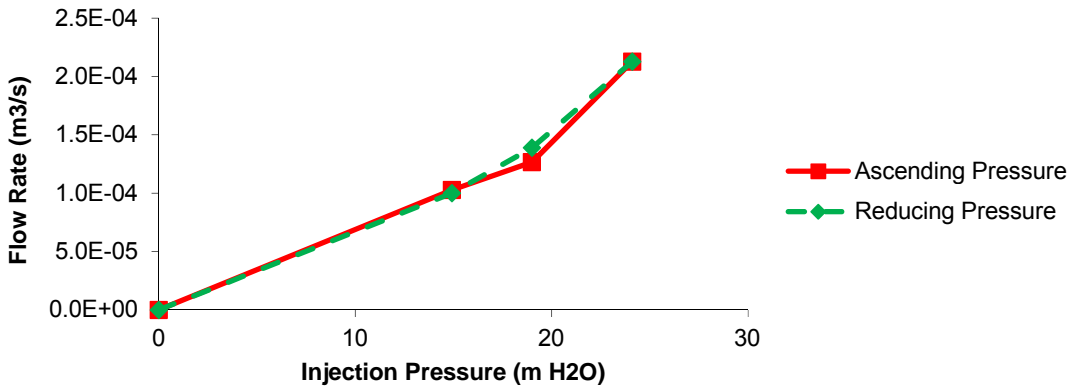
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 12.5  
 Bottom of Packer Test Interval (mah): 20.0  
 L: Length of Test Interval (mah): 7.5  
 Test Interval Midpoint (mah): 16.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 9.30  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -90  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	8.7	60.0	6.1	14.9	1.0E-04	7.4E-07
2	14.5	100.0	10.2	19.0	1.3E-04	7.1E-07
3	21.8	150.0	15.3	24.1	2.1E-04	9.5E-07
4	14.5	100.0	10.2	19.0	1.4E-04	7.8E-07
5	8.7	60.0	6.1	14.9	1.0E-04	7.2E-07
<b>Geometric Mean:</b>						<b>7.8E-07</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1430 m  
**Trend:** 180 deg  
**Plunge:** -90 deg  
**Date:** 12-Aug-15

**Hole #:** MW15-02  
**Hole Size:** HQ  
**Design Test Interval:** 12.5 to 32 m  
**Test #:** 1

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	60.0	100.8820	-
1	60.0	100.8820	0.0000
2*	60.0	100.8820	0.0000
3	60.0	100.8820	0.0000
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 60.0 0.0000

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	100.0	100.8830	-
1	100.0	100.8890	0.0060
2	100.0	100.8930	0.0040
3	100.0	100.8970	0.0040
4	100.0	100.9010	0.0040
5	100.0	100.9055	0.0045
6			
7			
8			
9			
10			

Stable Ave. 100.0 0.0045

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	150	100.9100	-
1	140	100.9180	0.0080
2	150	100.9225	0.0045
3	150	100.9290	0.0065
4	150	100.9350	0.0060
5	150	100.9410	0.0060
6			
7			
8			
9			
10			

Stable Ave. 148.0 0.0062

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	90	100.9430	-
1	90	100.9440	0.0010
2	90		
3	90	100.9490	0.0025
4	100	100.9520	0.0030
5	100	100.9550	0.0030
6			
7			
8			
9			
10			

Stable Ave. 94.0 0.0024

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			0.0000
2	No flow at lower pressure, cut test off		0.0000
3			0.0000
4			0.0000
5			
6			
7			
8			
9			
10			

Stable Ave. #DIV/0! 0.0000

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

Depth to Water from Top of Stickup: 0.0 m toc  
 Top of Packer Interval: 12.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 32.00 m ah  
 Packer Inflation Pressure: 300 psi  
 Rod Stickup Height: 2.50 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 2.00 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

No flushing, setup @  
 Start Flushing:  
 End Flushing: 6:20 PM  
 Start Packer Testing:  
 End Packer Testing:

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** No leaks from stuffing box - nevermind, very small leak (1 drip every 3 seconds)

\* Very very little flow, no return.



Hole #: MW15-02  
 Test #: 1



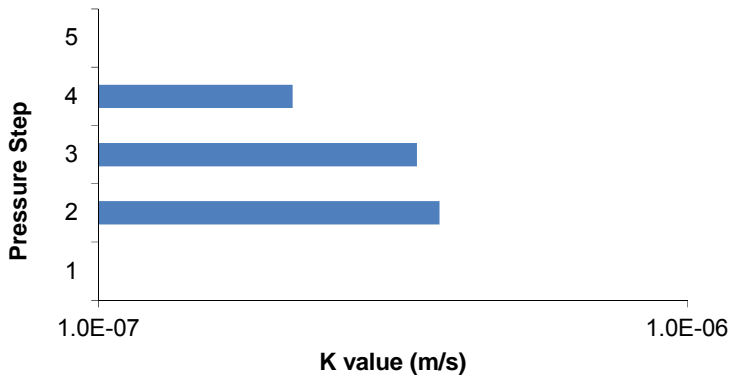
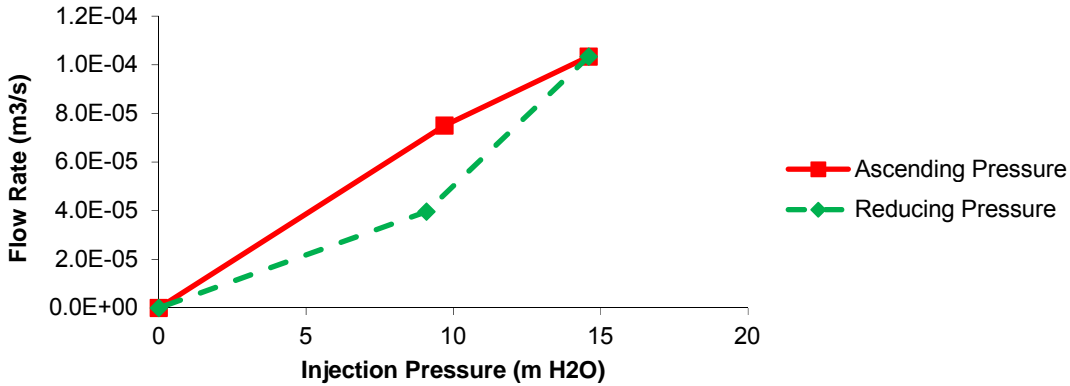
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 12.5  
 Bottom of Packer Test Interval (mah): 32.0  
 L: Length of Test Interval (mah): 19.5  
 Test Interval Midpoint (mah): 22.3  
 Stickup Height (mah): 2.50  
 Pressure Gauge Height (m above ground): 2.00  
 Depth to Water Table (mah): 0.00  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -90  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1						
2	14.5	100.0	10.2	9.7	7.5E-05	3.8E-07
3	21.5	148.0	15.1	14.6	1.0E-04	3.5E-07
4	13.6	94.0	9.6	9.1	4.0E-05	2.1E-07
5						
<b>Geometric Mean:</b>						<b>3.0E-07</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** \_\_\_\_\_

**Collar El.:** 1464 m  
**Trend:** 180 deg  
**Plunge:** -90 deg  
**Date:** 14-Aug-15

**Hole #:** MW15-05D  
**Hole Size:** HQ  
**Design Test Interval:** 22.5 to 30.0 m  
**Test #:** 1

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	55.0	103.1970	-
1	55.0	103.1972	0.0002
2	55.0	103.1972	0.0000
3	55.0	103.1975	0.0003
4	55.0	103.1977	0.0002
5	55.0	103.1980	0.0003
6			
7			
8			
9			
10			

Stable Ave. 55.0 0.0002

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	100.0	103.1990	-
1	100.0	103.2010	0.0020
2	100.0	103.2010	0.0000
3	100.0	103.2020	0.0010
4	100.0	103.2030	0.0010
5	100.0	103.2040	0.0010
6			
7			
8			
9			
10			

Stable Ave. 100.0 0.0010

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	150	103.2057	-
1	150	103.2067	0.0010
2	-		
3	150	103.2082	0.0008
4	150	103.2090	0.0008
5	150	103.2097	0.0007
6	150	103.2105	0.0008
7			
8			
9			
10			

Stable Ave. 150.0 0.0008

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	100	103.2120	-
1	100	103.2132	0.0012
2	100	103.2140	0.0008
3	100	103.2145	0.0005
4	100	103.2152	0.0007
5	100	103.2160	0.0008
6	100	103.2172	0.0012
7	100	103.218	0.0008
8			
9			
10			

Stable Ave. 100.0 0.0008

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	50	103.2195	-
1	55	103.2200	0.0005
2	55	103.2210	0.0010
3	55	103.2222	0.0012
4	55	103.2225	0.0003
5	55	103.2240	0.0015
6	55	103.2242	0.0002
7			
8			
9			
10			

Stable Ave. 55.0 0.0008

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

Depth to Water from Top of Stickup: 11.3 m toc  
 Top of Packer Interval: 22.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 30.00 m ah  
 Packer Inflation Pressure: 290 psi  
 Rod Stickup Height: 1.50 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.00 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

No mud used, just flushing cuttings  
 Start Flushing: \_\_\_\_\_  
 End Flushing: 10 minutes  
 Start Packer Testing: 11:32 PM  
 End Packer Testing: 12:08 AM

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** 21 to 24 m not crumbly, obvious layer in rock, but competent.

Hole #: MW15-05D  
 Test #: 1



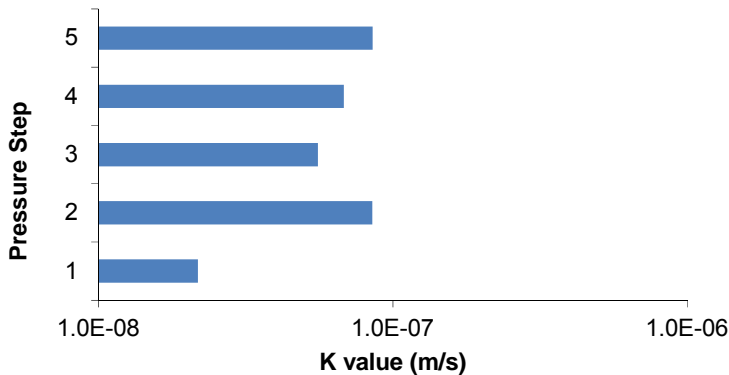
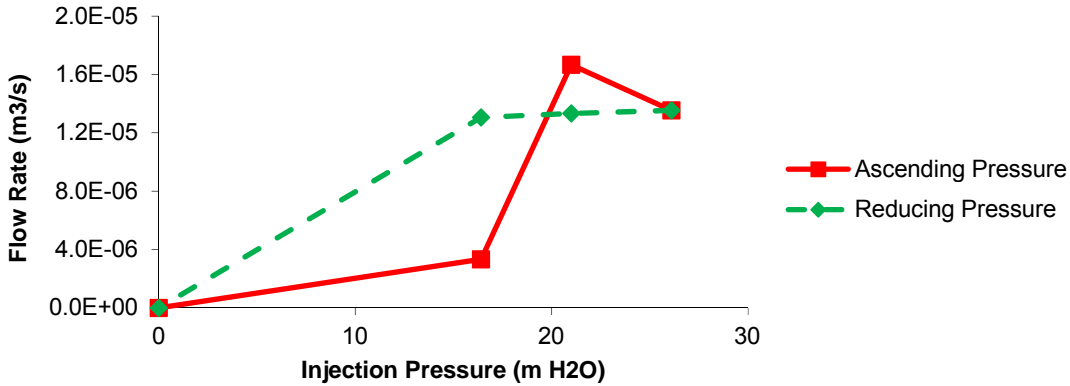
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 22.5  
 Bottom of Packer Test Interval (mah): 30.0  
 L: Length of Test Interval (mah): 7.5  
 Test Interval Midpoint (mah): 26.3  
 Stickup Height (mah): 1.50  
 Pressure Gauge Height (m above ground): 1.00  
 Depth to Water Table (mah): 11.30  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -90  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	8.0	55.0	5.6	16.4	3.3E-06	2.2E-08
2	14.5	100.0	10.2	21.0	1.7E-05	8.5E-08
3	21.8	150.0	15.3	26.1	1.4E-05	5.6E-08
4	14.5	100.0	10.2	21.0	1.3E-05	6.8E-08
5	8.0	55.0	5.6	16.4	1.3E-05	8.5E-08
<b>Geometric Mean:</b>						<b>5.7E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1362 m  
**Trend:** 180 deg  
**Plunge:** -90 deg  
**Date:** 15-Aug-15

**Hole #:** MW15-07D  
**Hole Size:** HQ  
**Design Test Interval:** 16.5 to 33  
**Test #:** 1

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	65.0	103.0130	-
1	65.0	103.0155	0.0025
2	65.0	103.0160	0.0005
3	65.0	103.0160	0.0000
4	65.0	103.0170	0.0010
5	65.0	103.0170	0.0000
6			
7			
8			
9			
10			

Stable Ave. 65.0 0.0008

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	120.0	103.1180	-
1	120.0	103.1230	0.0050
2	120.0	103.1270	0.0040
3	120.0	103.1310	0.0040
4	200.0	103.1380	0.0070
5	200.0	103.1430	0.0050
6	120.0	103.1470	0.0040
7			
8	Hit release valve with shoe		
9			
10			

Stable Ave. 146.7 0.0050

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	180	103.1500	-
1	185	103.1570	0.0070
2	185	103.1630	0.0060
3	185	103.1680	0.0050
4	185	103.1740	0.0060
5	185	103.1800	0.0060
6			
7			
8			
9			
10			

Stable Ave. 185.0 0.0060

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	110	103.1820	-
1	110	103.1850	0.0030
2	120	103.1880	0.0030
3	120	103.1910	0.0030
4	120	103.1940	0.0030
5	120	103.1970	0.0030
6			
7			
8			
9			
10			

Stable Ave. 118.0 0.0030

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	70	103.1975	-
1	70	103.1985	0.0010
2	70	103.1995	0.0010
3	70	103.2010	0.0015
4	70	103.2025	0.0015
5	70	103.2040	0.0015
6			
7			
8			
9			
10			

Stable Ave. 70.0 0.0013

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

Depth to Water from Top of Stickup: 0.0 m toc  
 Top of Packer Interval: 16.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 33.00 m ah  
 Packer Inflation Pressure: 300 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.00 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

No mud used  
 Start Flushing: -  
 End Flushing: -  
 Start Packer Testing: 9:20 AM  
 End Packer Testing: -

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** At 65kPa very low flow. No return through casing. Computer dead. Estimated pressures based on calculations at MW15-08. Bedrock interface at about 13.5 m.

Hole #: MW15-07D  
 Test #: 1



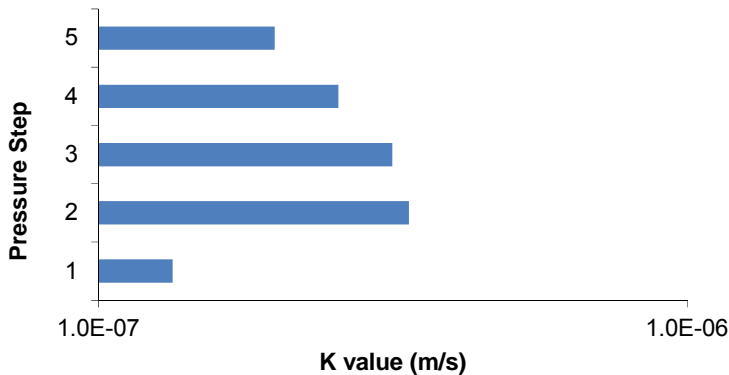
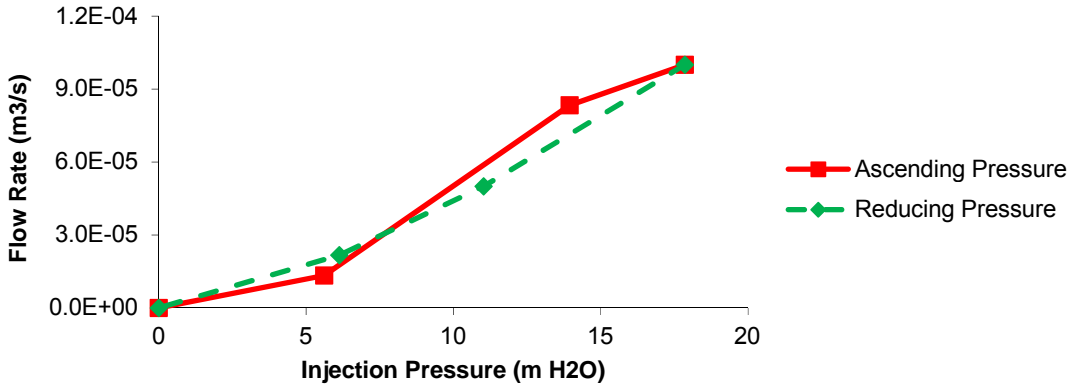
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 16.5  
 Bottom of Packer Test Interval (mah): 33.0  
 L: Length of Test Interval (mah): 16.5  
 Test Interval Midpoint (mah): 24.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.00  
 Depth to Water Table (mah): -0.01  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -90  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	9.4	65.0	6.6	5.6	1.3E-05	1.3E-07
2	21.3	146.7	15.0	13.9	8.3E-05	3.4E-07
3	26.8	185.0	18.9	17.9	1.0E-04	3.2E-07
4	17.1	118.0	12.0	11.0	5.0E-05	2.6E-07
5	10.2	70.0	7.1	6.1	2.2E-05	2.0E-07
<b>Geometric Mean:</b>						<b>2.4E-07</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1332 m  
**Trend:** 180 deg  
**Plunge:** -90 deg  
**Date:** 12-Aug-15

**Hole #:** MW15-08D  
**Hole Size:** HQ  
**Design Test Interval:** 19.5 to 36m  
**Test #:** 1

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	70.0	27.1225	-
1	70.0	27.1275	0.0050
2	-	27.1320	0.0045
3	70.0	27.1360	0.0040
4	70.0	27.1400	0.0040
5	70.0	27.1440	0.0040
6			
7			
8			
9			
10			

Stable Ave. 70.0 0.0043

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	135.0	27.1480	-
1	140.0	27.1560	0.0080
2	140.0	27.1630	0.0070
3	140.0	27.1710	0.0080
4	140.0	27.1790	0.0080
5	140.0	27.1870	0.0080
6			
7			
8			
9			
10			

Stable Ave. 140.0 0.0078

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	200	27.1900	-
1	-		
2	210	27.2160	0.0130
3	215	27.2280	0.0120
4	215	27.2410	0.0130
5	15	27.2530	0.0120
6	215	27.265	0.0120
7			
8			
9			
10			

Stable Ave. 174.0 0.0125

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	120	27.2730	-
1	120	27.2780	0.0050
2	120	27.2830	0.0050
3	120	27.2880	0.0050
4	120	27.2930	0.0050
5			
6			
7			
8			
9			
10			

Stable Ave. 120.0 0.0050

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	75	27.2965	-
1	75	27.2990	0.0025
2	70	27.3025	0.0035
3	70	27.3040	0.0015
4	70	27.3060	0.0020
5			
6			
7			
8			
9			
10			

Stable Ave. 71.3 0.0024

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

Depth to Water from Top of Stickup: 0.0 m toc  
 Top of Packer Interval: 19.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 36.00 m ah  
 Packer Inflation Pressure: 300 psi  
 Rod Stickup Height: 1.50 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.00 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

No mud used, just flushing cuttings  
 Start Flushing: Setup time: 11:55 AM  
 End Flushing: -  
 Start Packer Testing: 12:07 PM  
 End Packer Testing: 12:35 PM

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Drillers had reached target depth by the time I arrived (about 20m) below bedrock interface. Tested longer interval than screen section.

Hole #: MW15-08D  
 Test #: 1



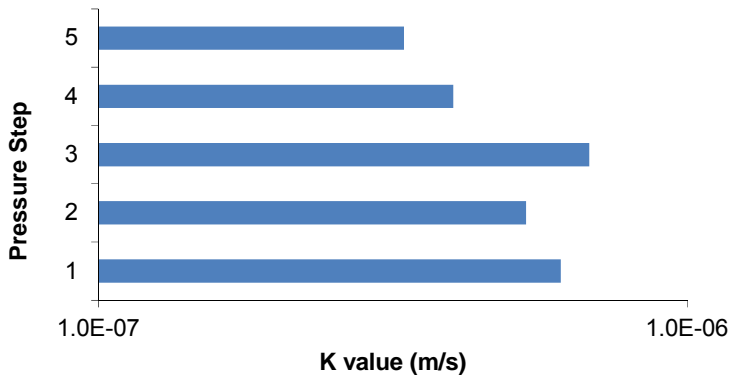
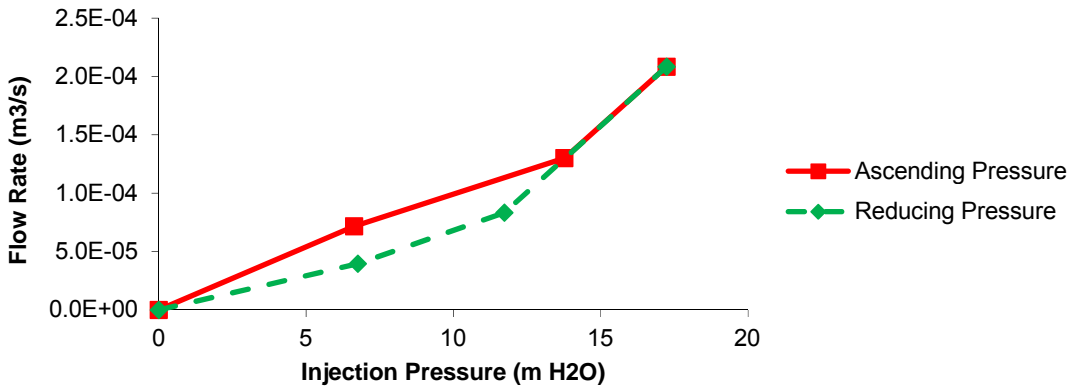
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 19.5  
 Bottom of Packer Test Interval (mah): 36.0  
 L: Length of Test Interval (mah): 16.5  
 Test Interval Midpoint (mah): 27.8  
 Stickup Height (mah): 1.50  
 Pressure Gauge Height (m above ground): 1.00  
 Depth to Water Table (mah): -0.01  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -90  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	10.2	70.0	7.1	6.6	7.2E-05	6.1E-07
2	20.3	140.0	14.3	13.8	1.3E-04	5.3E-07
3	25.2	174.0	17.7	17.2	2.1E-04	6.8E-07
4	17.4	120.0	12.2	11.7	8.3E-05	4.0E-07
5	10.3	71.3	7.3	6.8	4.0E-05	3.3E-07
<b>Geometric Mean:</b>						<b>4.9E-07</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1318 m  
**Trend:** 180 deg  
**Plunge:** -90 deg  
**Date:** 10-Aug-15

**Hole #:** MW15-09D  
**Hole Size:** HQ  
**Design Test Interval:** 34.5 to 39 m  
**Test #:** 1

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	13.8	26.0070	-
1	13.8	26.0220	0.0150
2*	15.0	26.0580	0.0360
3	15.0	26.0750	0.0170
4	15.0	26.0920	0.0170
5	15.0	26.1080	0.0160
6			
7			
8	* maybe I skipped a minute, unusual		
9			
10			

Stable Ave. 14.8 0.0202

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	30.0		-
1	30.0	26.2440	
2	30.0	26.2590	0.0150
3	30.0	26.2770	0.0180
4	30.0	26.2940	0.0170
5	30.0	26.3100	0.0160
6			
7			
8			
9			
10			

Stable Ave. 30.0 0.0165

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	40	26.3180	-
1	40	26.3360	0.0180
2	40	26.3530	0.0170
3	40		
4	40	26.3870	0.0170
5	40	26.4040	0.0170
6			
7	Oscillating between 30 and 50 Kpa		
8			
9			
10			

Stable Ave. 40.0 0.0172

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	30	26.4140	-
1	30	26.4300	0.0160
2	30	26.4460	0.0160
3	30	26.4640	0.0180
4	30	26.4810	0.0170
5	30		
6			
7			
8			
9			
10			

Stable Ave. 30.0 0.0168

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	15	26.5040	-
1	15	26.5190	0.0150
2	15	26.5350	0.0160
3	15	26.5490	0.0140
4	15	26.5640	0.0150
5			
6			
7			
8			
9			
10			

Stable Ave. 15.0 0.0150

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

Depth to Water from Top of Stickup: 0.0 m toc  
 Top of Packer Interval: 34.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 39.00 m ah  
 Packer Inflation Pressure: 400 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): 15 min  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 2.00 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

Start Flushing: 7:15 AM  
 End Flushing: 7:30 AM  
 Start Packer Testing: 8:05 AM  
 End Packer Testing: 8:30 AM

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Very difficult to achieve such low pressure. Minimum Kpa on gauge is 30. Calculated Kpa were 12, 24 and 36 Kpa. Release valve completely closed on flowmeter @ 40 Kpa.



Hole #: MW15-09D  
 Test #: 1



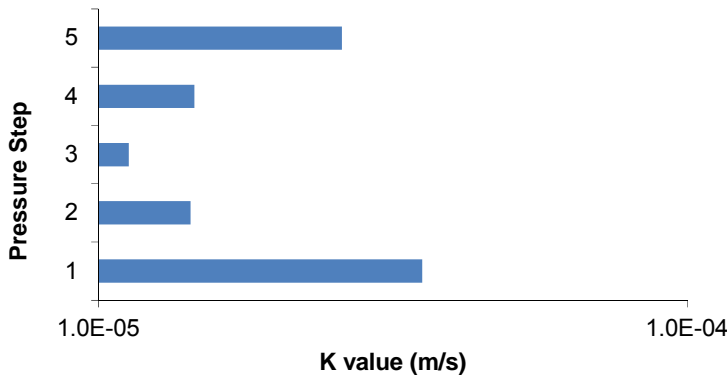
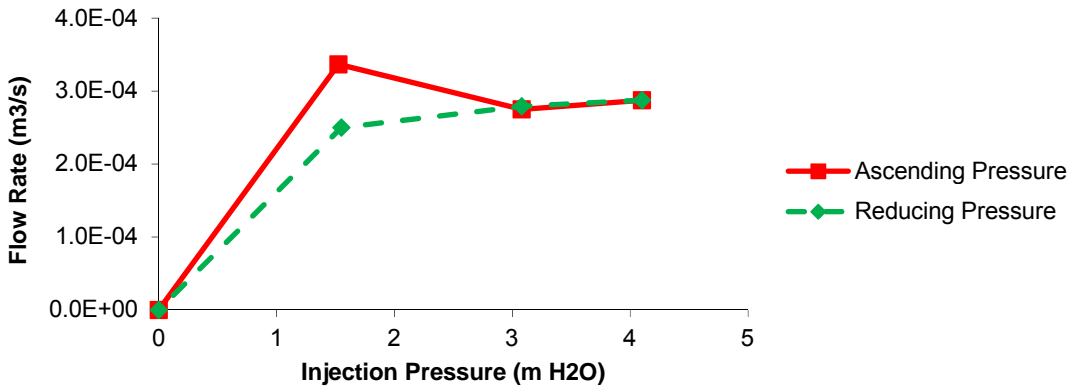
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 34.5  
 Bottom of Packer Test Interval (mah): 39.0  
 L: Length of Test Interval (mah): 4.5  
 Test Interval Midpoint (mah): 36.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 2.00  
 Depth to Water Table (mah): 0.02  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -90  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	2.1	14.8	1.5	1.5	3.4E-04	3.5E-05
2	4.4	30.0	3.1	3.1	2.7E-04	1.4E-05
3	5.8	40.0	4.1	4.1	2.9E-04	1.1E-05
4	4.4	30.0	3.1	3.1	2.8E-04	1.5E-05
5	2.2	15.0	1.5	1.5	2.5E-04	2.6E-05
<b>Geometric Mean:</b>						<b>1.8E-05</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1320 m  
**Trend:** 180 deg  
**Plunge:** -90 deg  
**Date:** 11-Aug-15

**Hole #:** MW15-10D  
**Hole Size:** HQ  
**Design Test Interval:** 28.5 to 33.0 m  
**Test #:** 1

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	30.0	26.6290	-
1	30.0	26.6330	0.0040
2	30.0	26.6400	0.0070
3	30.0	26.6470	0.0070
4	30.0	26.6540	0.0070
5	30.0	26.6620	0.0080
6			
7			
8			
9			
10			

Stable Ave. 30.0 0.0066

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	45.0	26.6700	-
1	50.0	26.6880	0.0180
2	50.0	26.7050	0.0170
3	52.0	26.7220	0.0170
4	53.0	26.7390	0.0170
5	53.0	26.7550	0.0160
6			
7			
8			
9			
10			

Stable Ave. 51.6 0.0170

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	75	26.7705	-
1	75	26.7930	0.0225
2	70	26.8150	0.0220
3	70	26.8365	0.0215
4	72	26.8590	0.0225
5	72	26.8810	0.0220
6			
7			
8			
9			
10			

Stable Ave. 71.8 0.0221

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	50	26.8890	-
1	50	26.9020	0.0130
2	45	26.9155	0.0135
3	50	26.9285	0.0130
4	45	26.9410	0.0125
5	45	26.9540	0.0130
6			
7			
8			
9			
10			

Stable Ave. 47.0 0.0130

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	30	26.9580	-
1	-		
2	30	26.9660	0.0040
3	30	26.9700	0.0040
4	30	26.9750	0.0050
5	30	26.9790	0.0040
6	30	26.9840	0.0050
7			
8			
9			
10			

Stable Ave. 30.0 0.0044

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

Depth to Water from Top of Stickup: -0.2 m toc  
 Top of Packer Interval: 28.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 33.00 m ah  
 Packer Inflation Pressure: 350 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

No mud used, no flushing required  
 Start Flushing: -  
 End Flushing: -  
 Start Packer Testing: 9:00 AM  
 End Packer Testing: -

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Recovery of rock very poor. Difficult to tell if rock is stable enough to hold packer. Asked driller to change configuration of flowmeter. Test has improved.

Hole #: MW15-10D  
 Test #: 1



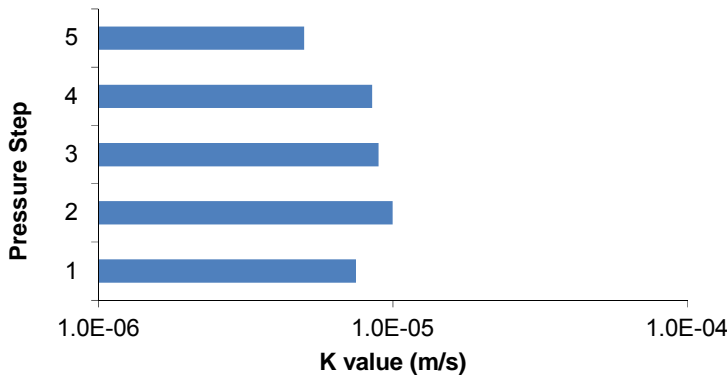
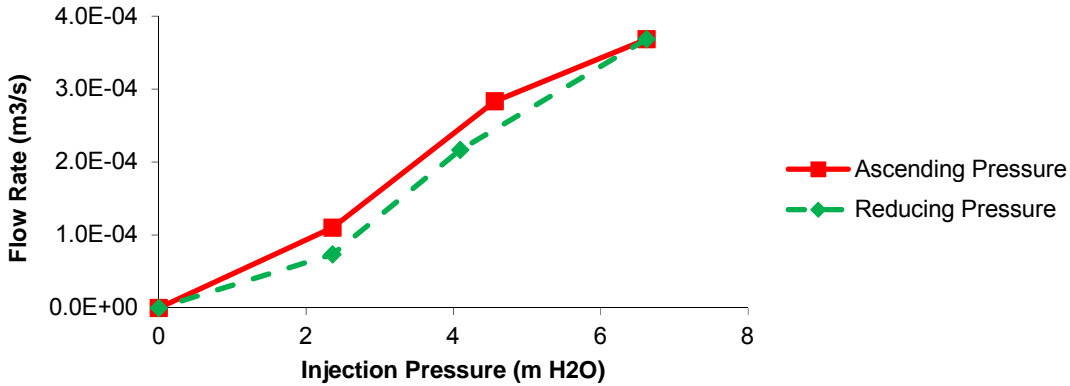
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 28.5  
 Bottom of Packer Test Interval (mah): 33.0  
 L: Length of Test Interval (mah): 4.5  
 Test Interval Midpoint (mah): 30.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): -0.20  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -90  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	4.4	30.0	3.1	2.4	1.1E-04	7.5E-06
2	7.5	51.6	5.3	4.6	2.8E-04	1.0E-05
3	10.4	71.8	7.3	6.6	3.7E-04	8.9E-06
4	6.8	47.0	4.8	4.1	2.2E-04	8.5E-06
5	4.4	30.0	3.1	2.4	7.3E-05	5.0E-06
<b>Geometric Mean:</b>						<b>7.8E-06</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1458 m  
**Trend:** 180 deg  
**Plunge:** -60 deg  
**Date:** 6-Aug-15

**Hole #:** ABM2 / K15-204  
**Hole Size:** NQ  
**Design Test Interval:** 21.5 to 35 m  
**Test #:** 1

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	80.0	99.6085	-
1	80.0	99.6085	0.0000
2	80.0	99.6085	0.0000
3	80.0	99.6085	0.0000
4			
5			
6	Not flowing, moved on to next interval		
7			
8			
9			
10			

Stable Ave. 80.0 0.0000

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	120.0	99.6085	-
1	100.0	99.6085	0.0000
2	110.0	99.6085	0.0000
3	110.0	99.6085	0.0000
4			
5	No flow		
6			
7			
8			
9			
10			

Stable Ave. 106.7 0.0000

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	190	99.6085	-
1	195	99.6085	0.0000
2	195	99.6085	0.0000
3	195	99.6085	0.0000
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 195.0 0.0000

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			0.0000
2			0.0000
3	Terminated test due to no flow.		0.0000
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 0.0000

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Ave.

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 20.0 m toc  
 Top of Packer Interval: 21.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 35.00 m ah  
 Packer Inflation Pressure: 400 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 10:00 AM  
 End Flushing: 10:36 AM  
 Start Packer Testing: -  
 End Packer Testing: -

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** No flow. However rock above is fractured and incompetent. Would likely get flow, but may also damage packers as it is broken oxidized bedrock with many fractures from 14 to 17 m.

Hole #: ABM2 / K15-204  
 Test #: 1



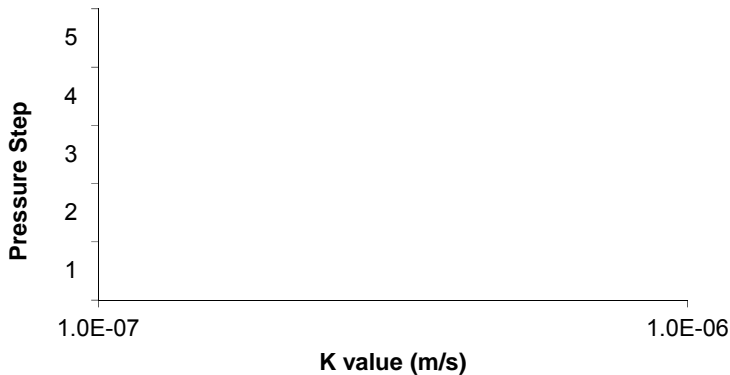
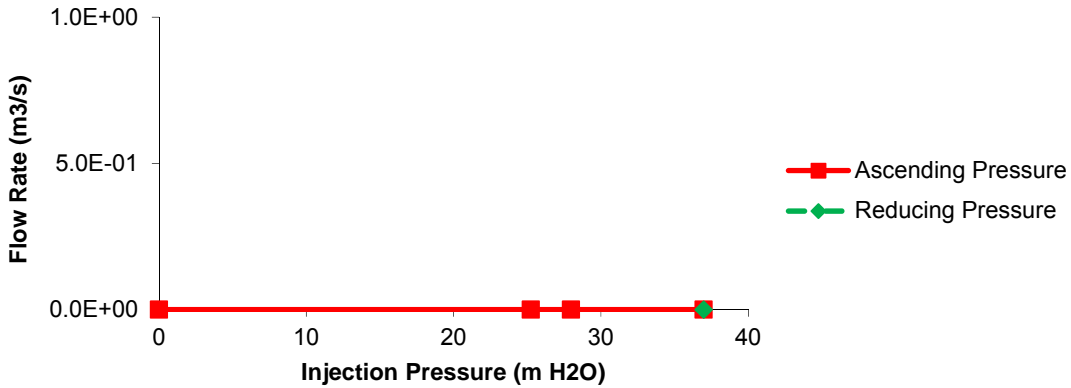
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 21.5  
 Bottom of Packer Test Interval (mah): 35.0  
 L: Length of Test Interval (mah): 13.5  
 Test Interval Midpoint (mah): 28.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 20.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -60  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	11.6	80.0	8.2	25.2	0.0E+00	0.0E+00
2	15.5	106.7	10.9	28.0	0.0E+00	0.0E+00
3	28.3	195.0	19.9	37.0	0.0E+00	0.0E+00
4						
5						
<b>Geometric Mean:</b>						<b>#NUM!</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1458 m  
**Trend:** 180 deg  
**Plunge:** -60 deg  
**Date:** 7-Aug-15

**Hole #:** ABM2 / K15-204  
**Hole Size:** NQ  
**Design Test Interval:** 72.5 to 95  
**Test #:** 2

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	150.0	99.6220	-
1	150.0	99.6235	0.0015
2	150.0	99.6245	0.0010
3	160.0	-	-
4	145.0	99.6257	0.0006
5	150.0	99.6265	0.0008
6			
7			
8			
9			
10			

Stable Ave. 151.0 0.0010

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	280.0	99.6290	-
1	280.0	-	-
2	280.0	99.6317	0.0013
3	280.0	99.6330	0.0013
4	280.0	99.6337	0.0007
5	280.0	99.6347	0.0010
6	280.0	99.6357	0.0010
7			
8			
9			
10			

Stable Ave. 280.0 0.0011

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	430	99.6402	-
1	420	99.6412	0.0010
2	420	99.6425	0.0013
3	420	99.6440	0.0015
4	420	99.6450	0.0010
5	425	99.6462	0.0012
6	425	99.6475	0.0013
7	425	99.6490	0.0015
8			
9			
10			

Stable Ave. 422.1 0.0012

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	300	99.6490	-
1	305	99.6497	0.0007
2	305	99.6500	0.0003
3	305	99.6502	0.0002
4	305	99.6510	0.0008
5	310	99.6520	0.0010
6	310	99.6530	0.0010
7	310	99.6535	0.0005
8			
9			
10			

Stable Ave. 307.1 0.0006

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	150	99.6535	-
1	155	99.6530	-0.0005
2	155	99.6530	0.0000
3	155	99.6530	0.0000
4	155	99.6530	0.0000
5			
6			
7			
8			
9			
10			

Stable Ave. 155.0 0.0000

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

rising  
 Depth to Water from Top of Stickup: -0.1 m toc  
 Top of Packer Interval: 72.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 95.00 m ah  
 Packer Inflation Pressure: 425 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

No mud used, just washing cuttings  
 Start Flushing: 5:30 AM  
 End Flushing: 5:47 AM  
 Start Packer Testing: -  
 End Packer Testing: 7:12 AM

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Clay seam about 15 cm thick at 76.5m, otherwise very competent rock to about 85.5m. Lots of thin fractures at about 85.5 to 87m.  
 Small leak at hose adaptor into stuffing box.

Hole #: ABM2 / K15-204  
 Test #: 2



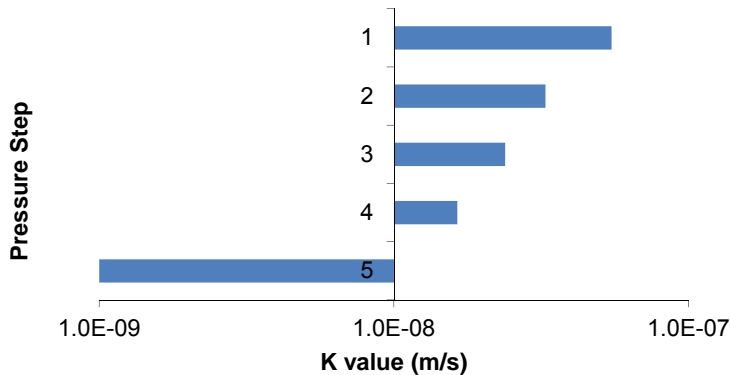
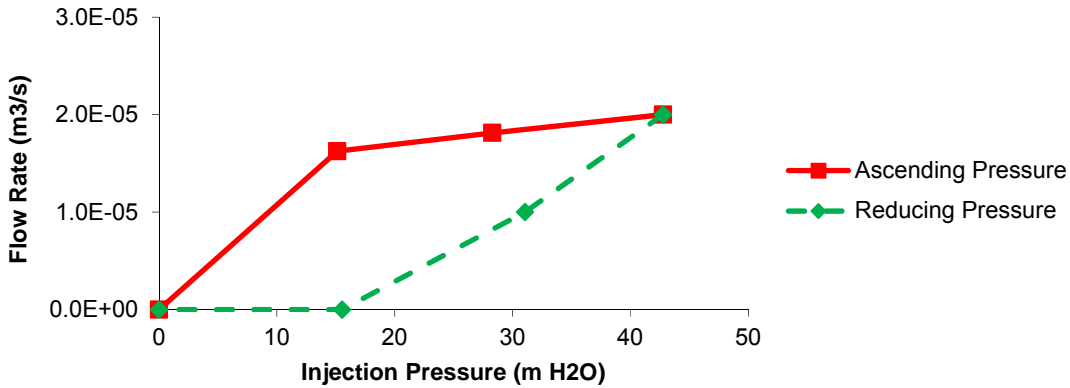
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 72.5  
 Bottom of Packer Test Interval (mah): 95.0  
 L: Length of Test Interval (mah): 22.5  
 Test Interval Midpoint (mah): 83.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): -0.05  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -60  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	21.9	151.0	15.4	15.1	1.6E-05	5.5E-08
2	40.6	280.0	28.6	28.3	1.8E-05	3.3E-08
3	61.2	422.1	43.0	42.8	2.0E-05	2.4E-08
4	44.5	307.1	31.3	31.0	1.0E-05	1.6E-08
5	22.5	155.0	15.8	15.5	0.0E+00	1.0E-09
<b>Geometric Mean:</b>						<b>1.5E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1458 m  
**Trend:** 180 deg  
**Plunge:** -60 deg  
**Date:** 8-Aug-15

**Hole #:** ABM2 / K15-204  
**Hole Size:** NQ  
**Design Test Interval:** 123.5 to 149 m  
**Test #:** 3

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	230.0	99.7125	-
1	230.0	99.7132	0.0007
2	230.0	99.7137	0.0005
3	230.0	99.7145	0.0008
4	230.0	99.7150	0.0005
5	230.0	99.7157	0.0007
6	230.0	99.7162	0.0005
7			
8			
9			
10			

Stable Ave. 230.0 0.0006

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	460.0	99.7177	-
1	460.0	99.7190	0.0013
2	460.0	99.7202	0.0012
3	460.0	99.7215	0.0013
4	460.0	99.7225	0.0010
5	460.0	99.7240	0.0015
6	460.0	99.7250	0.0010
7			
8	Pressure gauge hard to read as it's fluctuating a lot		
9			
10			

Stable Ave. 460.0 0.0013

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	710	99.7290	-
1	710	99.7310	0.0020
2	720	99.7335	0.0025
3	720	99.7347	0.0012
4	720	99.7357	0.0010
5	720	99.7372	0.0015
6	720	99.7397	0.0025
7			
8			
9			
10			

Stable Ave. 718.3 0.0016

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	470	99.7410	-
1	470	99.7417	0.0007
2	470	99.7430	0.0013
3	470	99.7445	0.0015
4	470	99.7455	0.0010
5	470	99.7465	0.0010
6	470	99.7475	0.0010
7			
8			
9			
10			

Stable Ave. 470.0 0.0011

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	250	99.7485	-
1	250	99.7490	0.0005
2	250	99.7497	0.0007
3	250	99.7500	0.0003
4	250	99.7505	0.0005
5	250	99.7510	0.0005
6	250	99.7512	0.0002
7			
8			
9			
10			

Stable Ave. 250.0 0.0005

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 30.0 m toc  
 Top of Packer Interval: 123.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 149.00 m ah  
 Packer Inflation Pressure: 550 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 12:30 AM  
 End Flushing: 1:00 AM  
 Start Packer Testing: 1:58 AM  
 End Packer Testing: 2:35 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Clay seams between 110 to 117m, swelled up and almost lost rods, driller recommended not doing a test in that zone so that they would not have to go through it twice.  
 Very competent beyond that point, no weathered zones or visible fractures. Full return. Little mud used during drilling, however were constrained to recycling the water from the sump, so no clear water for test, murky. No leaks.



Hole #: ABM2 / K15-204  
 Test #: 3



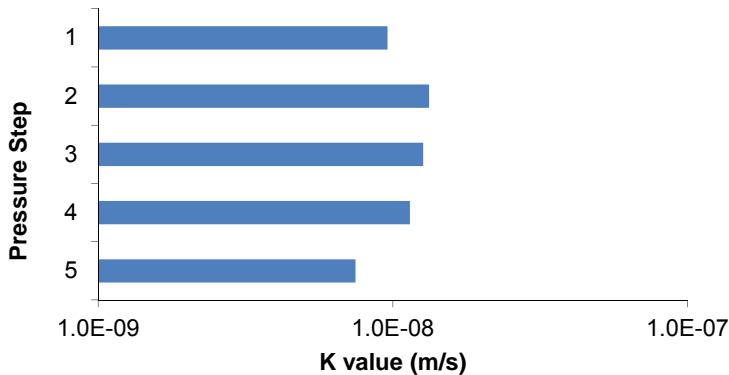
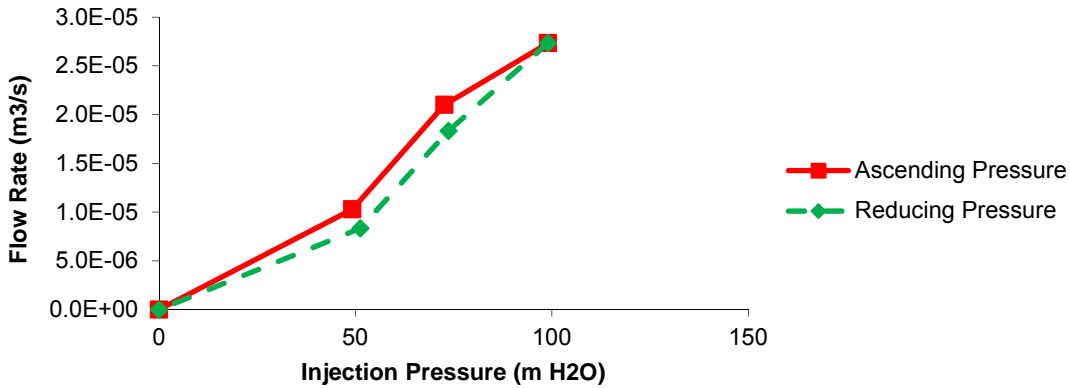
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 123.5  
 Bottom of Packer Test Interval (mah): 149.0  
 L: Length of Test Interval (mah): 25.5  
 Test Interval Midpoint (mah): 136.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 30.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -60  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	33.4	230.0	23.5	49.2	1.0E-05	9.6E-09
2	66.7	460.0	46.9	72.7	2.1E-05	1.3E-08
3	104.2	718.3	73.3	99.0	2.7E-05	1.3E-08
4	68.2	470.0	47.9	73.7	1.8E-05	1.1E-08
5	36.3	250.0	25.5	51.2	8.3E-06	7.5E-09
<b>Geometric Mean:</b>						<b>1.1E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1432 m  
**Trend:** 180 deg  
**Plunge:** -65 deg  
**Date:** 8-Aug-15

**Hole #:** ABM6 / K15-206  
**Hole Size:** NQ  
**Design Test Interval:** 13.5 to 24 m  
**Test #:** 1

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	60.0	99.7925	-
1	60.0	99.7930	0.0005
2	60.0	99.7937	0.0007
3	60.0	99.7945	0.0008
4	60.0	99.7952	0.0007
5	60.0	99.7957	0.0005
6	60.0	99.7967	0.0010
7	60.0	99.7972	0.0005
8			
9			
10			

Stable Ave. 60.0 0.0007

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	115.0	99.8000	-
1	115.0	99.8005	0.0005
2	115.0	99.8015	0.0010
3	115.0	99.8025	0.0010
4	115.0	99.8032	0.0007
5	115.0	99.8045	0.0013
6			
7			
8			
9			
10			

Stable Ave. 115.0 0.0009

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	195	99.8062	-
1	195	99.8080	0.0018
2	195	99.8092	0.0012
3	205	99.8105	0.0013
4	210	99.8120	0.0015
5	195	99.8132	0.0012
6	190	99.8142	0.0010
7	190	99.8155	0.0013
8			
9			
10			

Stable Ave. 197.1 0.0013

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	125	99.8160	-
1	120	99.8175	0.0015
2	120	99.8182	0.0007
3	120	99.8195	0.0013
4	120	99.8200	0.0005
5	120	99.8210	0.0010
6	125	99.8217	0.0007
7			
8			
9			
10			

Stable Ave. 120.8 0.0010

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	55	99.8220	-
1	55	99.8225	0.0005
2	60	99.8227	0.0002
3	60	99.8230	0.0003
4	60	99.8240	0.0010
5	60	99.8242	0.0002
6	60	99.8247	0.0005
7			
8			
9			
10			

Stable Ave. 59.2 0.0005

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 10.0 m toc  
 Top of Packer Interval: 13.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 24.00 m ah  
 Packer Inflation Pressure: 300 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 3:58 AM  
 End Flushing: 4:20 AM  
 Start Packer Testing: 4:51 AM  
 End Packer Testing: 5:27 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Lost return just after 9m, clays seams, rods jammed in, not recommended to pull back past that depth.

Hole #: ABM6 / K15-206  
 Test #: 1



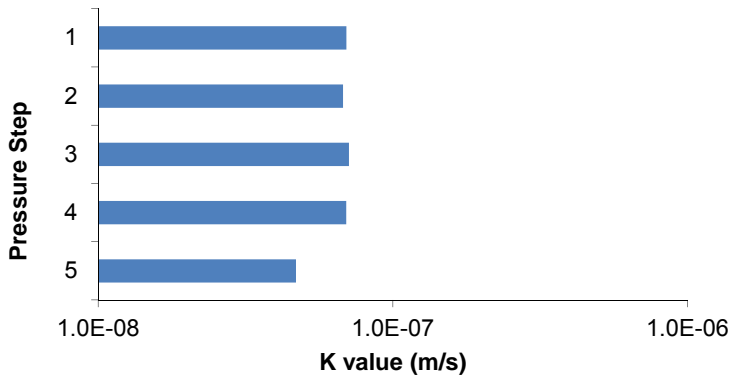
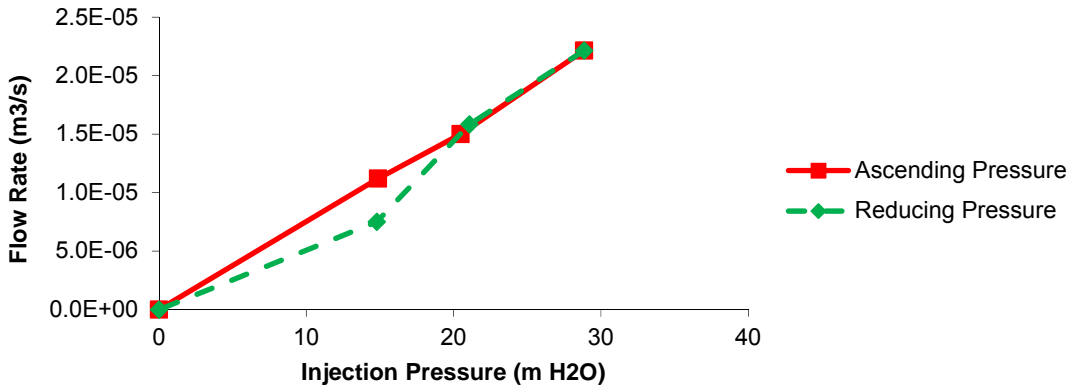
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 13.5  
 Bottom of Packer Test Interval (mah): 24.0  
 L: Length of Test Interval (mah): 10.5  
 Test Interval Midpoint (mah): 18.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 10.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -65  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	8.7	60.0	6.1	14.9	1.1E-05	7.0E-08
2	16.7	115.0	11.7	20.5	1.5E-05	6.8E-08
3	28.6	197.1	20.1	28.9	2.2E-05	7.1E-08
4	17.5	120.8	12.3	21.1	1.6E-05	6.9E-08
5	8.6	59.2	6.0	14.8	7.5E-06	4.7E-08
<b>Geometric Mean:</b>						<b>6.4E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1432 m  
**Trend:** 180 deg  
**Plunge:** -65 deg  
**Date:** 8-Aug-15

**Hole #:** ABM6 / K15-206  
**Hole Size:** NQ  
**Design Test Interval:** 52.5 to 57  
**Test #:** 2

**Packer Setup Type: Single**

Pressure Interval 1		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0	110.0	0.0920	-	
1	80.0	0.1200	0.0280	
2	70.0	0.1540	0.0340	
3	70.0	0.1840	0.0300	
4	70.0	0.2150	0.0310	
5	60.0	0.2460	0.0310	
6	60.0	0.2760	0.0300	
7				
8				
9				
10				

Stable Ave. 68.3 0.0307

Pressure Interval 2		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0	120.0	0.6250	-	
1	170.0	0.6780	0.0530	
2	200.0	0.7300	0.0520	
3	200.0	0.7800	0.0500	
4	200.0	0.8400	0.0600	
5	200.0	0.8930	0.0530	
6	200.0	0.9480	0.0550	
7				
8				
9				
10				

Stable Ave. 195.0 0.0538

Pressure Interval 3		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0			-	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Stable Ave.

Pressure Interval 4		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0			-	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Stable Ave.

Pressure Interval 5		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0			-	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Stable Ave.

Pressure Interval 6		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0			-	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Stable Ave.

**Measurements**

Depth to Water from Top of Stickup: 20.0 m toc  
 Top of Packer Interval: 52.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 57.00 m ah  
 Packer Inflation Pressure: psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 1:45 PM  
 End Flushing: 2:00 PM  
 Start Packer Testing: 2:52 PM  
 End Packer Testing: 3:05 PM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Drillers lost return from 54 to 57m. No leaks. Took more than 10 minutes to fill rods (about 700L). Began test. Tried to get to 1st pressure but pump had blockage.  
 Bits of cement blocked one piston. Began test at 2:50.  
 Not able to reach design pressure; aborted test after 2nd pressure step.

Hole #: ABM6 / K15-206  
 Test #: 2



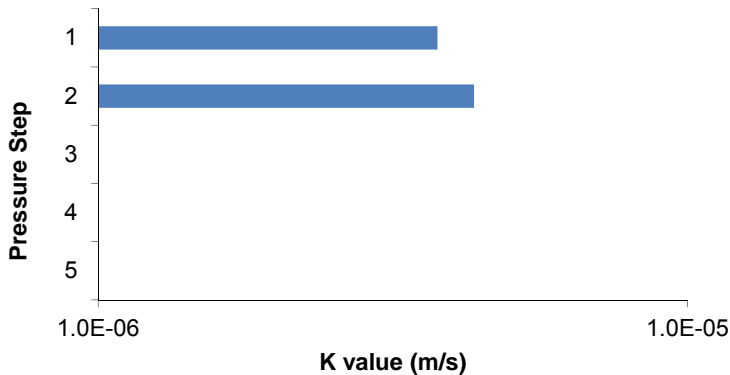
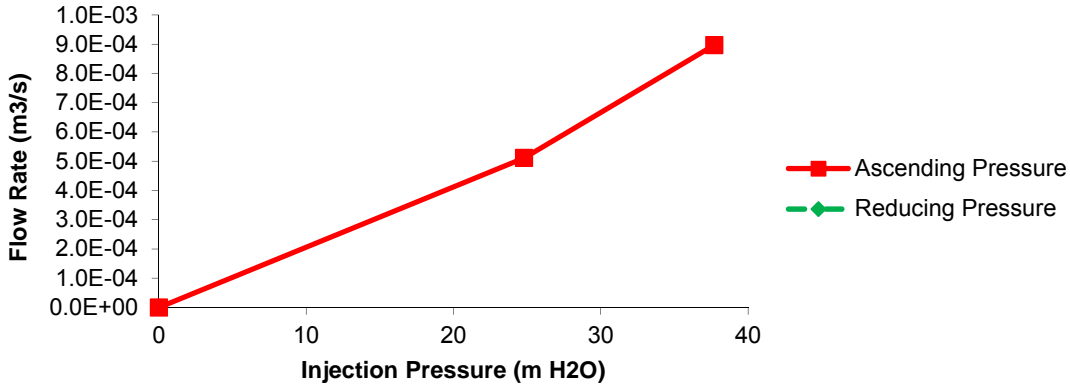
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 52.5  
 Bottom of Packer Test Interval (mah): 57.0  
 L: Length of Test Interval (mah) 4.5  
 Test Interval Midpoint (mah): 54.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 20.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -65  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	9.9	68.3	7.0	24.8	5.1E-04	3.8E-06
2	28.3	195.0	19.9	37.7	9.0E-04	4.3E-06
3						
4						
5						
<b>Geometric Mean:</b>						<b>4.0E-06</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1432 m  
**Trend:** 180 deg  
**Plunge:** -65 deg  
**Date:** 9-Aug-15

**Hole #:** ABM6 / K15-206  
**Hole Size:** NQ  
**Design Test Interval:** 94.5 to 114 m  
**Test #:** 3

### Packer Setup Type: Single

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	230.0	101.2760	-
1	230.0	101.2760	0.0000
2	230.0	101.2760	0.0000
3	230.0	101.2760	0.0000
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 230.0 0.0000

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	470.0	101.2770	-
1	470.0	101.2770	0.0000
2	470.0	101.2775	0.0005
3	470.0	101.2777	0.0002
4	470.0	101.2780	0.0003
5	470.0	101.2782	0.0002
6	470.0	101.2790	0.0008
7			
8			
9			
10			

Stable Ave. 470.0 0.0003

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	710	101.2792	-
1	-	101.2800	0.0008
2	740	101.2805	0.0005
3	710	101.2807	0.0002
4	720	101.2810	0.0003
5	730	101.2815	0.0005
6			
7			
8			
9			
10			

Stable Ave. 725.0 0.0005

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	460	101.2817	-
1	460	101.2820	0.0003
2	460	101.2822	0.0002
3	465	101.2827	0.0005
4	465	101.2830	0.0003
5			
6			
7			
8			
9			
10			

Stable Ave. 462.5 0.0003

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	240	101.2835	-
1	240	101.2837	0.0002
2	240	101.2840	0.0003
3	240	101.2845	0.0005
4	240	101.2845	0.0000
5	240	101.2845	0.0000
6			
7			
8			
9			
10			

Stable Ave. 240.0 0.0002

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

### Measurements

assume  
 Depth to Water from Top of Stickup: 30.0 m toc  
 Top of Packer Interval: 94.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 114.00 m ah  
 Packer Inflation Pressure: 400 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

Start Flushing: 4:50 AM  
 End Flushing: 5:00 AM  
 Start Packer Testing: 5:46 AM  
 End Packer Testing: 6:15 AM

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Clay seam about 50 cm thick at 110.5 m. Few other clay rich fractures throughout (ranging from a few mm to a cm thick). Took over 1h to drill 111 to 114m run.  
 Only about 60 cm of core recovered, small rounded crumbs. Clay/fines all washed away, big fault. No return since about 50 m deep.  
 Fair leak at hose on sub @ 720kPa.

Hole #: ABM6 / K15-206  
 Test #: 3



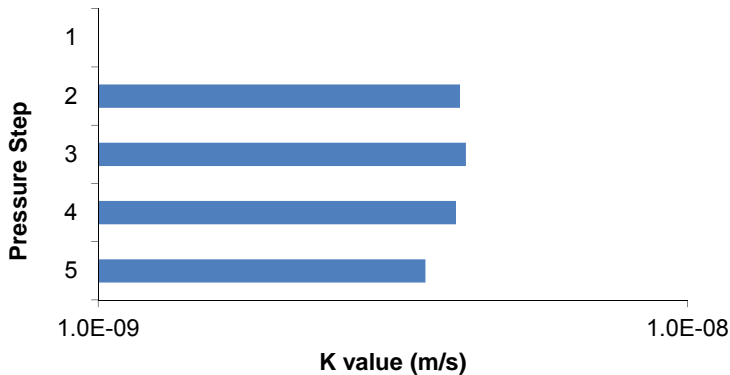
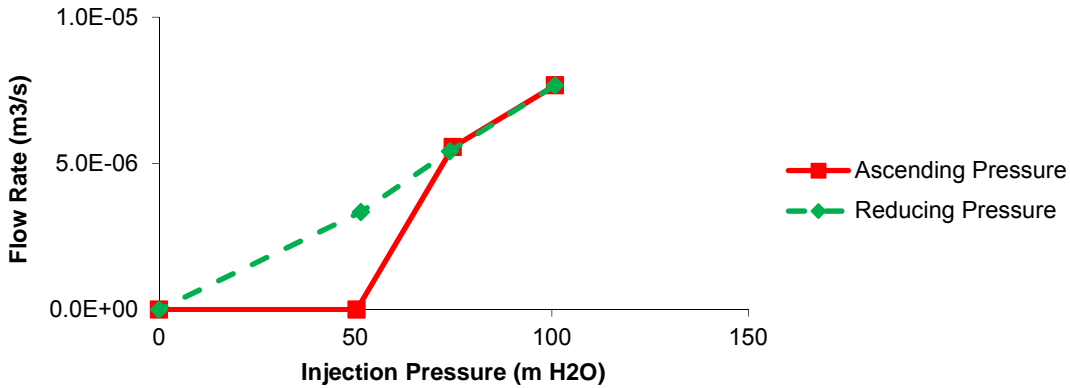
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 94.5  
 Bottom of Packer Test Interval (mah): 114.0  
 L: Length of Test Interval (mah): 19.5  
 Test Interval Midpoint (mah): 104.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 30.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -65  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	33.4	230.0	23.5	50.3	0.0E+00	1.0E-09
2	68.2	470.0	47.9	74.8	5.6E-06	4.1E-09
3	105.2	725.0	73.9	100.8	7.7E-06	4.2E-09
4	67.1	462.5	47.2	74.0	5.4E-06	4.0E-09
5	34.8	240.0	24.5	51.4	3.3E-06	3.6E-09
<b>Geometric Mean:</b>						<b>3.0E-09</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1432 m  
**Trend:** 180 deg  
**Plunge:** -65 deg  
**Date:** 10-Aug-15

**Hole #:** ABM6 / K15-206  
**Hole Size:** NQ  
**Design Test Interval:** 211.5 to 237 m  
**Test #:** 4

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	220.0	101.4000	-
1	230.0	101.4220	0.0220
2	230.0	101.4450	0.0230
3	240.0	101.4670	0.0220
4	240.0	101.4890	0.0220
5	240.0	101.5120	0.0230
6			
7			
8			
9			
10			

Stable Ave. 236.0 0.0224

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	420.0	101.5320	-
1	400.0	101.5670	0.0350
2	400.0	101.6020	0.0350
3	390.0	101.6380	0.0360
4	400.0	101.6720	0.0340
5			
6			
7			
8			
9			
10			

Stable Ave. 397.5 0.0350

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	660	101.7100	-
1	670	101.7580	0.0480
2	670	101.8030	0.0450
3	670	101.8510	0.0480
4	670	101.8960	0.0450
5	670	101.9440	0.0480
6			
7			
8			
9			
10			

Stable Ave. 670.0 0.0468

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	450	101.9850	-
1	440	102.0230	0.0380
2	450	102.0590	0.0360
3	450	102.0960	0.0370
4	450	102.1300	0.0340
5	450	102.1720	0.0420
6			
7			
8			
9			
10			

Stable Ave. 448.0 0.0374

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	290	102.1900	-
1	280	102.2190	0.0290
2	290	102.2490	0.0300
3	290	102.2780	0.0290
4	290	102.3070	0.0290
5	300	102.3330	0.0260
6			
7			
8			
9			
10			

Stable Ave. 290.0 0.0286

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 40.0 m toc  
 Top of Packer Interval: 211.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 237.00 m ah  
 Packer Inflation Pressure: 450 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 2:30 PM  
 End Flushing: 3:00 PM  
 Start Packer Testing: 4:10 PM  
 End Packer Testing: -

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Inflated once, but packers weren't quite in drill bit. Deflated and tried again, 2nd attempt successful. Lost return @ 54m, never regained. No leaks.



Hole #: ABM6 / K15-206  
 Test #: 4



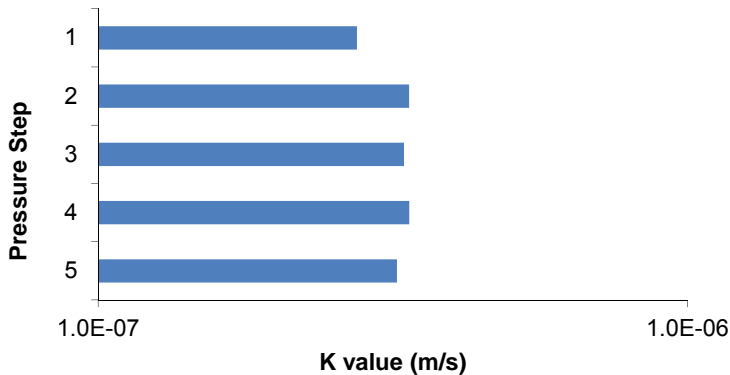
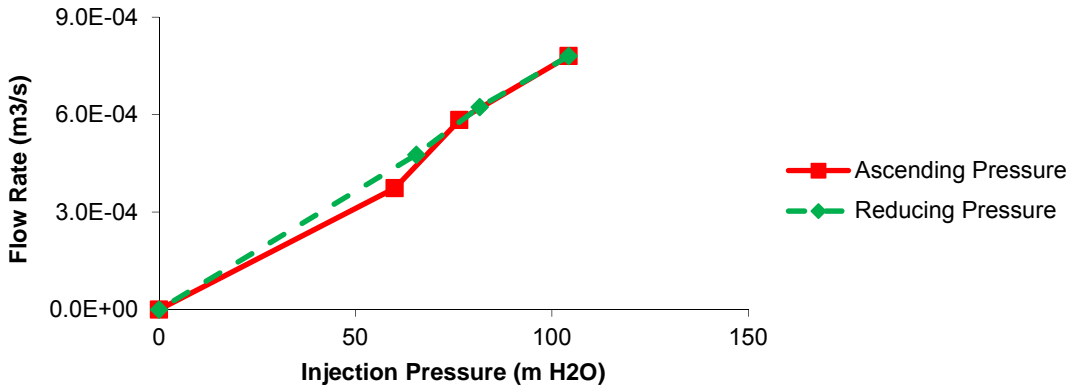
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 211.5  
 Bottom of Packer Test Interval (mah): 237.0  
 L: Length of Test Interval (mah): 25.5  
 Test Interval Midpoint (mah): 224.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 40.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -65  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	34.2	236.0	24.1	60.0	3.7E-04	2.7E-07
2	57.7	397.5	40.5	76.5	5.8E-04	3.4E-07
3	97.2	670.0	68.3	104.3	7.8E-04	3.3E-07
4	65.0	448.0	45.7	81.6	6.2E-04	3.4E-07
5	42.1	290.0	29.6	65.5	4.8E-04	3.2E-07
<b>Geometric Mean:</b>						<b>3.2E-07</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1409 m  
**Trend:** 180 deg  
**Plunge:** -70 deg  
**Date:** 31-Jul-15

**Hole #:** ABM16 / K15-200  
**Hole Size:** HQ  
**Design Test Interval:** 9 to 19.5 m  
**Test #:** 1

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	80.0	98.3555	-
1	85.0	98.3645	0.0090
2	100.0	98.3775	0.0130
3	100.0	98.3865	0.0090
4	100.0	98.3970	0.0105
5	90.0	98.4070	0.0100
6	90.0	98.4175	0.0105
7	90.0	98.4280	0.0105
8	90.0	98.4375	0.0095
9			
10			

Stable Ave. 93.1 0.0102

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Ave.

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	80.0	98.3555	-
1	85.0	98.3645	0.0090
2	100.0	98.3775	0.0130
3	100.0	98.3865	0.0090
4	100.0	98.3970	0.0105
5	90.0	98.4070	0.0100
6	90.0	98.4175	0.0105
7	90.0	98.4280	0.0105
8	90.0	98.4375	0.0095
9			
10			

Stable Ave.

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Ave.

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

Stable Ave.

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 7.0 m toc  
 Top of Packer Interval: 9.00 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 19.50 m ah  
 Packer Inflation Pressure: 250 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags

\* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 3:10 AM  
 End Flushing: 3:19 AM  
 Start Packer Testing: 4:23 AM  
 End Packer Testing: 4:32 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Little mud used, only took a few minutes for the water to run clear. Took a long time to fill the rods with water. Could not do pressure intervals as ~100 kPa was the minimum pressure achieved. Packers remained inflated at 250 psi, no return through the casing nor leak at sub.

Hole #: ABM16 / K15-200  
 Test #: 1



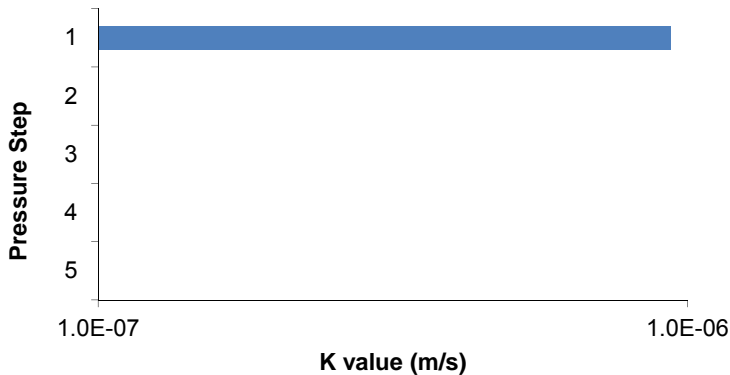
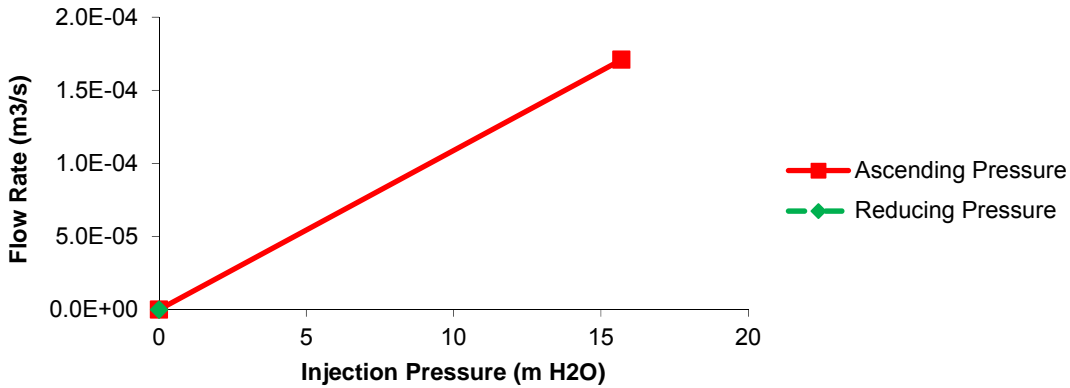
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 9.0  
 Bottom of Packer Test Interval (mah): 19.5  
 L: Length of Test Interval (mah): 10.5  
 Test Interval Midpoint (mah): 14.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 7.00  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -70  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	13.5	93.1	9.5	15.7	1.7E-04	9.4E-07
2						
3						
4						
5						
						9.4E-07

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1414 m  
**Trend:** 180 deg  
**Plunge:** -70 deg  
**Date:** 1-Aug-15

**Hole #:** ABM16 / K15-200  
**Hole Size:** HQ  
**Design Test Interval:** 64.5 to 75.0  
**Test #:** 2

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	180.0	98.5950	-
1	180.0	98.6120	0.0170
2	180.0	98.6290	0.0170
3			
4			
5		98.6765	
6	190.0	98.6905	0.0140
7			
8			
9			
10			

Stable Ave. 183.3 0.0160

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	360.0	98.7400	-
1	370.0	98.7655	0.0255
2	360.0	98.7870	0.0215
3	360.0	98.8090	0.0220
4	365.0	98.8295	0.0205
5	360.0	98.8510	0.0215
6			
7			
8			
9			
10			

Stable Ave. 363.0 0.0222

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	520	98.9000	-
1	520	98.9370	0.0370
2	515	98.9715	0.0345
3	515	99.0040	0.0325
4	515	99.0370	0.0330
5	515	99.0715	0.0345
6			
7			
8			
9			
10			

Stable Ave. 516.0 0.0343

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	365	99.1000	-
1	365	99.1200	0.0200
2	365	99.1380	0.0180
3	360	99.1560	0.0180
4	360	99.1740	0.0180
5	360	99.1930	0.0190
6			
7			
8			
9			
10			

Stable Ave. 362.0 0.0186

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	180	99.2010	-
1	200	99.2105	0.0095
2	200	99.2190	0.0085
3	210	99.2305	0.0115
4	190	99.2375	0.0070
5	200	99.2480	0.0105
6	200	99.2580	0.0100
7			
8			
9			
10			

Stable Ave. 200.0 0.0095

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 2.5 m toc  
 Top of Packer Interval: 64.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 75.00 m ah  
 Packer Inflation Pressure: 395 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: \_\_\_\_\_  
 End Flushing: 1:31 AM  
 Start Packer Testing: 2:31 AM  
 End Packer Testing: 3:08 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Broken core and poor recovery at ~66 to 69 m. No leak at sub; not return through casing.

Hole #: ABM16 / K15-200  
 Test #: 2



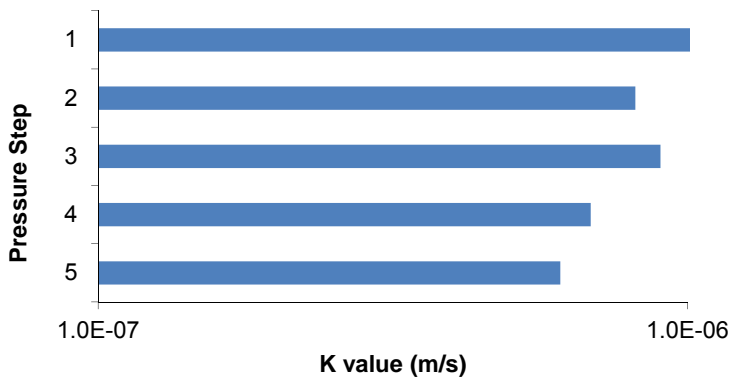
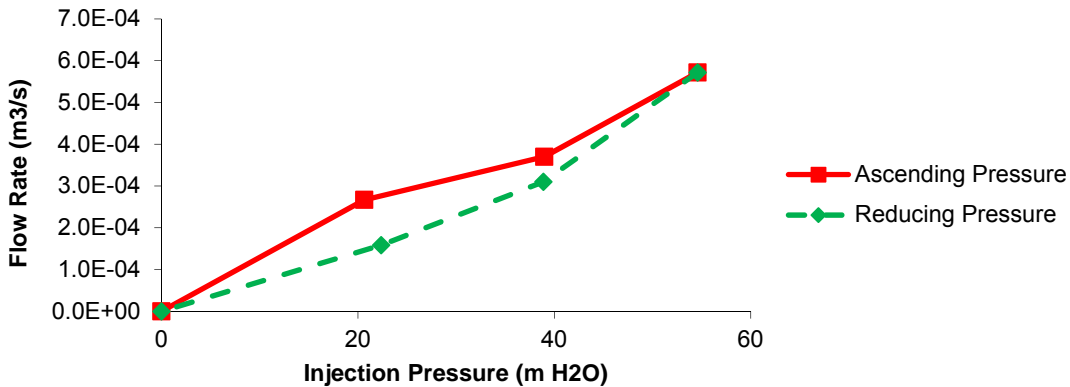
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 64.5  
 Bottom of Packer Test Interval (mah): 75.0  
 L: Length of Test Interval (mah) 10.5  
 Eliane Roy 69.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 2.50  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -70  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	26.6	183.3	18.7	20.7	2.7E-04	1.1E-06
2	52.6	363.0	37.0	39.0	3.7E-04	8.2E-07
3	74.8	516.0	52.6	54.6	5.7E-04	9.0E-07
4	52.5	362.0	36.9	38.9	3.1E-04	6.8E-07
5	29.0	200.0	20.4	22.4	1.6E-04	6.1E-07
<b>Geometric Mean:</b>						<b>8.1E-07</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1409 m  
**Trend:** 180 deg  
**Plunge:** -70 deg  
**Date:** 1-Aug-15

**Hole #:** ABM16 / K15-200  
**Hole Size:** HQ  
**Design Test Interval:** 103.5 to 108  
**Test #:** 3

### Packer Setup Type: Single

Pressure Interval 1		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0	260.0	99.4080	-	
1	260.0	99.4085	0.0005	
2	260.0	99.4085	0.0000	
3	260.0	99.4090	0.0005	
4	260.0	99.4100	0.0010	
5	260.0	99.4100	0.0000	
6				
7				
8				
9				
10				

Stable Ave. 260.0 0.0004

Pressure Interval 2		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0	400.0	99.4110	-	
1	425.0	99.4120	0.0010	
2	425.0	99.4135	0.0015	
3	425.0	99.4142	0.0007	
4	425.0	99.4150	0.0008	
5	425.0	99.4160	0.0010	
6				
7				
8				
9				
10				

Stable Ave. 425.0 0.0010

Pressure Interval 3		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0	630	99.4160	-	
1	650	99.4170	0.0010	
2	650	99.4175	0.0005	
3	650	99.4180	0.0005	
4	650	99.4185	0.0005	
5	650	99.4190	0.0005	
6				
7				
8				
9				
10				

Stable Ave. 650.0 0.0006

Pressure Interval 4		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0	430	99.4190	-	
1	430	99.4195	0.0005	
2	430	99.4195	0.0000	
3	430	99.4200	0.0005	
4	430	99.4200	0.0000	
5				
6				
7				
8				
9				
10				

Stable Ave. 430.0 0.0003

Pressure Interval 5		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0	330	99.4200	-	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Stable Ave. 330.0 0.0000

Pressure Interval 6		Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3	
0			-	
1				
2				
3				
4				
5				
6				
7				
8				
9				
10				

Stable Ave. 650.0 0.0006

### Measurements

Depth to Water from Top of Stickup: 2.5 m toc  
 Top of Packer Interval: 103.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 106.50 m ah  
 Packer Inflation Pressure: 400 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

### Measurement Units

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

### Time

Start Flushing: 2:20 PM  
 End Flushing: 2:28 PM  
 Start Packer Testing: -  
 End Packer Testing: -

### FALLING HEAD TEST or RISING HEAD TEST

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** No detectable flow at last pressure step. No leak.

Hole #: ABM16 / K15-200  
 Test #: 3



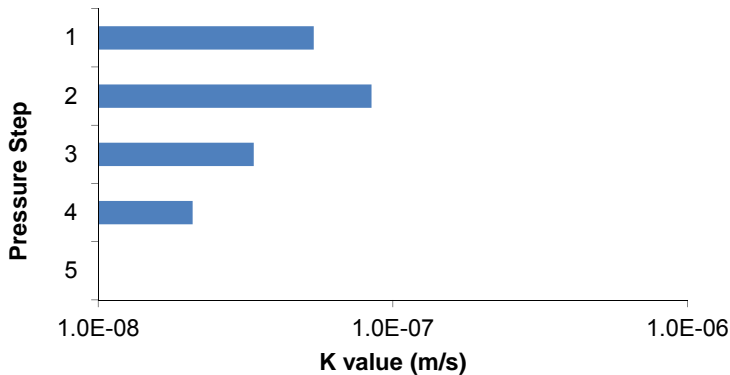
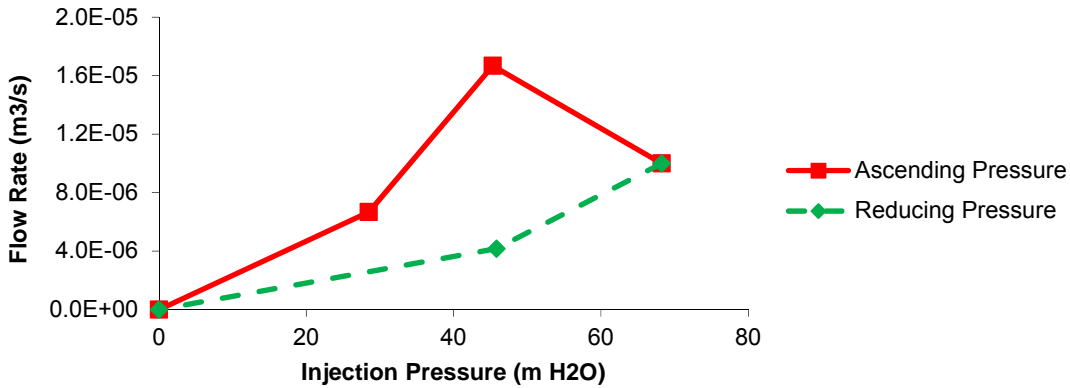
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 103.5  
 Bottom of Packer Test Interval (mah): 106.5  
 L: Length of Test Interval (mah): 3.0  
 Test Interval Midpoint (mah): 105.0  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 2.50  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -70  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	37.7	260.0	26.5	28.5	6.7E-06	5.4E-08
2	61.6	425.0	43.3	45.3	1.7E-05	8.5E-08
3	94.3	650.0	66.3	68.3	1.0E-05	3.4E-08
4	62.4	430.0	43.9	45.8	4.2E-06	2.1E-08
5						
<b>Geometric Mean:</b>						<b>4.2E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1409 m  
**Trend:** 180 deg  
**Plunge:** -70 deg  
**Date:** 2-Aug-15

**Hole #:** ABM16 / K15-200  
**Hole Size:** HQ  
**Design Test Interval:** 127.5 to 138 m  
**Test #:** 4

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	235.0	99.4525	-
1			
2	235.0	99.4537	0.0006
3	235.0	99.4540	0.0003
4	235.0	99.4547	0.0007
5	235.0	99.4552	0.0005
6			
7			
8			
9			
10			

Stable Ave. 235.0 0.0005

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	470.0	99.4572	-
1	470.0	99.4590	0.0018
2	470.0	99.4600	0.0010
3	470.0	99.4610	0.0010
4	475.0	99.4622	0.0012
5	475.0	99.4635	0.0013
6			
7			
8			
9			
10			

Stable Ave. 472.0 0.0013

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	660	99.4660	-
1	660	99.4685	0.0025
2	660	99.4707	0.0022
3	670	99.4732	0.0025
4	670	99.4755	0.0023
5	670	99.4772	0.0017
6			
7			
8			
9			
10			

Stable Ave. 666.0 0.0022

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	440	99.4780	-
1	440	99.4787	0.0007
2	450	99.4795	0.0008
3	450	99.4797	0.0002
4	450	99.4802	0.0005
5	450	99.4805	0.0003
6			
7			
8			
9			
10			

Stable Ave. 448.0 0.0005

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	230	99.4807	-
1	230	99.4810	0.0003
2	230	99.4810	0.0000
3	230	99.4810	0.0000
4	230	99.4810	0.0000
5			
6			
7			
8			
9			
10			

Stable Ave. 230.0 0.0001

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 1.0 m toc  
 Top of Packer Interval: 127.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 138.00 m ah  
 Packer Inflation Pressure: 460 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Very little mud used  
 Start Flushing: 5:20 AM  
 End Flushing: 5:35 AM  
 Start Packer Testing: 6:12 AM  
 End Packer Testing: 6:42 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Somewhat weathered core just past 131.5m; very weathered between ~129 and 129.2 m.

No leaks at sub or casing.



Hole #: ABM16 / K15-200  
 Test #: 4



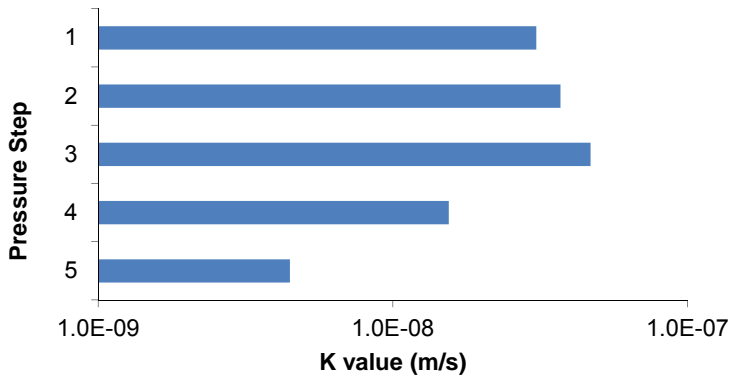
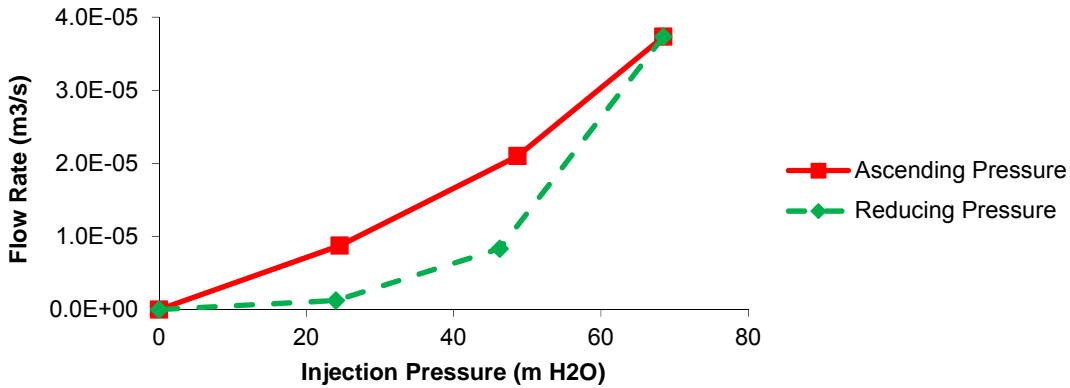
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 127.5  
 Bottom of Packer Test Interval (mah): 138.0  
 L: Length of Test Interval (mah): 10.5  
 Test Interval Midpoint (mah): 132.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 1.00  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -70  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	34.1	235.0	24.0	24.5	8.8E-06	3.1E-08
2	68.5	472.0	48.1	48.7	2.1E-05	3.7E-08
3	96.6	666.0	67.9	68.5	3.7E-05	4.7E-08
4	65.0	448.0	45.7	46.2	8.3E-06	1.5E-08
5	33.4	230.0	23.5	24.0	1.2E-06	4.5E-09
<b>Geometric Mean:</b>						<b>2.1E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1414 m  
**Trend:** 180 deg  
**Plunge:** -70 deg  
**Date:** 3-Aug-15

**Hole #:** ABM16 / K15-200  
**Hole Size:** HQ  
**Design Test Interval:** 199.5 to 213 m  
**Test #:** 5A

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	225	99.5272	-
1	230	-	-
2	220	99.5280	0.0004
3	220	99.5280	0.0000
4	220	99.5280	0.0000
5			
6			
7			
8			
9			
10			

Stable Ave. 222.5 0.0001

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	480.0	99.5285	-
1	480.0	99.5295	0.0010
2	480.0	99.5300	0.0005
3	480.0	99.5302	0.0002
4	-	-	-
5	480.0	99.5317	0.0008
6	480.0	99.5322	0.0005
7			
8			
9			
10			

Stable Ave. 480.0 0.0006

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	700	99.5337	-
1	710	99.5347	0.0010
2	710	99.5357	0.0010
3	710	99.5365	0.0008
4	710	-	-
5	710	99.5385	0.0010
6			
7			
8			
9			
10			

Stable Ave. 710.0 0.0010

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	460	99.5390	-
1	460	99.5392	0.0002
2	460	99.5400	0.0008
3	460	99.5400	0.0000
4	460	99.5402	0.0002
5			
6			
7			
8			
9			
10			

Stable Ave. 460.0 0.0003

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	215	99.5405	-
1	215	99.5407	0.0002
2	220	99.5412	0.0005
3	220	99.5415	0.0003
4	220	99.5417	0.0002
5			
6			
7			
8			
9			
10			

Stable Ave. 218.8 0.0003

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 0.0 m toc  
 Top of Packer Interval: 199.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 213.00 m ah  
 Packer Inflation Pressure: 610 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 8:42 PM  
 End Flushing: -  
 Start Packer Testing: 9:58 PM  
 End Packer Testing: 10:27 PM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Realized near the end of the test that the tank was full of mud. Redid the test, see file Analysis\_ABM16\_211.5m (2).xls  
 No return through the casing, small leak at sub and small leak top of sub.

Hole #: ABM16 / K15-200  
 Test #: 5A



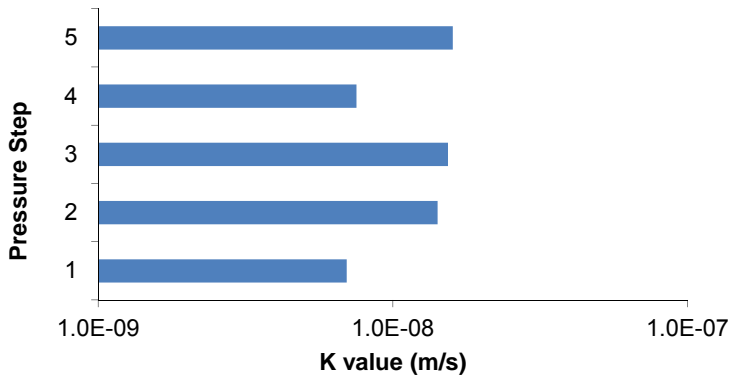
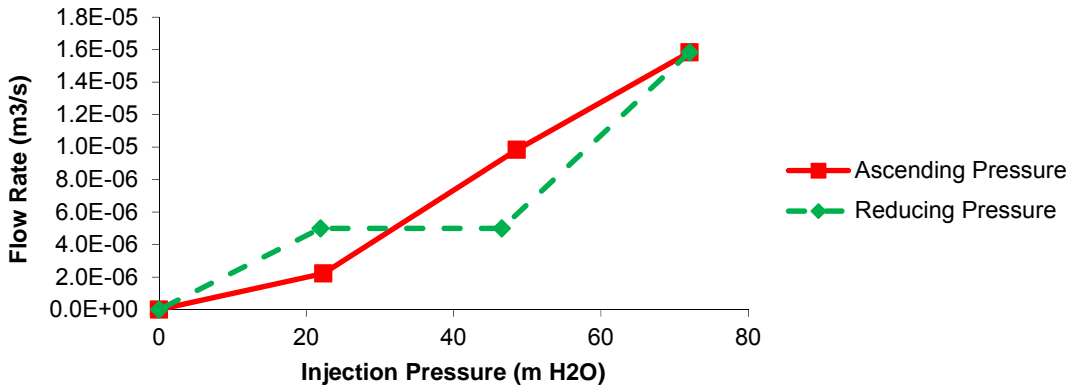
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 199.5  
 Bottom of Packer Test Interval (mah): 213.0  
 L: Length of Test Interval (mah): 13.5  
 Test Interval Midpoint (mah): 206.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 0.00  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -70  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	32.3	222.5	22.7	22.3	2.2E-06	7.0E-09
2	69.6	480.0	48.9	48.6	9.8E-06	1.4E-08
3	103.0	710.0	72.4	72.0	1.6E-05	1.5E-08
4	66.7	460.0	46.9	46.5	5.0E-06	7.5E-09
5	31.7	218.8	22.3	21.9	5.0E-06	1.6E-08
<b>Geometric Mean:</b>						<b>1.1E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1414 m  
**Trend:** 180 deg  
**Plunge:** -70 deg  
**Date:** 4-Aug-15

**Hole #:** ABM16 / K15-200  
**Hole Size:** HQ  
**Design Test Interval:** 198 to 211.5 m  
**Test #:** 5B

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	230	99.5602	-
1	225	99.5602	0.0000
2	225	99.5605	0.0003
3	225	99.5605	0.0000
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 225.0 0.0001

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	450.0	99.5612	-
1	450.0	99.5622	0.0010
2	450.0	99.5632	0.0010
3	450.0	99.5637	0.0005
4	450.0	99.5642	0.0005
5	440.0	99.5652	0.0010
6	440.0	99.5657	0.0005
7			
8			
9			
10			

Stable Ave. 446.7 0.0008

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	690	99.5672	-
1	700	99.5697	0.0025
2	710	99.5717	0.0020
3	710	99.5740	0.0023
4	710	-	
5	710	99.5797	0.0029
6			
7			
8			
9			
10			

Stable Ave. 708.0 0.0024

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	460	99.5825	-
1	465	99.5835	0.0010
2	465	99.5840	0.0005
3	465	99.5850	0.0010
4	465	99.5860	0.0010
5	465	99.5862	0.0002
6	465	99.5872	0.0010
7			
8			
9			
10			

Stable Ave. 465.0 0.0008

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	240	99.5872	-
1	240	99.5872	0.0000
2	240	99.5872	0.0000
3	240	99.5872	0.0000
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 240.0 0.0000

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 0.0 m toc  
 Top of Packer Interval: 198.00 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 211.50 m ah  
 Packer Inflation Pressure: 610 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: \_\_\_\_\_  
 End Flushing: \_\_\_\_\_  
 Start Packer Testing: 12:15 AM  
 End Packer Testing: 12:43 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Flushed the hole with clear water and redid the test.  
Small leak at sub.

Hole #: ABM16 / K15-200  
 Test #: 5B



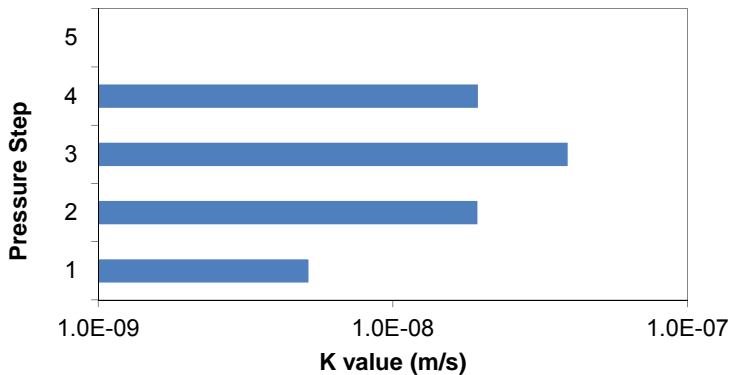
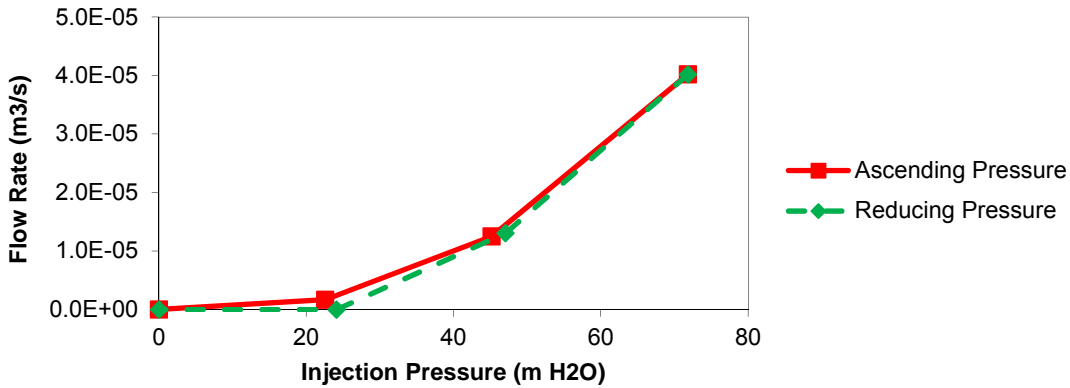
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 198.0  
 Bottom of Packer Test Interval (mah): 211.5  
 L: Length of Test Interval (mah): 13.5  
 Test Interval Midpoint (mah): 204.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 0.00  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -70  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	32.6	225.0	22.9	22.6	1.7E-06	5.2E-09
2	64.8	446.7	45.6	45.2	1.3E-05	1.9E-08
3	102.7	708.0	72.2	71.8	4.0E-05	3.9E-08
4	67.4	465.0	47.4	47.0	1.3E-05	1.9E-08
5	34.8	240.0	24.5	24.1	0.0E+00	1.0E-09
<b>Geometric Mean:</b>						<b>9.5E-09</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1404 m  
**Trend:** 180 deg  
**Plunge:** -60 deg  
**Date:** 2-Aug-15

**Hole #:** ABM18 / K15-202  
**Hole Size:** HQ  
**Design Test Interval:** 21.5 to 32.0 m  
**Test #:** 1

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	40.0	24.6620	-
1	40.0	24.6670	0.0050
2	45.0	24.6715	0.0045
3	45.0	24.6760	0.0045
4	45.0	24.6805	0.0045
5	45.0	24.6850	0.0045
6	45.0	24.6895	0.0045
7			
8			
9			
10			

Stable Ave.	44.2		0.0046
Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	65.0	24.6980	-
1	65.0	24.7025	0.0045
2			
3	65.0	24.7125	0.0050
4	65.0	24.7170	0.0045
5	65.0	24.7220	0.0050
6			
7			
8			
9			
10			

Stable Ave.	65.0		0.0048
Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	105	24.7320	-
1	110	24.7367	0.0047
2	110	24.7427	0.0060
3	110	24.7467	0.0040
4	110	24.7515	0.0048
5	112	24.7565	0.0050
6	112	24.7612	0.0047
7			
8			
9			
10			

Stable Ave. 110.7 0.0049

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	70	24.7720	-
1	70	24.7772	0.0052
2	72	24.7822	0.0050
3	72	24.7872	0.0050
4	72	24.7922	0.0050
5	72	24.7972	0.0050
6			
7			
8			
9			
10			

Stable Ave.	71.6		0.0050
Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	40	24.8030	-
1	40	24.8085	0.0055
2	40	24.8137	0.0052
3	40	24.8190	0.0053
4	40	24.8245	0.0055
5	40	24.8297	0.0052
6			
7			
8			
9			
10			

Stable Ave.	40.0		0.0053
Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

measured at 3.15 and rising slowly  
 Depth to Water from Top of Stickup: 0.0 m toc  
 Top of Packer Interval: 21.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 32.00 m ah  
 Packer Inflation Pressure: 330 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: \_\_\_\_\_  
 End Flushing: \_\_\_\_\_  
 Start Packer Testing: 4:00 AM  
 End Packer Testing: 4:34 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Driller indicated fault at 23 and 26 m, although did not loose return. Crumbly stratified rock. 26 to 29m run took 1h to drill; very hard quartzite intrusions.  
No mud used, quick rinse. Minimum pressure on flowmeter gauge is 40 kPa. Geotech's regulator was messed up, had to go get ours.  
Shoot water out as the packers were deflating; mildly artesian condition?

Hole #: ABM18 / K15-202  
 Test #: 1



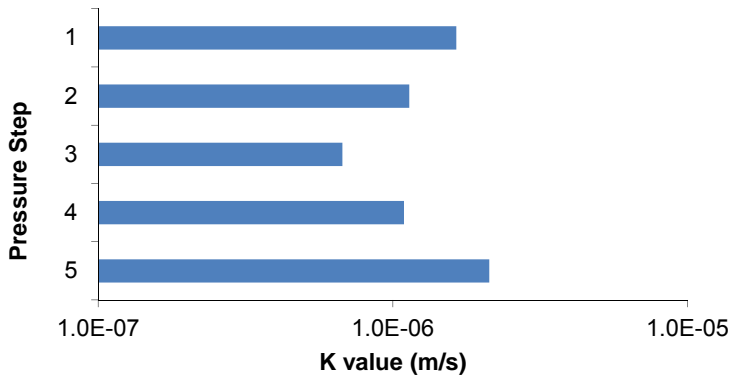
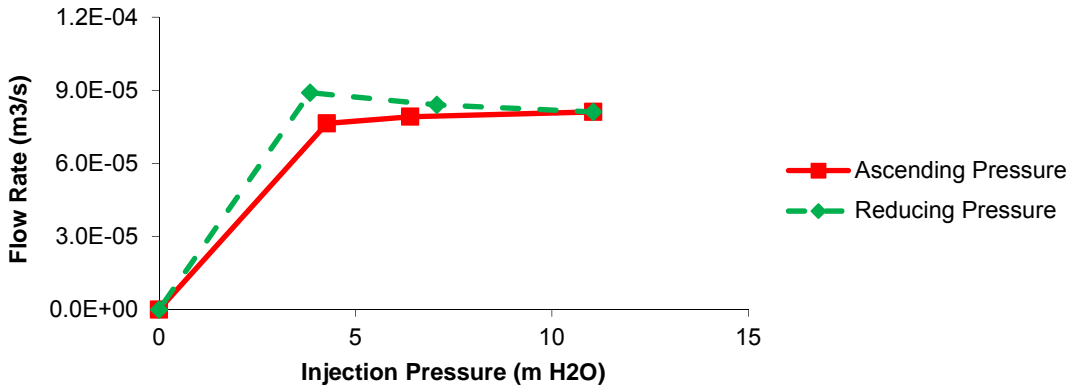
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 21.5  
 Bottom of Packer Test Interval (mah): 32.0  
 L: Length of Test Interval (mah): 10.5  
 Test Interval Midpoint (mah): 26.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 0.00  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -60  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	6.4	44.2	4.5	4.3	7.6E-05	1.6E-06
2	9.4	65.0	6.6	6.4	7.9E-05	1.1E-06
3	16.1	110.7	11.3	11.1	8.1E-05	6.7E-07
4	10.4	71.6	7.3	7.1	8.4E-05	1.1E-06
5	5.8	40.0	4.1	3.8	8.9E-05	2.1E-06
<b>Geometric Mean:</b>						<b>1.2E-06</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1404 m  
**Trend:** 180 deg  
**Plunge:** -60 deg  
**Date:** 2-Aug-15

**Hole #:** ABM18 / K15-202  
**Hole Size:** HQ  
**Design Test Interval:** 57.5 to 71 m  
**Test #:** 2

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	260.0	25.1650	-
1	260.0	25.1930	0.0280
2	260.0	25.2220	0.0290
3	260.0	25.2500	0.0280
4	260.0	25.2680	0.0180
5	260.0	25.3060	0.0380
6			
7			
8			
9			
10			

Stable Ave.	260.0		0.0282
Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	500.0	25.3370	-
1	520.0	25.3600	0.0230
2	500.0	25.4000	0.0400
3	480.0	25.4300	0.0300
4	490.0	25.4620	0.0320
5	490.0	25.4930	0.0310
6			
7			
8			
9			
10			

Stable Ave.	496.0		0.0312
Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	620	25.5090	-
1	650	25.5410	0.0320
2	690	25.5720	0.0310
3	680	25.6020	0.0300
4	690	25.6340	0.0320
5			
6			
7			
8			
9			
10			

Stable Ave. 677.5 0.0313

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	440	25.6590	-
1	440	25.6800	0.0210
2	440	25.7120	0.0320
3	450	25.7420	0.0300
4	440	25.7740	0.0320
5	440	25.8060	0.0320
6			
7			
8			
9			
10			

Stable Ave.	442.0		0.0294
Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	200	25.8120	-
1			
2	200	25.8850	0.0365
3	200	25.9110	0.0260
4			
5	200	25.9780	0.0335
6			
7			
8			
9			
10			

Stable Ave.	200.0		0.0320
Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: -0.1 m toc  
 Top of Packer Interval: 57.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 71.00 m ah  
 Packer Inflation Pressure: 450 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): 20 min  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 2.00 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 4:30 PM  
 End Flushing: 4:50 PM  
 Start Packer Testing: -  
 End Packer Testing: 7:00 PM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Well producing water. Return through casing, but didn't raise water pressure. Drillers think its from fracture above drill bit.



Hole #: ABM18 / K15-202  
 Test #: 2



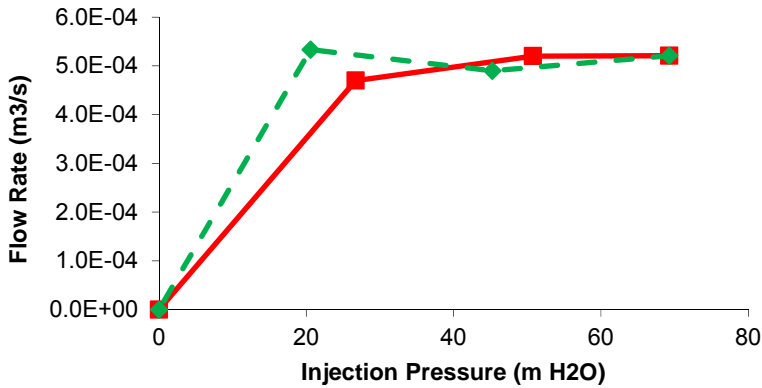
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 57.5  
 Bottom of Packer Test Interval (mah): 71.0  
 L: Length of Test Interval (mah): 13.5  
 Test Interval Midpoint (mah): 64.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 2.00  
 Depth to Water Table (mah): -0.10  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -60  
 \* mah indicates "meters along hole"

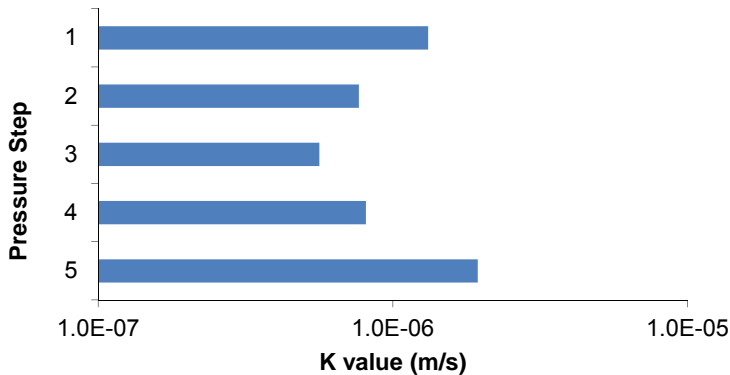
$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	37.7	260.0	26.5	26.7	4.7E-04	1.3E-06
2	71.9	496.0	50.6	50.8	5.2E-04	7.7E-07
3	98.3	677.5	69.1	69.3	5.2E-04	5.6E-07
4	64.1	442.0	45.1	45.3	4.9E-04	8.1E-07
5	29.0	200.0	20.4	20.6	5.3E-04	1.9E-06
<b>Geometric Mean:</b>						<b>9.8E-07</b>

**Diagnostic Plots**



#DIV/0!



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1407 m  
**Trend:** 167 deg  
**Plunge:** -65 deg  
**Date:** 31-Aug-15

**Hole #:** ABM46R (Relocated) / K15-242  
**Hole Size:** NQ  
**Design Test Interval:** 27.5 to 38 m  
**Test #:** 1

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	60.0	103.8410	-
1	58.0	103.8570	0.0160
2	50.0	103.8720	0.0150
3	50.0	103.8880	0.0160
4	50.0	103.9030	0.0150
5			
6			
7			
8			
9			
10			

Stable Ave. 52.0 0.0155

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	110.0	103.9180	-
1			
2	130.0	103.9560	0.0190
3	130.0	103.9740	0.0180
4	120.0	103.9920	0.0180
5	120.0	104.0100	0.0180
6			
7			
8			
9			
10			

Stable Ave. 125.0 0.0183

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	200	104.0270	-
1	200	104.0490	0.0220
2	200	104.0700	0.0210
3	200	104.0920	0.0220
4	200	104.1140	0.0220
5			
6			
7			
8			
9			
10			

Stable Ave. 200.0 0.0218

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	120	104.1230	-
1	120	104.1400	0.0170
2	120	104.1570	0.0170
3	120	104.1740	0.0170
4	120	104.1910	0.0170
5			
6			
7			
8			
9			
10			

Stable Ave. 120.0 0.0170

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	60	104.1980	-
1	60	104.2120	0.0140
2	60	104.2270	0.0150
3	60	104.2410	0.0140
4	60	104.2550	0.0140
5			
6			
7			
8			
9			
10			

Stable Ave. 60.0 0.0143

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 20.0 m toc  
 Top of Packer Interval: 27.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 38.00 m ah  
 Packer Inflation Pressure: 350 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

No mud used, just flushing cuttings  
 Start Flushing: 9:00 AM  
 End Flushing: 9:10 AM  
 Start Packer Testing: 10:20 AM  
 End Packer Testing: 10:52 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** No return through casing, no leaks from stuffing box. Finished first run at 9:00am. Set up packer began inflating; noticed issue. Pulled lines. Nitrogen line broke off.  
 Replaced fitting. Some problems again. Taped line. No issues. Delayed start.

Hole #: ABM46R (Relocated) / K15-242  
 Test #: 1



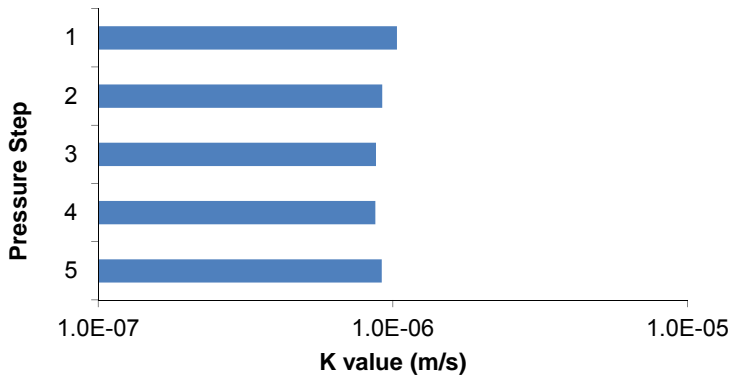
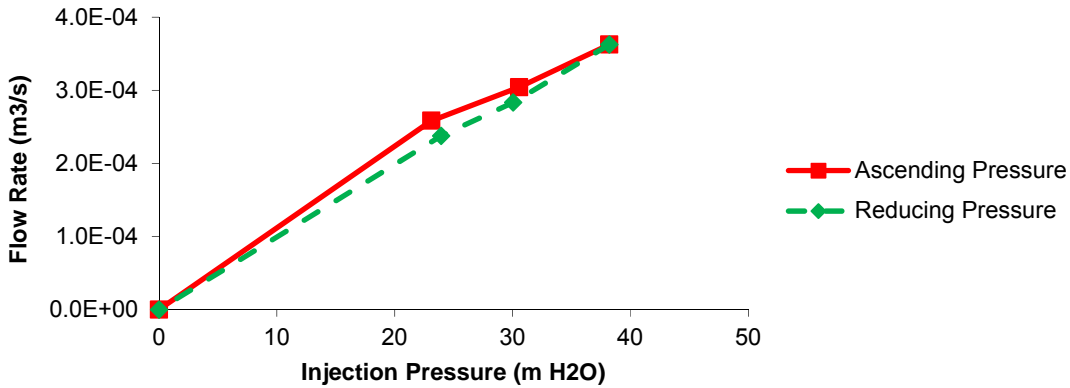
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 27.5  
 Bottom of Packer Test Interval (mah): 38.0  
 L: Length of Test Interval (mah): 10.5  
 Test Interval Midpoint (mah): 32.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 20.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -65  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	7.5	52.0	5.3	23.1	2.6E-04	1.0E-06
2	18.1	125.0	12.7	30.6	3.0E-04	9.2E-07
3	29.0	200.0	20.4	38.2	3.6E-04	8.8E-07
4	17.4	120.0	12.2	30.1	2.8E-04	8.7E-07
5	8.7	60.0	6.1	23.9	2.4E-04	9.2E-07
<b>Geometric Mean:</b>						<b>9.2E-07</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1407 m  
**Trend:** 180 deg  
**Plunge:** -65 deg  
**Date:** 31-Aug-15

**Hole #:** ABM46R (Relocated) / K15-242  
**Hole Size:** NQ  
**Design Test Interval:** 69.5 to 86m  
**Test #:** 2

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	150.0	104.3205	-
1	150.0	104.3210	0.0005
2	150.0	104.3210	0.0000
3	150.0	104.3212	0.0002
4	150.0	104.3215	0.0003
5	150.0	104.3217	0.0002
6			
7			
8			
9			
10			

Stable Ave. 150.0 0.0002

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	280.0	104.3222	-
1	330.0	104.3230	0.0008
2	300.0	104.3230	0.0000
3	280.0	104.3232	0.0002
4	280.0	104.3237	0.0005
5	280.0	104.3242	0.0005
6	280.0	104.3245	0.0003
7			
8			
9			
10			

Stable Ave. 291.7 0.0004

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	420	104.3250	-
1	420	104.3250	0.0000
2	420	104.3252	0.0002
3	420	104.3257	0.0005
4	420	104.3262	0.0005
5	420	104.3262	0.0000
6	420	104.3265	0.0003
7			
8			
9			
10			

Stable Ave. 420.0 0.0002

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	280	104.3267	-
1	280	104.3270	0.0003
2	280	104.3272	0.0002
3	280	104.3275	0.0003
4	280	104.3277	0.0002
5	280	104.3280	0.0003
6			
7			
8			
9			
10			

Stable Ave. 280.0 0.0003

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	150	104.3285	-
1	150	104.3285	0.0000
2	150	104.3287	0.0002
3	150	104.3290	0.0003
4	150	104.3292	0.0002
5	150	104.3295	0.0003
6			
7			
8			
9			
10			

Stable Ave. 150.0 0.0002

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 18.0 m toc  
 Top of Packer Interval: 69.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 86.00 m ah  
 Packer Inflation Pressure: 600 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

No mud used, just flushing cuttings  
 Start Flushing: 9:55 PM  
 End Flushing: 10:05 PM  
 Start Packer Testing: 10:52 PM  
 End Packer Testing: 10:34 PM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Small leak at hose on sub. Regulator valve was shut, though not the N2 tank valve; packer initially inflated to 450psi, pressure slowly increased to 750psi until noticed  
 No damage.

Hole #: ABM46R (Relocated) / K15-242  
 Test #: 2



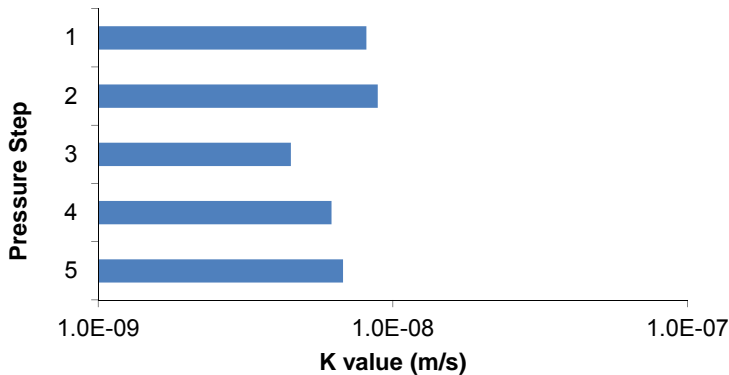
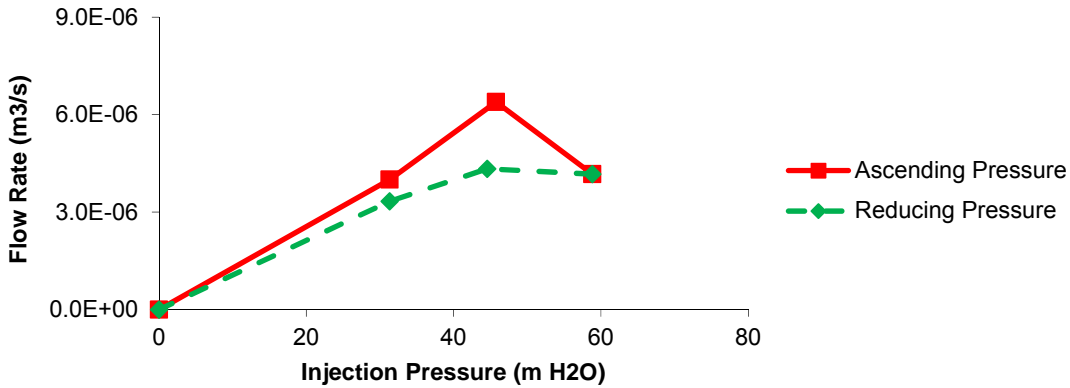
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 69.5  
 Bottom of Packer Test Interval (mah): 86.0  
 L: Length of Test Interval (mah): 16.5  
 Test Interval Midpoint (mah): 77.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 18.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -65  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	21.8	150.0	15.3	31.3	4.0E-06	8.1E-09
2	42.3	291.7	29.7	45.7	6.4E-06	8.9E-09
3	60.9	420.0	42.8	58.8	4.2E-06	4.5E-09
4	40.6	280.0	28.6	44.6	4.3E-06	6.2E-09
5	21.8	150.0	15.3	31.3	3.3E-06	6.8E-09
<b>Geometric Mean:</b>						<b>6.7E-09</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** \_\_\_\_\_ m  
**Trend:** 167 deg  
**Plunge:** -65 deg  
**Date:** 1-Sep-15

**Hole #:** ABM46R (Relocated) / K15-242  
**Hole Size:** NQ  
**Design Test Interval:** 117.5 to 125 m  
**Test #:** 3

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	300.0	104.4855	-
1	300.0	104.4858	0.0003
2	300.0	104.4860	0.0002
3	300.0	104.4862	0.0002
4	300.0	104.4865	0.0003
5	300.0	-	-
6	300.0	104.4868	0.0001
7			
8			
9	Flowing, but very slowly		
10	No leaks		

Stable Ave. 300.0 0.0002

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	450.0	104.4870	-
1	450.0		
2	450.0	104.4872	0.0001
3	450.0	104.4875	0.0003
4	450.0	104.4878	0.0003
5			
6	450.0	104.4878	0.0000
7			
8			
9			
10			

Stable Ave. 450.0 0.0002

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	650	104.4880	-
1	650	104.4882	0.0002
2	650	104.4888	0.0006
3	650	104.4888	0.0000
4	650	104.4890	0.0002
5	650	104.4890	0.0000
6			
7			
8			
9			
10			

Stable Ave. 650.0 0.0002

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	440	104.4890	-
1	440	104.4892	0.0002
2		104.4895	0.0003
3	440	104.4898	0.0003
4	440	104.4898	0.0000
5	440	104.4900	0.0002
6			
7			
8			
9			
10			

Stable Ave. 440.0 0.0002

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	250	104.4900	-
1	250		
2	250		
3	250	104.4902	0.0001
4	250		
5	250	104.4905	0.0001
6			
7			
8			
9			
10			

Stable Ave. 250.0 0.0001

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 16.0 m toc  
 Top of Packer Interval: 117.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 125.00 m ah  
 Packer Inflation Pressure: 400 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

No mud used, just flushing cuttings  
 Start Flushing: 9:00 AM  
 End Flushing: 9:15 AM  
 Start Packer Testing: 9:55 AM  
 End Packer Testing: 10:30 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Rock highly fractured. Driller had lost return between 40m and 117m. Taking on water, but slowly.

Hole #: ABM46R (Relocated) / K15-242  
 Test #: 3



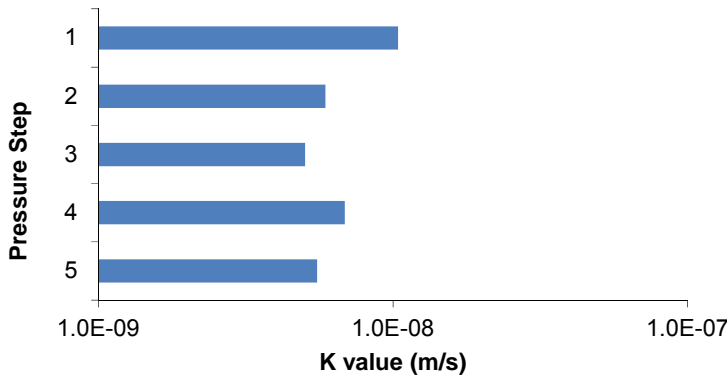
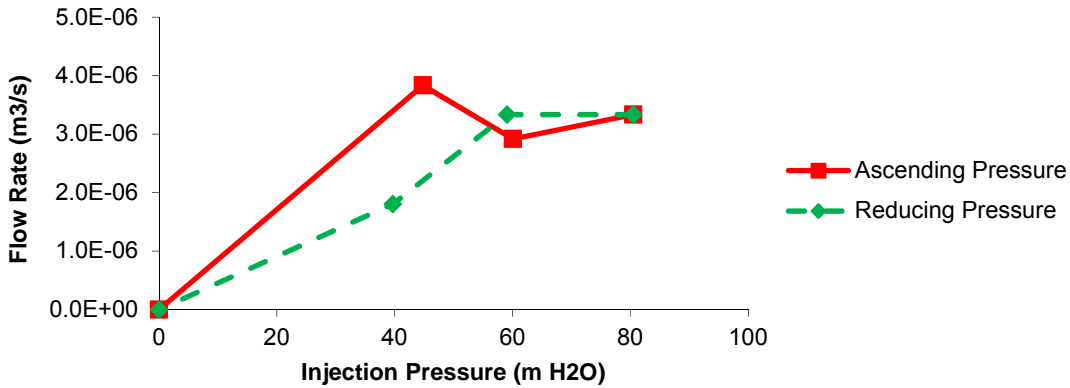
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 117.5  
 Bottom of Packer Test Interval (mah): 125.0  
 L: Length of Test Interval (mah): 7.5  
 Test Interval Midpoint (mah): 121.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 16.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -65  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	43.5	300.0	30.6	44.8	3.8E-06	1.0E-08
2	65.3	450.0	45.9	60.1	2.9E-06	5.9E-09
3	94.3	650.0	66.3	80.5	3.3E-06	5.0E-09
4	63.8	440.0	44.9	59.1	3.3E-06	6.9E-09
5	36.3	250.0	25.5	39.7	1.8E-06	5.5E-09
<b>Geometric Mean:</b>						<b>6.5E-09</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1407 m  
**Trend:** 167 deg  
**Plunge:** -65 deg  
**Date:** 1-Sep-15

**Hole #:** ABM46R (Relocated) / K15-242  
**Hole Size:** NQ  
**Design Test Interval:** 132.5 to 161  
**Test #:** 4

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	220.0	104.5070	-
1	220.0	104.5147	0.0077
2	220.0	104.5230	0.0083
3	220.0	104.5297	0.0067
4	220.0	104.5357	0.0060
5	220.0	104.5425	0.0068
6			
7			
8			
9			
10			

Stable Ave. 220.0 0.0071

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	500.0	104.5540	-
1	460.0	104.5645	0.0105
2	480.0	104.5732	0.0087
3	470.0	104.5820	0.0088
4	470.0	104.5905	0.0085
5	480.0	104.5995	0.0090
6	490.0	104.6080	0.0085
7	470.0	104.6157	0.0077
8			
9			
10			

Stable Ave. 474.3 0.0088

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	680	104.6352	-
1	720	104.6460	0.0108
2	680	104.6565	0.0105
3	680	104.6655	0.0090
4	690	104.6750	0.0095
5	680	104.6845	0.0095
6	680	104.6937	0.0092
7			
8			
9			
10			

Stable Ave. 688.3 0.0098

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	470	104.7025	-
1	470	-	-
2	480	104.7157	0.0066
3	480	104.7230	0.0073
4	480	104.7297	0.0067
5	480	104.7360	0.0063
6			
7			
8			
9			
10			

Stable Ave. 478.0 0.0067

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	230	104.7402	-
1	230	104.7445	0.0043
2	230	104.7485	0.0040
3	230	104.7525	0.0040
4	230	104.7562	0.0037
5	230	104.7602	0.0040
6			
7			
8			
9			
10			

Stable Ave. 230.0 0.0040

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 12.0 m toc  
 Top of Packer Interval: 132.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 161.00 m ah  
 Packer Inflation Pressure: 425 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

No mud used, just flushing cuttings  
 Start Flushing: 9:55 PM  
 End Flushing: -  
 Start Packer Testing: 12:23 AM  
 End Packer Testing: 12:58 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Technical difficulties, had to pull the packers out and troubleshoot for a bit, then reset the packers down into the borehole.



Hole #: ABM46R (Relocated) / K15-242  
 Test #: 4



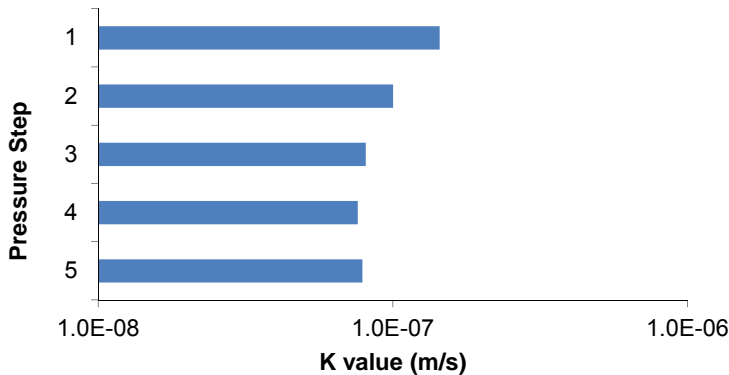
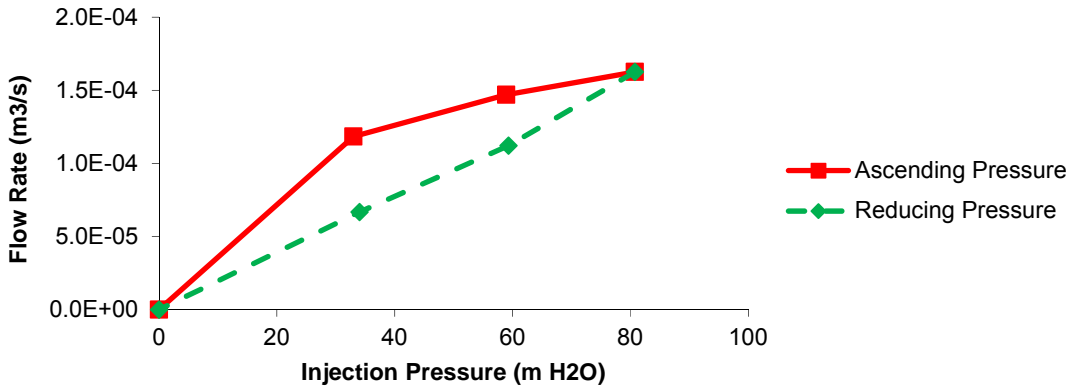
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 132.5  
 Bottom of Packer Test Interval (mah): 161.0  
 L: Length of Test Interval (mah): 28.5  
 Test Interval Midpoint (mah): 146.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 12.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -65  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	31.9	220.0	22.4	33.0	1.2E-04	1.4E-07
2	68.8	474.3	48.4	58.9	1.5E-04	1.0E-07
3	99.8	688.3	70.2	80.8	1.6E-04	8.1E-08
4	69.3	478.0	48.7	59.3	1.1E-04	7.6E-08
5	33.4	230.0	23.5	34.0	6.7E-05	7.9E-08
<b>Geometric Mean:</b>						<b>9.3E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1424 m  
**Trend:** 180 deg  
**Plunge:** -75 deg  
**Date:** 10-Sep-15

**Hole #:** ABM50 / K15-248  
**Hole Size:** HQ  
**Design Test Interval:** 46.5 to 52.5 m  
**Test #:** 1

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	90.0	106.9595	-
1	90.0	106.9597	0.0002
2	90.0	106.9597	0.0000
3	90.0	106.9597	0.0000
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 90.0 0.0001

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	180.0	106.9600	-
1	180.0	106.9605	0.0005
2	180.0	106.9607	0.0002
3	180.0	106.9610	0.0003
4	180.0	106.9617	0.0007
5	180.0	106.9620	0.0003
6			
7			
8			
9			
10			

Stable Ave. 180.0 0.0004

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	270	106.9622	-
1	270	106.9622	0.0000
2	270	106.9625	0.0003
3	270	106.9630	0.0005
4	270	106.9632	0.0002
5	270	106.9635	0.0003
6			
7			
8			
9			
10			

Stable Ave. 270.0 0.0003

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	180	106.9640	-
1	180	106.9642	0.0002
2	180	106.9650	0.0008
3	180	106.9652	0.0002
4	180	106.9655	0.0003
5	180	106.9660	0.0005
6			
7			
8			
9			
10			

Stable Ave. 180.0 0.0004

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	90	106.9662	-
1	90	106.9665	0.0003
2	90	106.9665	0.0000
3	90	106.9665	0.0000
4	90	106.9665	0.0000
5	90	106.9665	0.0000
6			
7			
8			
9			
10			

Stable Ave. 90.0 0.0001

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 33.5 m toc  
 Top of Packer Interval: 46.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 52.50 m ah  
 Packer Inflation Pressure: 320 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

No mud used, just flushing cuttings  
 Start Flushing: -  
 End Flushing: -  
 Start Packer Testing: 9:00 PM  
 End Packer Testing: 9:32 PM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** No return while drilling since start of hole. Return when flushing the hole though. Very crumbly, clay rich fractures ranging from mm to about 1dm thick. Quartz seams. Casing advanced to 18m, competent rock starting at ~24m.  
 Triple packer with 4X 1.5m extension = 6m interval.

Hole #: ABM50 / K15-248  
 Test #: 1



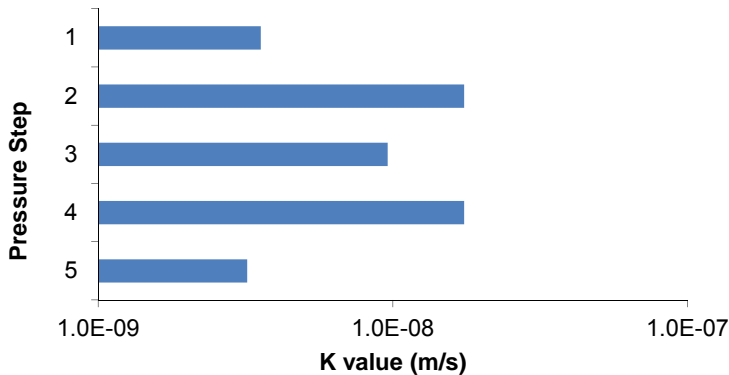
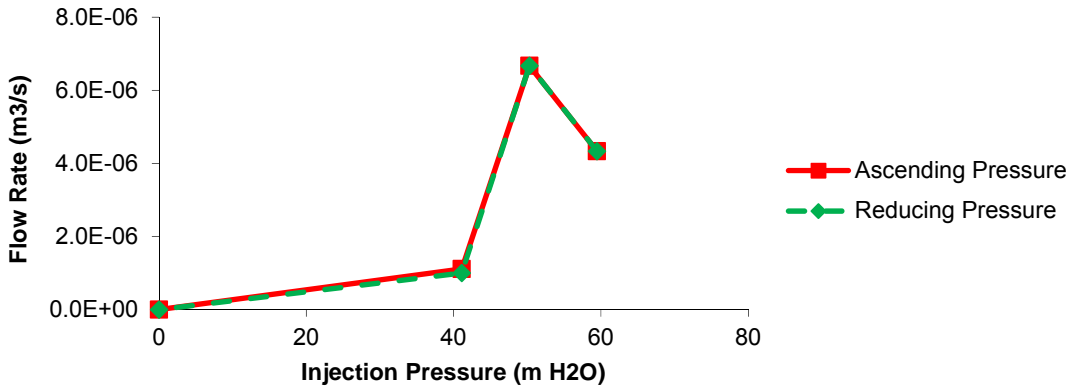
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 46.5  
 Bottom of Packer Test Interval (mah): 52.5  
 L: Length of Test Interval (mah): 6.0  
 Test Interval Midpoint (mah): 49.5  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 33.50  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -75  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	13.1	90.0	9.2	41.1	1.1E-06	3.6E-09
2	26.1	180.0	18.4	50.3	6.7E-06	1.7E-08
3	39.2	270.0	27.5	59.5	4.3E-06	9.6E-09
4	26.1	180.0	18.4	50.3	6.7E-06	1.7E-08
5	13.1	90.0	9.2	41.1	1.0E-06	3.2E-09
<b>Geometric Mean:</b>						<b>8.0E-09</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1424 m  
**Trend:** 180 deg  
**Plunge:** -75 deg  
**Date:** 10-Sep-15

**Hole #:** ABM50 / K15-248  
**Hole Size:** HQ  
**Design Test Interval:** 169.5 to 175.5 m  
**Test #:** 2

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	300.0	106.6030	-
1	300.0	106.6040	0.0010
2	300.0	106.6045	0.0005
3	300.0	106.6050	0.0005
4	300.0	106.6055	0.0005
5	300.0	106.6060	0.0005
6			
7			
8			
9			
10			

Stable Ave. 300.0 0.0006

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	480.0	106.6060	-
1	480.0	106.6068	0.0008
2	480.0	106.6075	0.0007
3	480.0	106.6082	0.0007
4	480.0	106.6085	0.0003
5	480.0	106.6090	0.0005
6			
7			
8			
9			
10			

Stable Ave. 480.0 0.0006

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	680	106.6098	-
1	680	106.6100	0.0002
2	690	106.6105	0.0005
3	690	106.6110	0.0005
4	690	106.6115	0.0005
5	690	106.6120	0.0005
6			
7			
8			
9			
10			

Stable Ave. 688.0 0.0004

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	480	106.6120	-
1	480		
2	480	106.6125	0.0003
3	480	106.6130	0.0005
4	480	106.6135	0.0005
5	480	106.6140	0.0005
6			
7			
8			
9			
10			

Stable Ave. 480.0 0.0004

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0	280	106.6142	-
1	280	106.6150	0.0008
2	260	106.6155	0.0005
3	260	106.6160	0.0005
4	260	106.6170	0.0010
5	260	106.6178	0.0008
6			
7			
8			
9			
10			

Stable Ave. 264.0 0.0007

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m <sup>3</sup>	m <sup>3</sup>
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 18.5 m toc  
 Top of Packer Interval: 169.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 175.50 m ah  
 Packer Inflation Pressure: 550 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): 30  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: \_\_\_\_\_  
 End Flushing: \_\_\_\_\_  
 Start Packer Testing: \_\_\_\_\_  
 End Packer Testing: \_\_\_\_\_

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Small leak form stuffing box, pinhole in diameter.

Hole #: ABM50 / K15-248  
 Test #: 2



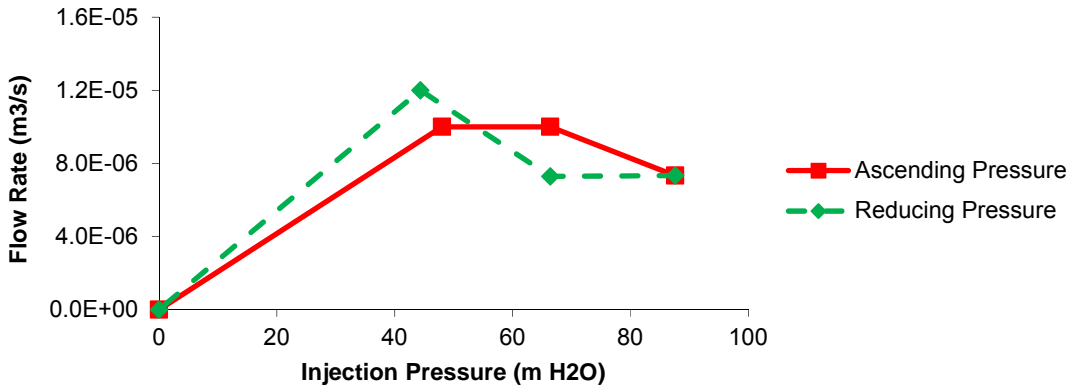
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 169.5  
 Bottom of Packer Test Interval (mah): 175.5  
 L: Length of Test Interval (mah): 6.0  
 Test Interval Midpoint (mah): 172.5  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 18.50  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -75  
 \* mah indicates "meters along hole"

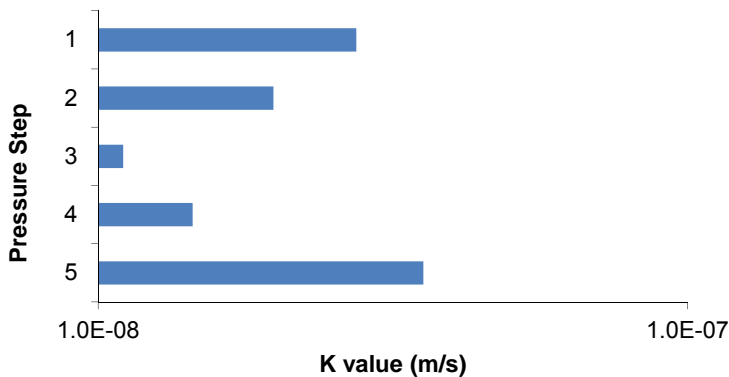
$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	43.5	300.0	30.6	48.0	1.0E-05	2.7E-08
2	69.6	480.0	48.9	66.4	1.0E-05	2.0E-08
3	99.8	688.0	70.2	87.6	7.3E-06	1.1E-08
4	69.6	480.0	48.9	66.4	7.3E-06	1.4E-08
5	38.3	264.0	26.9	44.4	1.2E-05	3.6E-08
<b>Geometric Mean:</b>						<b>2.0E-08</b>

**Diagnostic Plots**



#DIV/0!



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** KRR

**Collar El.:** 1424 m  
**Trend:** 180 deg  
**Plunge:** -75 deg  
**Date:** 9-Sep-15

**Hole #:** ABM50 / K15-248  
**Hole Size:** HQ  
**Design Test Interval:** 226.5 to 240 m  
**Test #:** 3

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	290.0	105.3140	-
1	280.0	105.3200	0.0060
2	280.0	105.3250	0.0050
3	290.0	105.3310	0.0060
4	290.0	105.3370	0.0060
5			
6			
7			
8			
9			
10			

Stable Ave. 285.0 0.0058

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	450.0	105.6820	-
1	450.0	105.6830	0.0010
2	450.0	105.6840	0.0010
3	450.0	105.6840	0.0000
4	440.0	105.6845	0.0005
5	440.0	105.6850	0.0005
6			
7			
8			
9			
10			

Stable Ave. 446.0 0.0006

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	680	105.6855	-
1	680	105.6860	0.0005
2	660	105.6870	0.0010
3	640	105.6870	0.0000
4	640	105.6875	0.0005
5	640	105.6880	0.0005
6			
7			
8			
9			
10			

Stable Ave. 652.0 0.0005

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	500	105.6880	-
1	500	105.6885	0.0005
2	500	105.6890	0.0005
3	500	105.6895	0.0005
4	500	105.6900	0.0005
5			
6			
7			
8			
9			
10			

Stable Ave. 500.0 0.0005

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	280	105.6130	-
1	240	105.6130	0.0000
2	240	105.6130	0.0000
3	240	105.6130	0.0000
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 240.0 0.0000

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 10.0 m toc  
 Top of Packer Interval: 226.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 240.00 m ah  
 Packer Inflation Pressure: 600 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 10:27 AM  
 End Flushing: 11:00 AM  
 Start Packer Testing: 11:45 AM  
 End Packer Testing: 12:10 PM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Packers holding pressure, no leaks from stuffing box. Difficult to reach min p, increased packers pressure to 600psi. Packer was holding pressure but flow decreased.  
 Packer was likely leaking for first pressure step - do not use for analysis.

Hole #: ABM50 / K15-248  
 Test #: 3



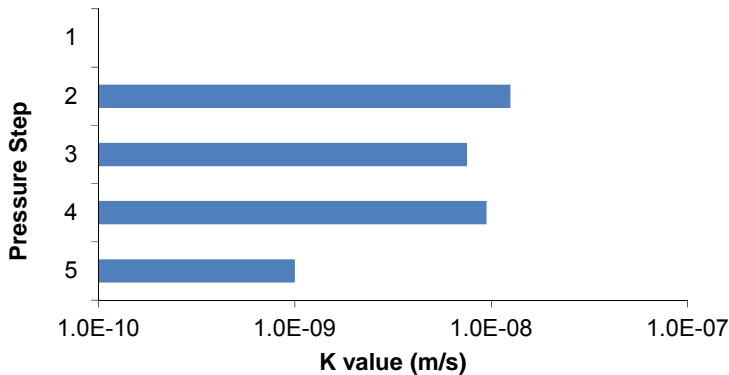
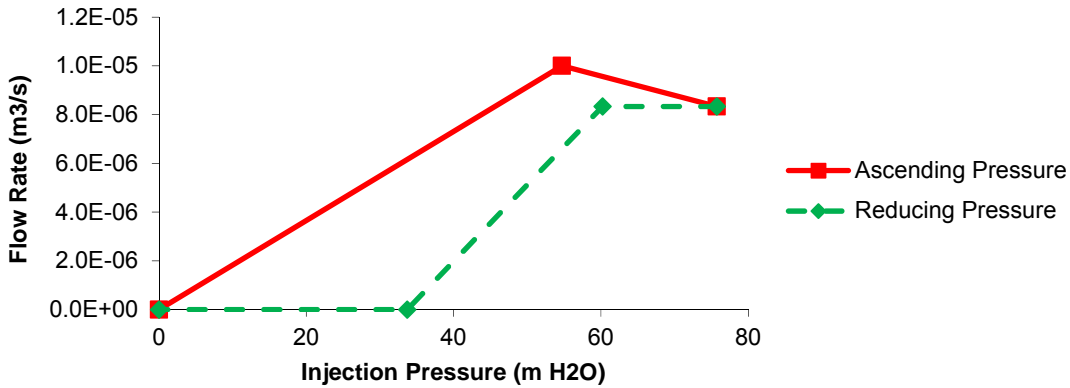
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 226.5  
 Bottom of Packer Test Interval (mah): 240.0  
 L: Length of Test Interval (mah) 13.5  
 Test Interval Midpoint (mah): 233.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 10.00  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -75  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1						
2	64.7	446.0	45.5	54.7	1.0E-05	1.3E-08
3	94.6	652.0	66.5	75.7	8.3E-06	7.5E-09
4	72.5	500.0	51.0	60.2	8.3E-06	9.5E-09
5	34.8	240.0	24.5	33.7	0.0E+00	1.0E-09
<b>Geometric Mean:</b>						<b>5.5E-09</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1424 m  
**Trend:** 180 deg  
**Plunge:** -75 deg  
**Date:** 10-Sep-15

**Hole #:** ABM50 / K15-248  
**Hole Size:** HQ  
**Design Test Interval:** 244.5 - 279 m  
**Test #:** 4

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	240.0	105.6792	-
1	240.0	105.6795	0.0003
2	240.0	105.6800	0.0005
3	240.0	105.6802	0.0002
4	240.0	105.6810	0.0008
5	240.0	105.6810	0.0000
6	240.0	105.6820	0.0010
7			
8			
9			
10			

Stable Ave. 240.0 0.0005

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	470.0	105.6830	-
1	470.0		
2	470.0	105.6845	0.0007
3	475.0	105.6850	0.0005
4	475.0	105.6850	0.0000
5	480.0	105.6865	0.0015
6			
7			
8			
9			
10			

Stable Ave. 474.0 0.0007

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	695	105.6877	-
1	700	105.6882	0.0005
2	700	105.6895	0.0013
3	700	105.6902	0.0007
4	700	105.6912	0.0010
5	700	105.6920	0.0008
6			
7			
8			
9			
10			

Stable Ave. 700.0 0.0009

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	470	105.6927	-
1	475	105.6935	0.0008
2	475	105.6942	0.0007
3	480	105.6950	0.0008
4	480	105.6957	0.0007
5	470	105.6962	0.0005
6	475	105.6975	0.0013
7			
8			
9			
10			

Stable Ave. 475.8 0.0008

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	230	105.6980	-
1	230	105.6982	0.0002
2	230	105.6990	0.0008
3	230	105.7000	0.0010
4	230	105.7002	0.0002
5	230	105.7010	0.0008
6			
7			
8			
9			
10			

Stable Ave. 230.0 0.0006

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 8.0 m toc  
 Top of Packer Interval: 244.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 279.00 m ah  
 Packer Inflation Pressure: 625 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean):  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 96 mm  
 Vertical height of gauge above ground: 1.50 m ags  
\* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

No mud used, just flushing cuttings  
 Start Flushing: -  
 End Flushing: ~ 45 min  
 Start Packer Testing: 5:15 AM  
 End Packer Testing: 5:48 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Bottom of hole very altered, lots of clay. Rock started to get better past 243m.



Hole #: ABM50 / K15-248  
 Test #: 4



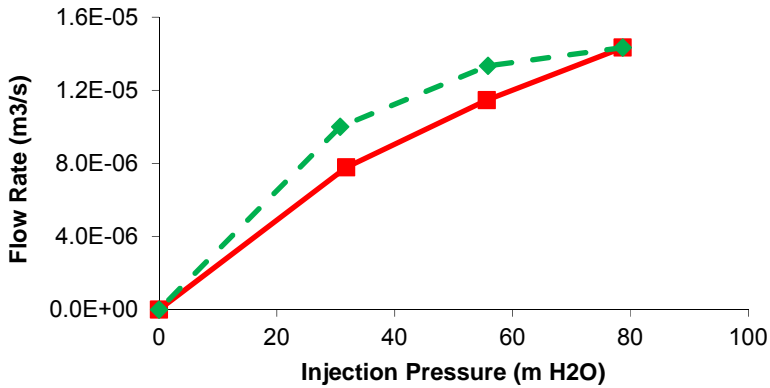
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 244.5  
 Bottom of Packer Test Interval (mah): 279.0  
 L: Length of Test Interval (mah): 34.5  
 Test Interval Midpoint (mah): 261.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 8.00  
 Borehole Diameter (mm): 96.000  
 r: Borehole Radius (m): 0.048  
 A: Angle From Horizontal (deg): -75  
 \* mah indicates "meters along hole"

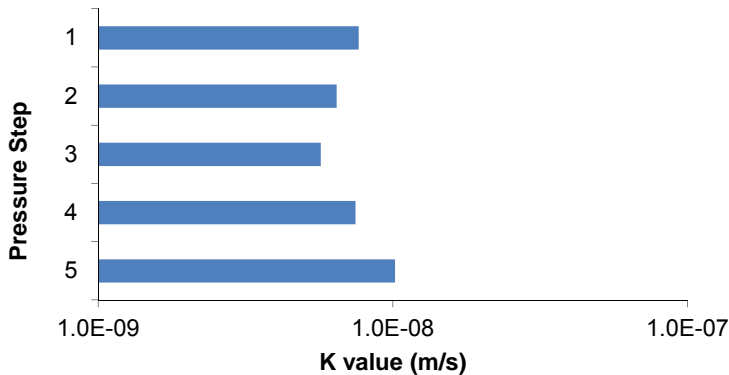
$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	34.8	240.0	24.5	31.8	7.8E-06	7.6E-09
2	68.7	474.0	48.3	55.6	1.1E-05	6.4E-09
3	101.5	700.0	71.4	78.7	1.4E-05	5.7E-09
4	69.0	475.8	48.5	55.8	1.3E-05	7.5E-09
5	33.4	230.0	23.5	30.8	1.0E-05	1.0E-08
<b>Geometric Mean:</b>						<b>7.3E-09</b>

**Diagnostic Plots**



#DIV/0!



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED e

**Collar El.:** 1424 m  
**Trend:** 180 deg  
**Plunge:** -55 deg  
**Date:** 19-Sep-15

**Hole #:** ABM51R / K15-265  
**Hole Size:** NQ  
**Design Test Interval:** 70.5 - 90  
**Test #:** 1

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	170.0	107.6020	-
1	170.0	107.6045	0.0025
2	170.0	107.6070	0.0025
3	170.0	107.6090	0.0020
4	170.0	107.6115	0.0025
5			
6			
7			
8			
9			
10			

Stable Ave. 170.0 0.0024

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	280.0	107.6150	-
1	270.0	107.6180	
2	270.0	107.6210	0.0030
3	270.0	107.6240	0.0030
4	270.0	107.6270	0.0030
5			
6			
7			
8			
9			
10			

Stable Ave. 270.0 0.0030

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	420	107.6290	-
1	400	107.6330	0.0040
2	400	107.6360	0.0030
3	400	107.6400	0.0040
4	400	107.6435	0.0035
5			
6			
7			
8			
9			
10			

Stable Ave. 400.0 0.0036

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	280	107.6450	-
1	250	107.6475	0.0025
2	280	107.6500	0.0025
3	280	107.6530	0.0030
4	280	107.6560	0.0030
5			
6			
7			
8			
9			
10			

Stable Ave. 272.5 0.0028

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	130	107.6670	-
1	130	107.6690	0.0020
2	130	107.6715	0.0025
3	130	107.6735	0.0020
4	130	107.6755	0.0020
5			
6			
7			
8			
9			
10			

Stable Ave. 130.0 0.0021

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

Depth to Water from Top of Stickup: 30.0 m toc  
 Top of Packer Interval: 70.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 90.00 m ah  
 Packer Inflation Pressure: 400 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): \_\_\_\_\_  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags

\* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

No mud used, just washing cuttings  
 Start Flushing: 6:40 AM  
 End Flushing: 7:00 AM  
 Start Packer Testing: -  
 End Packer Testing: -

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:**

Hole #: ABM51R / K15-265  
 Test #: 1



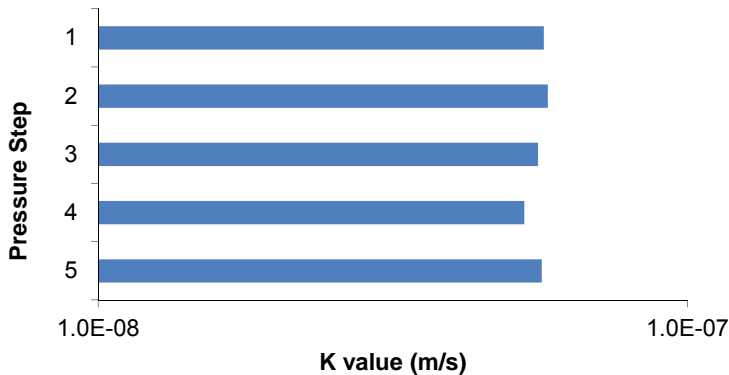
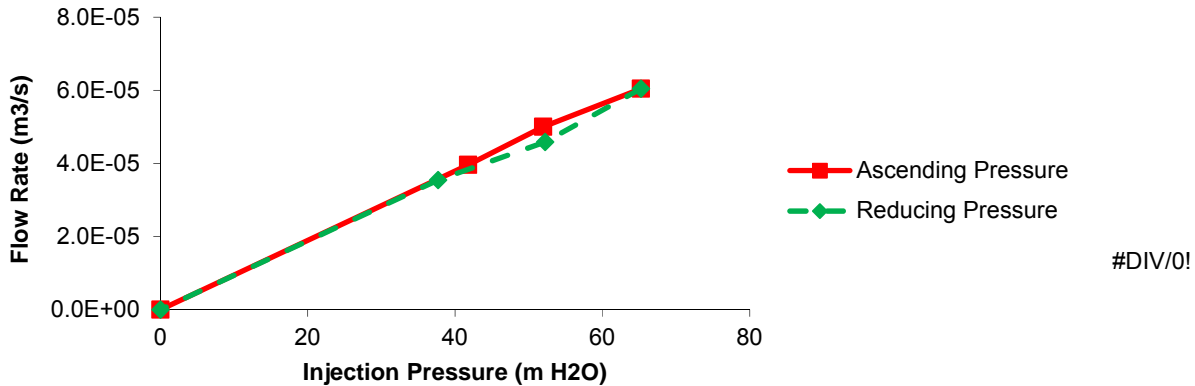
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 70.5  
 Bottom of Packer Test Interval (mah): 90.0  
 L: Length of Test Interval (mah): 19.5  
 Test Interval Midpoint (mah): 80.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 30.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -55  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	24.7	170.0	17.3	41.8	4.0E-05	5.7E-08
2	39.2	270.0	27.5	52.0	5.0E-05	5.8E-08
3	58.0	400.0	40.8	65.2	6.0E-05	5.6E-08
4	39.5	272.5	27.8	52.2	4.6E-05	5.3E-08
5	18.9	130.0	13.3	37.7	3.5E-05	5.7E-08
<b>Geometric Mean:</b>						<b>5.6E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1424 m  
**Trend:** 180 deg  
**Plunge:** -55 deg  
**Date:** 20-Sep-15

**Hole #:** ABM51R / K15-265  
**Hole Size:** NQ  
**Design Test Interval:** 133.5 - 153  
**Test #:** 2

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	220.0	107.8370	-
1	220.0	107.8400	0.0030
2	220.0	107.8430	0.0030
3	220.0	107.8460	0.0030
4	220.0	107.8485	0.0025
5	220.0	107.8510	0.0025
6			
7			
8			
9			
10			

Stable Ave. 220.0 0.0028

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	420.0	107.8540	-
1	440.0	107.8580	
2	450.0	107.8615	0.0038
3	420.0	107.8650	0.0035
4	440.0	107.8680	0.0030
5	450.0	107.8715	0.0035
6			
7			
8			
9			
10			

Stable Ave. 440.0 0.0034

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	640	107.8760	-
1	600	107.8800	0.0040
2	620	107.8840	0.0040
3	640	107.8875	0.0035
4	600	107.8910	0.0035
5	620	107.8945	0.0035
6			
7			
8			
9			
10			

Stable Ave. 616.0 0.0037

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	390	107.8950	-
1	420	107.8960	0.0010
2	420	107.8985	0.0025
3	420	107.9005	0.0020
4	430	107.9030	0.0025
5	430	107.9050	0.0020
6			
7			
8			
9			
10			

Stable Ave. 424.0 0.0020

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	200	107.9055	-
1	200	107.9065	0.0010
2	200	107.9075	0.0010
3	200	107.9090	0.0015
4	200	107.9100	0.0010
5	200	107.9115	0.0015
6			
7			
8			
9			
10			

Stable Ave. 200.0 0.0012

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 25.0 m toc  
 Top of Packer Interval: 133.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 153.00 m ah  
 Packer Inflation Pressure: 450 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): 15 min  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

No mud used, just washing cuttings  
 Start Flushing: 9:45 AM  
 End Flushing: 10:00 AM  
 Start Packer Testing: 10:25 AM  
 End Packer Testing: 10:55 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:**

Hole #: ABM51R / K15-265  
 Test #: 2



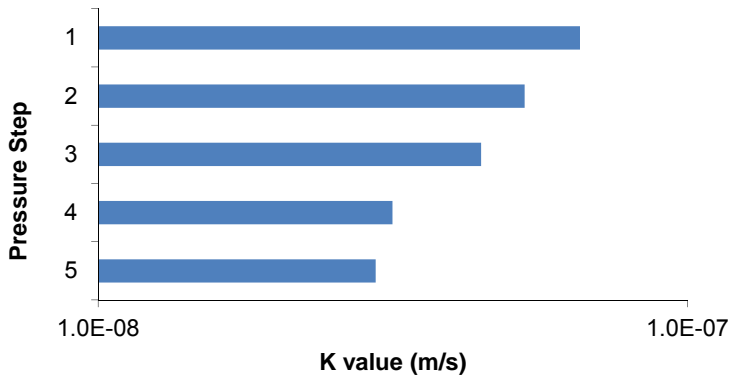
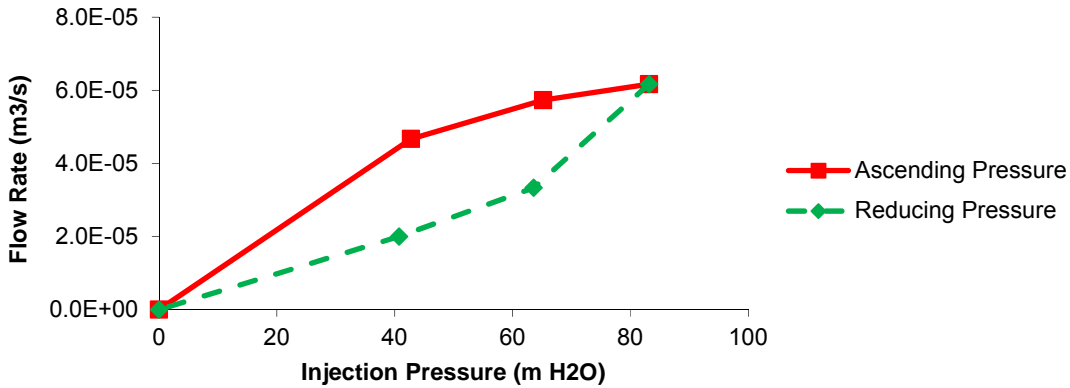
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 133.5  
 Bottom of Packer Test Interval (mah): 153.0  
 L: Length of Test Interval (mah): 19.5  
 Test Interval Midpoint (mah): 143.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 25.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -55  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	31.9	220.0	22.4	42.8	4.7E-05	6.6E-08
2	63.8	440.0	44.9	65.2	5.7E-05	5.3E-08
3	89.3	616.0	62.8	83.2	6.2E-05	4.5E-08
4	61.5	424.0	43.2	63.6	3.3E-05	3.2E-08
5	29.0	200.0	20.4	40.7	2.0E-05	3.0E-08
<b>Geometric Mean:</b>						<b>4.3E-08</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1424 m  
**Trend:** 180 deg  
**Plunge:** -55 deg  
**Date:** 20-Sep-15

**Hole #:** ABM51R / K15-265  
**Hole Size:** NQ  
**Design Test Interval:** 190.5 - 201  
**Test #:** 3

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	220.0	108.0060	-
1	220.0	108.0160	0.0100
2	220.0	108.0260	0.0100
3	220.0	108.0360	0.0100
4	220.0	108.0460	0.0100
5			
6			
7			
8			
9			
10			

Stable Ave. 220.0 0.0100

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	480.0	108.0560	-
1	480.0	108.0700	0.0140
2	480.0	108.0840	0.0140
3	480.0	108.0980	0.0140
4	480.0	108.1110	0.0130
5			
6			
7			
8			
9			
10			

Stable Ave. 480.0 0.0138

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	700	108.1250	-
1	700	108.1420	0.0170
2	700	108.1590	0.0170
3	700	108.1720	0.0130
4	700	108.1930	0.0210
5			
6			
7			
8			
9			
10			

Stable Ave. 700.0 0.0170

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	480	108.2050	-
1	480	108.2180	0.0130
2	480	108.2310	0.0130
3	480	108.2450	0.0140
4	480	108.2580	0.0130
5			
6			
7			
8			
9			
10			

Stable Ave. 480.0 0.0132

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	230	108.2650	-
1	230	108.2750	0.0100
2	230	108.2850	0.0100
3	230	108.2950	0.0100
4	230	108.3050	0.0100
5			
6			
7			
8			
9			
10			

Stable Ave. 230.0 0.0100

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			-
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 20.0 m toc  
 Top of Packer Interval: 190.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 201.00 m ah  
 Packer Inflation Pressure: 500 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): 15  
 Packer Pipe ID/ or Drill Rod ID (circle one):  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.50 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 9:55 PM  
 End Flushing: 10:10 PM  
 Start Packer Testing: 10:30 PM  
 End Packer Testing: 11:00 PM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:**

Hole #: ABM51R / K15-265  
 Test #: 3



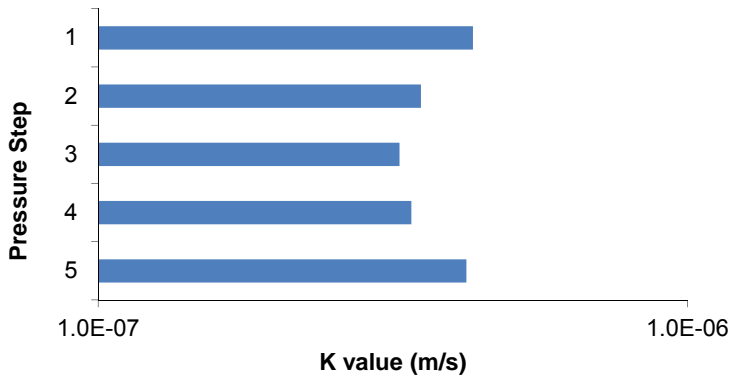
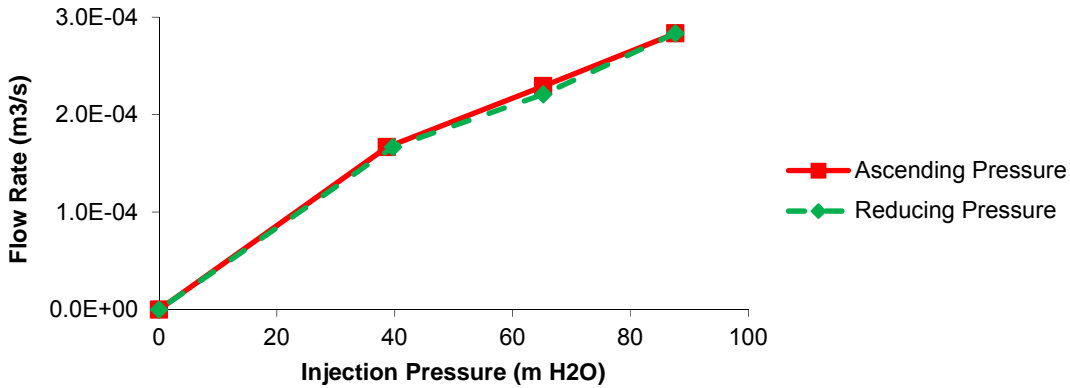
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 190.5  
 Bottom of Packer Test Interval (mah): 201.0  
 L: Length of Test Interval (mah) 10.5  
 Test Interval Midpoint (mah): 195.8  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.50  
 Depth to Water Table (mah): 20.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -55  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	31.9	220.0	22.4	38.7	1.7E-04	4.3E-07
2	69.6	480.0	48.9	65.2	2.3E-04	3.5E-07
3	101.5	700.0	71.4	87.6	2.8E-04	3.2E-07
4	69.6	480.0	48.9	65.2	2.2E-04	3.4E-07
5	33.4	230.0	23.5	39.7	1.7E-04	4.2E-07
<b>Geometric Mean:</b>						<b>3.7E-07</b>

**Diagnostic Plots**



## Constant Head (CH) and Falling/Rising Head (F/RH) Packer Test - Field Form

**Client:** BMC / Equity  
**Project:** Kudz Ze Kayah  
**Project #:** ENVMIN03071-01  
**Personnel:** Name REDACTED

**Collar El.:** 1424 m  
**Trend:** 180 deg  
**Plunge:** -55 deg  
**Date:** 21-Sep-15

**Hole #:** ABM51R / K15-265  
**Hole Size:** NQ  
**Design Test Interval:** 271.5 - 285  
**Test #:** 4

**Packer Setup Type: Single**

Pressure Interval 1	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	190.0	27.5130	-
1	210.0	27.5130	0.0000
2	210.0	27.5130	0.0000
3			
4			
5			
6			
7			
8			
9			
10			

Stable Ave. 210.0 0.0000

Pressure Interval 2	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	480.0	27.5139	-
1	480.0		
2	480.0		
3	480.0		
4	480.0		
5	480.0	27.5150	0.0002
6			
7			
8			
9			
10			

Stable Ave. 480.0 0.0002

Pressure Interval 3	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	680	27.5150	-
1	680		
2	680		
3	680		
4	680		
5	680	27.5168	0.0004
6			
7			
8			
9			
10			

Stable Ave. 680.0 0.0004

Pressure Interval 4	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	460	27.5168	-
1	460		
2	460		
3	460		
4	460		
5	460	27.5178	0.0002
6			
7			
8			
9			
10			

Stable Ave. 460.0 0.0002

Pressure Interval 5	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0	220	27.5178	-
1	220		
2	220		
3	220		
4	220	27.5183	0.0001
5			
6			
7			
8			
9			
10			

Stable Ave. 220.0 0.0001

Pressure Interval 6	Pressure	Volume	Δ Volume
Minutes	kPa	m3	m3
0			
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

**Measurements**

assume  
 Depth to Water from Top of Stickup: 10.0 m toc  
 Top of Packer Interval: 271.50 m ah\*  
 Bottom of Packer Interval (or Bottom of Hole): 285.00 m ah  
 Packer Inflation Pressure: 550 psi  
 Rod Stickup Height: 2.00 m ags  
 Water Flushed (Vol./Time/Until Clean): 20  
 Packer Pipe ID/ or Drill Rod ID (circle one): \_\_\_\_\_  
 Borehole Outside Diameter: 76 mm  
 Vertical height of gauge above ground: 1.00 m ags  
 \* m ah - metres along hole

**Measurement Units**

Volume: m<sup>3</sup>  
 Pressure: kPa (psi for packer inflation)  
 Length: m

**Time**

Start Flushing: 5:00 AM  
 End Flushing: 5:20 AM  
 Start Packer Testing: 8:00 AM  
 End Packer Testing: 8:37 AM

**FALLING HEAD TEST or RISING HEAD TEST**

Time (Min)	Depth to H2O (m)	Δ Depth/Min
0		-
1		
2		
4		
6		
8		
10		
15		
20		
25		
30		
40		
50		
60		

**Additional Comments:** Last 10 m of core quite fractured. Otherwise, last 50 m of hole very competent rock. Fractures didn't have gouge so assumed they would take water but no.



Hole #: ABM51R / K15-265  
 Test #: 4



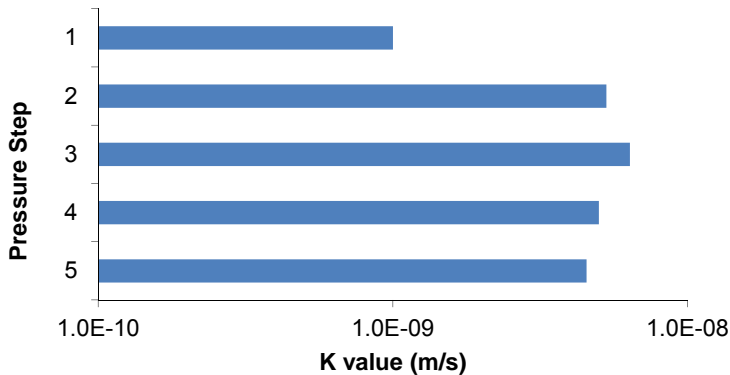
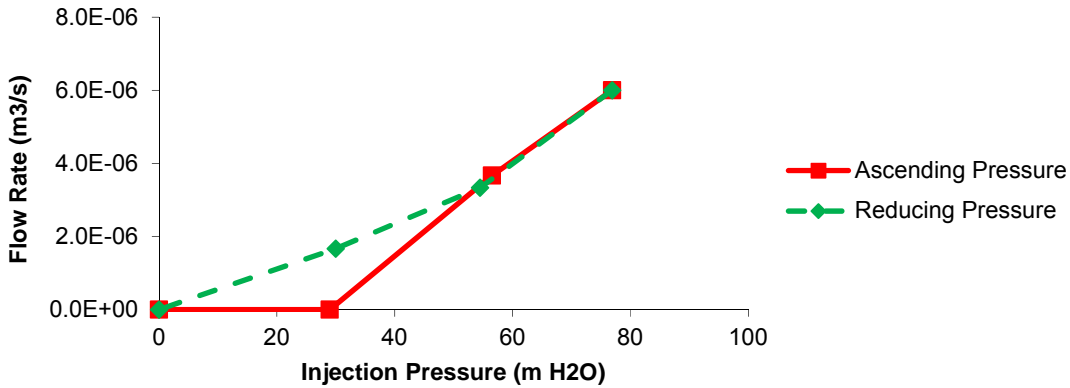
**Calculation Input Parameters**

Top of Packer Test Interval (mah): 271.5  
 Bottom of Packer Test Interval (mah): 285.0  
 L: Length of Test Interval (mah) 13.5  
 Test Interval Midpoint (mah): 278.3  
 Stickup Height (mah): 2.00  
 Pressure Gauge Height (m above ground): 1.00  
 Depth to Water Table (mah): 10.00  
 Borehole Diameter (mm): 76.000  
 r: Borehole Radius (m): 0.038  
 A: Angle From Horizontal (deg): -55  
 \* mah indicates "meters along hole"

$$K = \frac{Q \times \ln\left(\frac{L \sin(A)}{r}\right)}{2 \times \pi \times L \sin(A) \times dH}$$

Pressure Step	Pressure (psi)	Pressure (kPa)	Pressure (m of water)	Head Differential dH (m)	Flowrate Q (m <sup>3</sup> /s):	Hydraulic Conductivity K (m/s)
1	30.5	210.0	21.4	29.0	0.0E+00	1.0E-09
2	69.6	480.0	48.9	56.5	3.7E-06	5.3E-09
3	98.6	680.0	69.3	76.9	6.0E-06	6.4E-09
4	66.7	460.0	46.9	54.5	3.3E-06	5.0E-09
5	31.9	220.0	22.4	30.0	1.7E-06	4.5E-09
<b>Geometric Mean:</b>						<b>3.8E-09</b>

**Diagnostic Plots**





**Photo 1:** K15-211 / MW15-01: 1.50 – 8.23 m ah.



**Photo 2:** K15-211 / MW15-01: 8.23 – 20.00 m bg. Well screen interval 10.0 – 18.8 m bg.  
Packer test from 12.5 – 20.0 m bg.





**Photo 3:** K15-214 / MW15-02: 5.00 – 21.37 m bg. Packer test interval 12.5 – 32.0 m bg.



**Photo 4:** K15-214 / MW15-02: 21.37 – 32.00 m bg. Well screen interval 23.0 – 31.7 m bg.  
Packer test interval 12.5 – 32.0 m bg.



**Photo 5:** K15-222 / MW15-03S/D: 4.60 – 17.95 m bg. Well screen intervals 4.1 – 7.1 and 10.1 – 16.0 m bg.



**Photo 6:** K15-220 / MW15-04S: 5.60 – 24.88 m bg. Well screen interval 11.2 – 14.1 m bg.





**Photo 7:** K15-220 / MW15-04D: 24.88 – 33.00 m bg. Well screen interval 27.1 – 32.9 m bg.



**Photo 8:** K15-219 / MW15-05: 8.57 – 20.38 m bg.





**Photo 9:** K15-219 / MW15-05D: 20.38 – 30.00 m bg. Well screen interval 22.4 – 29.8 m bg.  
Test interval 22.5 – 30.0 m bg.



**Photo 10:** K15-215 / MW15-07D: 13.50 – 27.00 m bg. Well screen interval 26.3 – 32.1 m bg.  
Packer test interval 16.5 – 33.0 m bg.



**Photo 11:** K15-215 / MW15-07D: 27.00 – 33.00 m bg. Well screen interval 26.3 – 32.1 m bg.  
Packer test interval 16.5 – 33.0 m bg.



**Photo 12:** K15-212 / MW15-08D: 13.50 – 30.36 m bg.





**Photo 13:** K15-212 / MW15-08D: 30.36 – 36.00 m bg. Well screen interval 29.8 – 35.6 m bg.  
Packer test interval 19.5 – 36.0 m bg.



**Photo 14:** K15-208 / MW15-09D: 17.70 – 42.00 m bg. Well screen interval 35.1 – 40.9 m bg.  
Packer test interval 34.5 – 39.0 m bg.





**Photo 15:** K15-210 / MW15-10D: 12.00 – 36.00 m bg. Well screen interval 25.7 – 31.5 m bg.  
Packer test interval 28.5 – 33.0 m bg.



**Photo 16:** K15-318 / MW15-11: 7.50 – ~16.95 m bg.



**Photo 17:** K15-318 / MW15-11D: ~16.95 – ~26.25 m bg. Well screen interval 20.6 – 35.2 m bg.



**Photo 18:** K15-318 / MW15-11D: ~26.25 – 35 m bg. Well screen interval 20.6 – 35.2 m bg.





**Photo 1:** K15-200-WVP: 6.00 – 18.96 m ah. Packer Test #1 test interval 9.0 – 19.5 m ah.



**Photo 2:** K15-200-WVP: 18.96 – 31.95 m ah. Packer Test #1 test interval 9.0 – 19.5 m ah.



**Photo 3:** K15-200-WWP: 58.12 – 72.35 m ah. Packer Test #2 test interval 64.5 – 75.0 m ah.



**Photo 4:** K15-200-WWP: 72.35 – 85.43 m ah. Packer Test #2 test interval 64.5 – 75.0 m ah.





**Photo 5:** K15-200-WWP: 98.39 – 111.39 m ah. Packer Test #3 test interval 103.5 – 106.5 m ah.



**Photo 6:** K15-200-WWP: 124.50 – 137.31 m ah. Packer Test #4 test interval 127.5 – 138.0 m ah.



**Photo 7:** K15-200-WVP: 137.31 – 150.07 m ah. Packer Test #4 test interval 127.5 – 138.0 m ah.



**Photo 8:** K15-200-WVP: 188.53 – 201.57 m ah. Packer Test #5 test interval 198.0 – 211.5 m ah.





**Photo 9:** K15-200-WVP: 201.57 – 211.50 m ah. Packer Test #5 test interval 198.0 – 211.5 m ah.



**Photo 10:** K15-202: 8.00 – 22.80 m ah. Packer Test #1 test interval 21.5 – 32.0 m ah.



**Photo 11:** K15-202: 22.80 – 37.45 m ah. Packer Test #1 test interval 21.5 – 32.0 m ah.



**Photo 12:** K15-202: 50.90 – 66.11 m ah. Packer Test #2 test interval 57.5 – 71.0 m ah.





**Photo 13:** K15-202: 66.11 – 71.00 m ah. Packer Test #2 test interval 57.5 – 71.0 m ah.



**Photo 14:** K15-204: 6.00 – 26.00 m ah. Packer Test #1 test interval 21.5 – 35.0 m ah.



**Photo 15:** K15-204: 26.00 – 43.86 m ah. Packer Test #1 test interval 21.5 – 35.0 m ah.



**Photo 16:** K15-204: 62.22 – 81.24 m ah. Packer Test #2 test interval 72.5 – 95.0 m ah.





**Photo 17:** K15-204: 81.24 – 98.93 m ah. Packer Test #2 test interval 72.5 – 95.0 m ah.



**Photo 18:** K15-204: 116.88 – 135.10 m ah. Packer Test #3 test interval 123.5 – 149.0 m ah.





**Photo 19:** K15-204: 135.10 – 149.00 m ah. Packer Test #3 test interval 123.5 – 149.0 m ah.



**Photo 20:** K15-206: 9.00 – 30.70 m ah. Packer Test #1 test interval 13.5 – 24.0 m ah.



**Photo 21:** K15-206: 49.03 – 67.30 m ah. Packer Test #2 test interval 52.5 – 57.0 m ah.



**Photo 22:** K15-206: 85.55 – 103.60 m ah. Packer Test #3 test interval 94.5 – 114.0 m ah.





**Photo 23:** K15-206: 103.60 – 125.17 m ah. Packer Test #3 test interval 94.5 – 114.0 m ah.



**Photo 24:** K15-206: 197.79 – 215.58 m ah. Packer Test #4 test interval 211.5 – 237.0 m ah.



**Photo 25:** K15-206: 215.58 – 233.60 m ah. Packer Test #4 test interval 211.5 – 237.0 m ah.



**Photo 26:** K15-206: 233.60 – 237.00 m ah. Packer Test #4 test interval 211.5 – 237.0 m ah.





**Photo 27:** K15-242: 22.30 – 36.80 m ah. Packer Test #1 test interval 27.5 – 38.0 m ah.



**Photo 28:** K15-242: 36.80 – 50.40 m ah. Packer Test #1 test interval 27.5 – 38.0 m ah.





**Photo 29:** K15-242: 63.80 – 77.00 m ah. Packer Test #2 test interval 69.5 – 86.0 m ah.



**Photo 30:** K15-242: 77.00 – 91.54 m ah. Packer Test #2 test interval 69.5 – 86.0 m ah.



**Photo 31:** K15-242: 105.12 – 119.90 m ah. Packer Test #3 test interval 117.5 – 125.0 m ah.



**Photo 32:** K15-242: 119.90 – 133.00 m ah. Packer Test #3 test interval 117.5 – 125.0 m ah and Packer Test #4 test interval 132.5 – 161.0 m ah.





**Photo 33:** K15-242: 133.00 – 145.89 m ah. Packer Test #4 test interval 132.5 – 161.0 m ah.



**Photo 34:** K15-242: 145.89 – 159.40 m ah. Packer Test #4 test interval 132.5 – 161.0 m ah.



**Photo 35:** K15-242: 159.40 – 161.00 m ah. Packer Test #4 test interval 132.5 – 161.0 m ah.

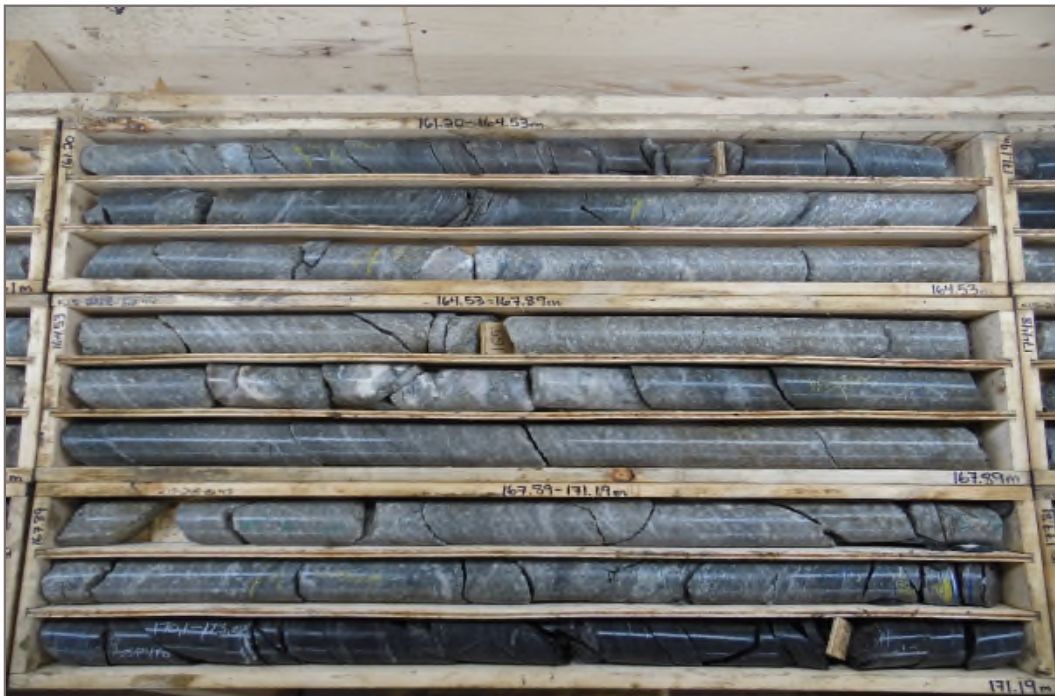


**Photo 36:** K15-248-WWP: 38.44 – 48.82 m ah. Packer Test #1 test interval 46.5 – 52.5 m ah.





**Photo 37:** K15-248-WWP: 48.82 – 60.95 m ah. Packer Test #1 test interval 46.5 – 52.5 m ah.



**Photo 38:** K15-248-WWP: 161.20 – 171.19 m ah. Packer Test #2 test interval 169.5 – 175.5 m ah.



**Photo 39:** K15-248-WWP: 171.19 – 181.19 m ah. Packer Test #2 test interval 169.5 – 175.5 m ah.



**Photo 40:** K15-248-WWP: 219.00 – 229.06 m ah. Packer Test #3 test interval 226.5 – 240.0 m ah.





**Photo 41:** K15-248-WWP: 238.78 – 250.80 m ah. Packer Test #3 test interval 226.5 – 240.0 m ah.



**Photo 42:** K15-248-WWP: 238.78 – 250.80 m ah. Packer Test #4 test interval 244.5 – 279.0 m ah.



**Photo 43:** K15-248-WWP: 250.80 – 263.91 m ah. Packer Test #4 test interval 244.5 – 279.0 m ah.

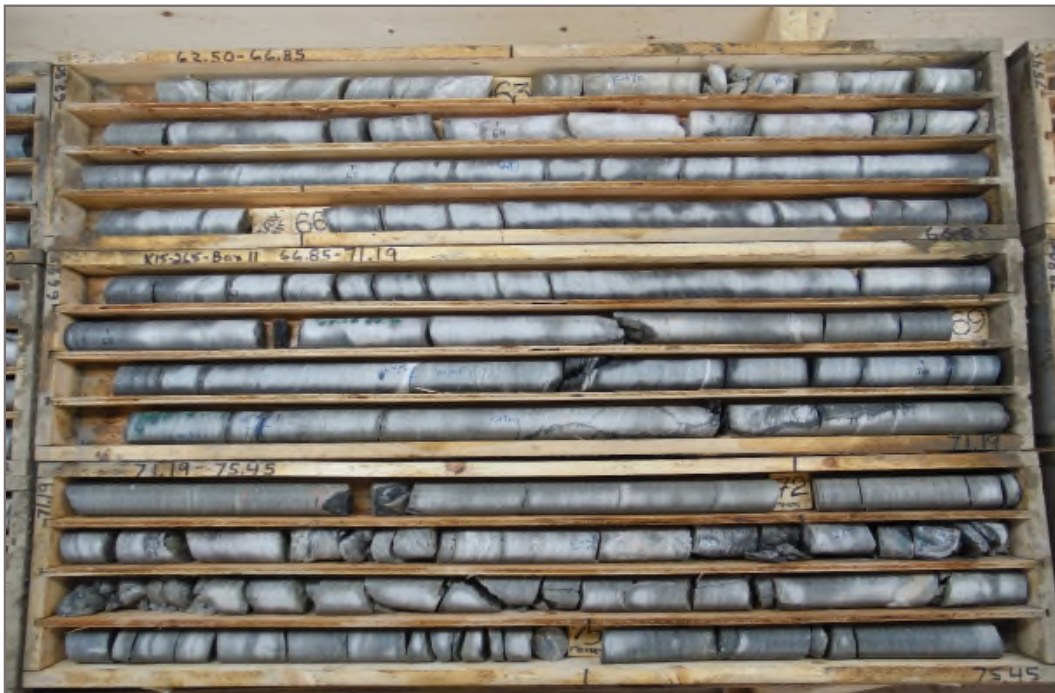


**Photo 44:** K15-248-WWP: 263.91 – 273.85 m ah. Packer Test #4 test interval 244.5 – 279.0 m ah.





**Photo 45:** K15-248-WWP: 273.85 – 278.50 m ah. Packer Test #4 test interval 244.5 – 279.0 m ah.



**Photo 46:** K15-265: 62.50 – 75.45 m ah. Packer Test #1 test interval 70.5 – 90.0 m ah.



**Photo 47:** K15-265: 75.45 – 88.61 m ah. Packer Test #1 test interval 70.5 – 90.0 m ah.



**Photo 48:** K15-265: 88.61 – 102.23 m ah. Packer Test #1 test interval 70.5 – 90.0 m ah.





**Photo 49:** K15-265: 130.00 – 143.70 m ah. Packer Test #2 test interval 133.5 -153.0 m ah.



**Photo 50:** K15-265: 143.70 – 156.66 m ah. Packer Test #2 test interval 133.5 -153.0 m ah.



**Photo 51:** K15-265: 185.17 – 198.30 m ah. Packer Test #3 test interval 190.5 – 201.0 m ah.



**Photo 52:** K15-265: 198.30 – 214.00 m ah. Packer Test #3 test interval 190.5 – 201.0 m ah.





**Photo 53:** K15-265: 265.98 – 278.85 m ah. Packer Test #4 test interval 271.5 – 285.0 m ah.



**Photo 54:** K15-265: 278.85 – 285.00 m ah. Packer Test #4 test interval 271.5 – 285.0 m ah.

# APPENDIX G

## LABORATORY REPORTS

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Your Project #: ENVMIN03071-01  
Your C.O.C. #: 464671-02-01, 464671-01-01

**Attention:KRISTEN RANGE**

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2016/01/19**  
Report #: R2119252  
Version: 3 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B540423**

**Received: 2015/05/15, 12:35**

Sample Matrix: Water  
# Samples Received: 21

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	11	N/A	2015/05/20	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	11	2015/05/20	2015/05/20	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	11	N/A	2015/05/19	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	11	N/A	2015/05/20	BBY6SOP-00026	SM 22 2510 B m
Fluoride	11	N/A	2015/05/19	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	3	N/A	2015/05/21	BBY7SOP-00002	EPA 6020a R1 m
Hardness Total (calculated as CaCO3)	8	N/A	2015/05/25	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	11	N/A	2015/05/21	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	11	N/A	2015/05/21	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	11	2015/05/21	2015/05/21	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	11	N/A	2015/05/21	BBY WI-00033	SM 22 1030E
Sum of cations, anions	11	N/A	2015/05/21	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	11	N/A	2015/05/21	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	5	N/A	2015/05/20	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	6	N/A	2015/05/21	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	8	2015/05/20	2015/05/23	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	3	N/A	2015/05/21	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	8	N/A	2015/05/25	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	3	N/A	2015/05/20	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	11	2015/05/21	2015/05/21	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Unpreserved)	1	N/A	2015/05/20	BBY6SOP-00009	SM 22 4500-NH3- G m
Ammonia-N (Preserved)	10	N/A	2015/05/19	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	11	N/A	2015/05/15	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrate+Nitrite (N) (low level)	10	N/A	2015/05/16	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	11	N/A	2015/05/15	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	11	N/A	2015/05/16	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	4	N/A	2015/05/20	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	6	N/A	2015/05/21	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (1)	10	N/A	2015/05/20	BBY6SOP-00026	SM 22 4500-H+ B m
pH Water (1)	1	N/A	2015/05/21	BBY6SOP-00026	SM 22 4500-H+ B m

Your Project #: ENVMIN03071-01  
Your C.O.C. #: 464671-02-01, 464671-01-01

**Attention:KRISTEN RANGE**

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2016/01/19**  
Report #: R2119252  
Version: 3 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B540423**

**Received: 2015/05/15, 12:35**

Sample Matrix: Water  
# Samples Received: 21

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted		
Orthophosphate by Konelab (low level)	11	N/A	2015/05/15 BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	10	N/A	2015/05/19 BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate by Automated Colourimetry	1	N/A	2015/05/20 BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	10	N/A	2015/05/20 BBY6SOP-00033	SM 22 2540 C m
Total Dissolved Solids - Low Level	1	N/A	2015/05/24 BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	11	N/A	2015/05/21 BBY WI-00033	Calculation
Carbon (Total Organic) (2)	11	N/A	2015/05/21 BBY6SOP-00003	SM 22 5310 C m
Phosphorus-P (LL Tot, dissolved) - FF/FP	10	2015/05/19	2015/05/19 BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	1	2015/05/20	2015/05/20 BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	11	N/A	2015/05/19 BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - unpreserved	1	N/A	2015/05/20 BBY6SOP-00013	SM 22 4500-P E m
Turbidity	11	N/A	2015/05/18 BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(2) TOC present in the sample should be considered as non-purgeable TOC.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email:Email REDACTED

Phone REDACTED

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3098	MG3098			MG3099		
Sampling Date		2015/05/12	2015/05/12			2015/05/12		
COC Number		464671-02-01	464671-02-01			464671-02-01		
	UNITS	BH95-25	BH95-25 Lab-Dup	RDL	QC Batch	BH95-25 FIELD PRESERVED	RDL	QC Batch

Calculated Parameters								
Anion Sum	meq/L	10		N/A	7904047		N/A	7904047
Cation Sum	meq/L	11		N/A	7904047		N/A	7904047
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE		N/A	ONSITE
Ion Balance	N/A	1.1		0.010	7903958		0.010	7903958
Nitrate (N)	mg/L	0.0024		0.0020	7903020		0.0020	7903020

Misc. Inorganics								
Fluoride (F)	mg/L	0.120		0.010	7906097		0.010	7906097
Acidity (pH 4.5)	mg/L	<0.50		0.50	7906927		0.50	7906927
Alkalinity (Total as CaCO3)	mg/L	302		0.50	7906762		0.50	7906762
Total Organic Carbon (C)	mg/L	2.41		0.50	7908536		0.50	7908536
Acidity (pH 8.3)	mg/L	1.33		0.50	7906927		0.50	7906927
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	7906762		0.50	7906762
Bicarbonate (HCO3)	mg/L	368		0.50	7906762		0.50	7906762
Carbonate (CO3)	mg/L	<0.50		0.50	7906762		0.50	7906762
Hydroxide (OH)	mg/L	<0.50		0.50	7906762		0.50	7906762

Anions								
Orthophosphate (P)	mg/L	0.0012		0.0010	7904503		0.0010	7904503
Dissolved Sulphate (SO4)	mg/L	197		0.50	7905975		0.50	7905975
Dissolved Chloride (Cl)	mg/L	0.51		0.50	7905974		0.50	7905974

Nutrients								
Total Ammonia (N)	mg/L	0.16		0.0050	7906182		0.0050	7906182
Dissolved Phosphorus (P)	mg/L			0.0020	7906159	0.0024	0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.217		0.020	7903024		0.020	7903024
Nitrate plus Nitrite (N)	mg/L	0.0024		0.0020	7904151	<0.020 (1)	0.020	7904747
Nitrite (N)	mg/L	<0.0020		0.0020	7904159			
Total Nitrogen (N)	mg/L	0.220		0.020	7908217			
Total Phosphorus (P)	mg/L					3.28	0.020	7906172

Physical Properties								
Conductivity	uS/cm	908		1.0	7906760			
pH	pH	8.11		N/A	7906757			

Physical Properties								
Total Dissolved Solids	mg/L	656	646	1.0	7905320			

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) RDL raised due to sample matrix interference.

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3098	MG3098			MG3099		
Sampling Date		2015/05/12	2015/05/12			2015/05/12		
COC Number		464671-02-01	464671-02-01			464671-02-01		
	UNITS	BH95-25	BH95-25 Lab-Dup	RDL	QC Batch	BH95-25 FIELD PRESERVED	RDL	QC Batch
Turbidity	NTU	587		0.10	7904142			
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate								

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3099			MG3100	MG3100		
Sampling Date		2015/05/12			2015/05/12	2015/05/12		
COC Number		464671-02-01			464671-02-01	464671-02-01		
	UNITS	<b>BH95-25 FIELD PRESERVED Lab-Dup</b>	RDL	QC Batch	<b>BH95-146</b>	<b>BH95-146 Lab-Dup</b>	RDL	QC Batch

**Calculated Parameters**

Anion Sum	meq/L		N/A	7904047	8.3		N/A	7904047
Cation Sum	meq/L		N/A	7904047	8.5		N/A	7904047
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A		0.010	7903958	1.0		0.010	7903958
Nitrate (N)	mg/L		0.0020	7903020	0.0053		0.0020	7903020

**Misc. Inorganics**

Fluoride (F)	mg/L		0.010	7906097	0.310		0.010	7906097
Acidity (pH 4.5)	mg/L		0.50	7906927	<0.50		0.50	7906929
Alkalinity (Total as CaCO3)	mg/L		0.50	7906762	130		0.50	7906762
Total Organic Carbon (C)	mg/L		0.50	7908536	1.06		0.50	7908536
Acidity (pH 8.3)	mg/L		0.50	7906927	<0.50		0.50	7906929
Alkalinity (PP as CaCO3)	mg/L		0.50	7906762	<0.50		0.50	7906762
Bicarbonate (HCO3)	mg/L		0.50	7906762	159		0.50	7906762
Carbonate (CO3)	mg/L		0.50	7906762	<0.50		0.50	7906762
Hydroxide (OH)	mg/L		0.50	7906762	<0.50		0.50	7906762

**Anions**

Orthophosphate (P)	mg/L		0.0010	7904503	<0.0010		0.0010	7904503
Dissolved Sulphate (SO4)	mg/L		0.50	7905975	273		5.0	7905975
Dissolved Chloride (Cl)	mg/L		0.50	7905974	<0.50		0.50	7905974

**Nutrients**

Total Ammonia (N)	mg/L		0.0050	7906182	0.043		0.0050	7906182
Dissolved Phosphorus (P)	mg/L	0.0024	0.0020	7906159			0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.020	7903024	0.060		0.020	7903024
Nitrate plus Nitrite (N)	mg/L		0.020	7904747	0.0053		0.0020	7904151
Nitrite (N)	mg/L				<0.0020		0.0020	7904159
Total Nitrogen (N)	mg/L				0.065		0.020	7908217
Total Phosphorus (P)	mg/L		0.020	7906172	0.0034	0.0033	0.0020	7906174

**Physical Properties**

Conductivity	uS/cm				767		1.0	7906760
pH	pH				8.12		N/A	7906757

**Physical Properties**

Total Dissolved Solids	mg/L				604		1.0	7905320
Turbidity	NTU				15.7		0.10	7904142

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3101			MG3102		
Sampling Date		2015/05/12			2015/05/12		
COC Number		464671-02-01			464671-02-01		
	UNITS	BH95-146 FIELD PRESERVED	RDL	QC Batch	BH95-21	RDL	QC Batch
<b>Calculated Parameters</b>							
Anion Sum	meq/L		N/A	7904047	4.3	N/A	7904047
Cation Sum	meq/L		N/A	7904047	4.5	N/A	7904047
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	7903958	1.1	0.010	7903958
Nitrate (N)	mg/L		0.0020	7903020	0.0048	0.0020	7903020
<b>Misc. Inorganics</b>							
Fluoride (F)	mg/L		0.010	7906097	0.100	0.010	7906097
Acidity (pH 4.5)	mg/L		0.50	7906929	<0.50	0.50	7906927
Alkalinity (Total as CaCO3)	mg/L		0.50	7906762	165	0.50	7906762
Total Organic Carbon (C)	mg/L		0.50	7908536	0.77	0.50	7908536
Acidity (pH 8.3)	mg/L		0.50	7906929	<0.50	0.50	7906927
Alkalinity (PP as CaCO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Bicarbonate (HCO3)	mg/L		0.50	7906762	201	0.50	7906762
Carbonate (CO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Hydroxide (OH)	mg/L		0.50	7906762	<0.50	0.50	7906762
<b>Anions</b>							
Orthophosphate (P)	mg/L		0.0010	7904503	<0.0010	0.0010	7904503
Dissolved Sulphate (SO4)	mg/L		5.0	7905975	46.5	0.50	7905975
Dissolved Chloride (Cl)	mg/L		0.50	7905974	<0.50	0.50	7905974
<b>Nutrients</b>							
Total Ammonia (N)	mg/L		0.0050	7906182	0.019	0.0050	7906182
Dissolved Phosphorus (P)	mg/L	0.0026	0.0020	7906159		0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.020	7903024	0.033	0.020	7903024
Nitrate plus Nitrite (N)	mg/L	<0.020 (1)	0.020	7904747	0.0048	0.0020	7904151
Nitrite (N)	mg/L				<0.0020	0.0020	7904159
Total Nitrogen (N)	mg/L				0.038	0.020	7908217
Total Phosphorus (P)	mg/L	0.0275	0.0020	7906172		0.020	
<b>Physical Properties</b>							
Conductivity	uS/cm				402	1.0	7906760
pH	pH				8.22	N/A	7906757
<b>Physical Properties</b>							
Total Dissolved Solids	mg/L				284	1.0	7905320
RDL = Reportable Detection Limit N/A = Not Applicable (1) RDL raised due to sample matrix interference.							

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		MG3101			MG3102		
<b>Sampling Date</b>		2015/05/12			2015/05/12		
<b>COC Number</b>		464671-02-01			464671-02-01		
	<b>UNITS</b>	<b>BH95-146 FIELD PRESERVED</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95-21</b>	<b>RDL</b>	<b>QC Batch</b>
Turbidity	NTU				640	0.10	7904142
RDL = Reportable Detection Limit							

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3103			MG3104	MG3104		
Sampling Date		2015/05/12			2015/05/12	2015/05/12		
COC Number		464671-02-01			464671-02-01	464671-02-01		
	UNITS	BH95-21 FIELD PRESERVED	RDL	QC Batch	BH95-22	BH95-22 Lab-Dup	RDL	QC Batch

**Calculated Parameters**

Anion Sum	meq/L		N/A	7904047	4.2		N/A	7904047
Cation Sum	meq/L		N/A	7904047	4.1		N/A	7904047
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A		0.010	7903958	0.98		0.010	7903958
Nitrate (N)	mg/L		0.0020	7903020	0.105		0.0020	7903020

**Misc. Inorganics**

Fluoride (F)	mg/L		0.010	7906097	0.070		0.010	7906097
Acidity (pH 4.5)	mg/L		0.50	7906927	<0.50	<0.50	0.50	7906929
Alkalinity (Total as CaCO3)	mg/L		0.50	7906762	152		0.50	7906762
Total Organic Carbon (C)	mg/L		0.50	7908536	6.18		0.50	7908536
Acidity (pH 8.3)	mg/L		0.50	7906927	<0.50	<0.50	0.50	7906929
Alkalinity (PP as CaCO3)	mg/L		0.50	7906762	<0.50		0.50	7906762
Bicarbonate (HCO3)	mg/L		0.50	7906762	186		0.50	7906762
Carbonate (CO3)	mg/L		0.50	7906762	<0.50		0.50	7906762
Hydroxide (OH)	mg/L		0.50	7906762	<0.50		0.50	7906762

**Anions**

Orthophosphate (P)	mg/L		0.0010	7904503	<0.0010		0.0010	7904503
Dissolved Sulphate (SO4)	mg/L		0.50	7905975	52.8		0.50	7905975
Dissolved Chloride (Cl)	mg/L		0.50	7905974	<0.50		0.50	7905974

**Nutrients**

Total Ammonia (N)	mg/L		0.0050	7906182	0.51 (1)		0.50	7906182
Dissolved Phosphorus (P)	mg/L	0.0023	0.0020	7906159			0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.020	7903024	1.59		0.20	7903024
Nitrate plus Nitrite (N)	mg/L	0.0052	0.0020	7904747	0.105		0.0020	7904151
Nitrite (N)	mg/L		0.0020		<0.0020		0.0020	7904159
Total Nitrogen (N)	mg/L		0.020		1.70 (1)		0.20	7908217
Total Phosphorus (P)	mg/L	0.914	0.020	7906172			0.20	

**Physical Properties**

Conductivity	uS/cm		1.0		391		1.0	7906760
pH	pH		N/A		8.22		N/A	7906757

**Physical Properties**

Total Dissolved Solids	mg/L		1.0		252		1.0	7905320
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RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

(1) RDL raised due to sample matrix interference.

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		MG3103			MG3104	MG3104		
<b>Sampling Date</b>		2015/05/12			2015/05/12	2015/05/12		
<b>COC Number</b>		464671-02-01			464671-02-01	464671-02-01		
	<b>UNITS</b>	<b>BH95-21 FIELD PRESERVED</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95-22</b>	<b>BH95-22 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
Turbidity	NTU		0.10		2850 (1)		1.0	7904142

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) RDL raised due to sample dilution.

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3105			MG3106		
Sampling Date		2015/05/12			2015/05/12		
COC Number		464671-02-01			464671-02-01		
	UNITS	BH95-22 FIELD PRESERVED	RDL	QC Batch	ART - 3 (3)	RDL	QC Batch
<b>Calculated Parameters</b>							
Anion Sum	meq/L		N/A	7904047	4.0	N/A	7904047
Cation Sum	meq/L		N/A	7904047	4.1	N/A	7904047
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	7903958	1.0	0.010	7903958
Nitrate (N)	mg/L		0.0020	7903020	0.0053	0.0020	7903020
<b>Misc. Inorganics</b>							
Fluoride (F)	mg/L		0.010	7906097	0.180	0.010	7906097
Acidity (pH 4.5)	mg/L		0.50	7906929	<0.50	0.50	7906927
Alkalinity (Total as CaCO3)	mg/L		0.50	7906762	104	0.50	7906762
Total Organic Carbon (C)	mg/L		0.50	7908536	<0.50	0.50	7908536
Acidity (pH 8.3)	mg/L		0.50	7906929	1.31	0.50	7906927
Alkalinity (PP as CaCO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Bicarbonate (HCO3)	mg/L		0.50	7906762	128	0.50	7906762
Carbonate (CO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Hydroxide (OH)	mg/L		0.50	7906762	<0.50	0.50	7906762
<b>Anions</b>							
Orthophosphate (P)	mg/L		0.0010	7904503	<0.0010	0.0010	7904503
Dissolved Sulphate (SO4)	mg/L		0.50	7905975	90.3	0.50	7905975
Dissolved Chloride (Cl)	mg/L		0.50	7905974	<0.50	0.50	7905974
<b>Nutrients</b>							
Total Ammonia (N)	mg/L		0.50	7906182	0.018	0.0050	7906182
Dissolved Phosphorus (P)	mg/L	0.0027	0.0020	7906159		0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.20	7903024	0.072	0.020	7903024
Nitrate plus Nitrite (N)	mg/L	0.143	0.0020	7904747	0.0053	0.0020	7904151
Nitrite (N)	mg/L		0.0020		<0.0020	0.0020	7904159
Total Nitrogen (N)	mg/L		0.20		0.077	0.020	7908208
Total Phosphorus (P)	mg/L	6.61	0.20	7906172		0.0020	
<b>Physical Properties</b>							
Conductivity	uS/cm		1.0		392	1.0	7906760
pH	pH		N/A		8.03	N/A	7906757
<b>Physical Properties</b>							
Total Dissolved Solids	mg/L		1.0		254	1.0	7905320
Turbidity	NTU		1.0		52.3	0.10	7904142
RDL = Reportable Detection Limit N/A = Not Applicable							



Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3107			MG3108		
Sampling Date		2015/05/12			2015/05/12		
COC Number		464671-02-01			464671-02-01		
	UNITS	ART - 3 (3) FIELD PRESERVED	RDL	QC Batch	ART-4	RDL	QC Batch
<b>Calculated Parameters</b>							
Anion Sum	meq/L		N/A	7904047	4.4	N/A	7904047
Cation Sum	meq/L		N/A	7904047	4.5	N/A	7904047
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	7903958	1.0	0.010	7903958
Nitrate (N)	mg/L		0.0020	7903020	<0.0020	0.0020	7903020
<b>Misc. Inorganics</b>							
Fluoride (F)	mg/L		0.010	7906097	0.240	0.010	7906097
Acidity (pH 4.5)	mg/L		0.50	7906927	<0.50	0.50	7906927
Alkalinity (Total as CaCO3)	mg/L		0.50	7906762	166	0.50	7906762
Total Organic Carbon (C)	mg/L		0.50	7908536	1.50	0.50	7908536
Acidity (pH 8.3)	mg/L		0.50	7906927	<0.50	0.50	7906927
Alkalinity (PP as CaCO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Bicarbonate (HCO3)	mg/L		0.50	7906762	203	0.50	7906762
Carbonate (CO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Hydroxide (OH)	mg/L		0.50	7906762	<0.50	0.50	7906762
<b>Anions</b>							
Orthophosphate (P)	mg/L		0.0010	7904503	0.0010	0.0010	7904503
Dissolved Sulphate (SO4)	mg/L		0.50	7905975	50.6	0.50	7905975
Dissolved Chloride (Cl)	mg/L		0.50	7905974	<0.50	0.50	7905974
<b>Nutrients</b>							
Total Ammonia (N)	mg/L		0.0050	7906182	0.90	0.0050	7906182
Dissolved Phosphorus (P)	mg/L	0.0163	0.0020	7906159		0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.020	7903024	0.85	0.20	7903024
Nitrate plus Nitrite (N)	mg/L	<0.0020	0.0020	7904747	<0.0020	0.0020	7904151
Nitrite (N)	mg/L		0.0020		<0.0020	0.0020	7904159
Total Nitrogen (N)	mg/L		0.020		0.85 (1)	0.20	7908217
Total Phosphorus (P)	mg/L	0.0234	0.0020	7906172			
<b>Physical Properties</b>							
Conductivity	uS/cm		1.0		415	1.0	7906760
pH	pH		N/A		8.28	N/A	7906757
<b>Physical Properties</b>							
Total Dissolved Solids	mg/L		1.0		258	1.0	7905320
RDL = Reportable Detection Limit N/A = Not Applicable (1) RDL raised due to sample matrix interference.							

Maxxam Job #: B540423  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		MG3107			MG3108		
<b>Sampling Date</b>		2015/05/12			2015/05/12		
<b>COC Number</b>		464671-02-01			464671-02-01		
	<b>UNITS</b>	<b>ART - 3 (3) FIELD PRESERVED</b>	<b>RDL</b>	<b>QC Batch</b>	<b>ART-4</b>	<b>RDL</b>	<b>QC Batch</b>
Turbidity	NTU		0.10		126	0.10	7904142
RDL = Reportable Detection Limit							

Maxxam Job #: B540423  
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TETRATECH EBA  
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**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3109			MG3110		
Sampling Date		2015/05/12			2015/05/12		
COC Number		464671-02-01			464671-02-01		
	UNITS	ART-4 FIELD PRESERVED	RDL	QC Batch	BH95-32	RDL	QC Batch
<b>Calculated Parameters</b>							
Anion Sum	meq/L		N/A	7904047	3.9	N/A	7904047
Cation Sum	meq/L		N/A	7904047	4.2	N/A	7904047
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	7903958	1.1	0.010	7903958
Nitrate (N)	mg/L		0.0020	7903020	0.0524	0.0020	7903020
<b>Misc. Inorganics</b>							
Fluoride (F)	mg/L		0.010	7906097	0.040	0.010	7906097
Acidity (pH 4.5)	mg/L		0.50	7906927	<0.50	0.50	7906927
Alkalinity (Total as CaCO3)	mg/L		0.50	7906762	158	0.50	7906762
Total Organic Carbon (C)	mg/L		0.50	7908536	1.63	0.50	7908536
Acidity (pH 8.3)	mg/L		0.50	7906927	<0.50	0.50	7906927
Alkalinity (PP as CaCO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Bicarbonate (HCO3)	mg/L		0.50	7906762	193	0.50	7906762
Carbonate (CO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Hydroxide (OH)	mg/L		0.50	7906762	<0.50	0.50	7906762
<b>Anions</b>							
Orthophosphate (P)	mg/L		0.0010	7904503	<0.0010	0.0010	7904503
Dissolved Sulphate (SO4)	mg/L		0.50	7905975	35.7	0.50	7907298
Dissolved Chloride (Cl)	mg/L		0.50	7905974	<0.50	0.50	7905974
<b>Nutrients</b>							
Total Ammonia (N)	mg/L		0.0050	7906182	0.29	0.0050	7906182
Dissolved Phosphorus (P)	mg/L	0.0024	0.0020	7906159		0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.20	7903024	0.83	0.20	7903024
Nitrate plus Nitrite (N)	mg/L	<0.020 (1)	0.020	7904747	0.0524	0.0020	7904151
Nitrite (N)	mg/L				<0.0020	0.0020	7904159
Total Nitrogen (N)	mg/L				0.88 (1)	0.20	7908217
Total Phosphorus (P)	mg/L	0.0936	0.0020	7906172			
<b>Physical Properties</b>							
Conductivity	uS/cm				376	1.0	7906760
pH	pH				8.02	N/A	7906757
<b>Physical Properties</b>							
Total Dissolved Solids	mg/L				232	1.0	7905320
RDL = Reportable Detection Limit N/A = Not Applicable (1) RDL raised due to sample matrix interference.							

Maxxam Job #: B540423  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		MG3109			MG3110		
<b>Sampling Date</b>		2015/05/12			2015/05/12		
<b>COC Number</b>		464671-02-01			464671-02-01		
	<b>UNITS</b>	<b>ART-4 FIELD PRESERVED</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95-32</b>	<b>RDL</b>	<b>QC Batch</b>
Turbidity	NTU				2570 (1)	1.0	7904142
RDL = Reportable Detection Limit							
(1) RDL raised due to sample dilution.							

Maxxam Job #: B540423  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3111			MG3112		
Sampling Date		2015/05/12			2015/05/12		
COC Number		464671-02-01			464671-02-01		
	UNITS	BH95-32 FIELD PRESERVED	RDL	QC Batch	BH95G-33D	RDL	QC Batch
<b>Calculated Parameters</b>							
Anion Sum	meq/L		N/A	7904047	4.4	N/A	7904047
Cation Sum	meq/L		N/A	7904047	4.7	N/A	7904047
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	7903958	1.1	0.010	7903958
Nitrate (N)	mg/L		0.0020	7903020	0.177	0.0020	7903020
<b>Misc. Inorganics</b>							
Fluoride (F)	mg/L		0.010	7906097	0.061	0.010	7906097
Acidity (pH 4.5)	mg/L		0.50	7906927	<0.50	0.50	7906927
Alkalinity (Total as CaCO3)	mg/L		0.50	7906762	152	0.50	7906762
Total Organic Carbon (C)	mg/L		0.50	7908536	1.53	0.50	7908536
Acidity (pH 8.3)	mg/L		0.50	7906927	<0.50	0.50	7906927
Alkalinity (PP as CaCO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Bicarbonate (HCO3)	mg/L		0.50	7906762	186	0.50	7906762
Carbonate (CO3)	mg/L		0.50	7906762	<0.50	0.50	7906762
Hydroxide (OH)	mg/L		0.50	7906762	<0.50	0.50	7906762
<b>Anions</b>							
Orthophosphate (P)	mg/L		0.0010	7904503	<0.0010	0.0010	7904503
Dissolved Sulphate (SO4)	mg/L		0.50	7907298	62.3	0.50	7905975
Dissolved Chloride (Cl)	mg/L		0.50	7905974	<0.50	0.50	7905974
<b>Nutrients</b>							
Total Ammonia (N)	mg/L		0.0050	7906182	0.12	0.0050	7906182
Dissolved Phosphorus (P)	mg/L	0.0032	0.0020	7906159		0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.20	7903024	0.53	0.20	7903024
Nitrate plus Nitrite (N)	mg/L	<0.020 (1)	0.020	7904747	0.177	0.0020	7904151
Nitrite (N)	mg/L				<0.0020	0.0020	7904159
Total Nitrogen (N)	mg/L				0.71 (1)	0.20	7908208
Total Phosphorus (P)	mg/L	4.34	0.020	7906172		0.020	
<b>Physical Properties</b>							
Conductivity	uS/cm				408	1.0	7906760
pH	pH				8.07	N/A	7906757
<b>Physical Properties</b>							
Total Dissolved Solids	mg/L				280	1.0	7905320
RDL = Reportable Detection Limit N/A = Not Applicable (1) RDL raised due to sample matrix interference.							

Maxxam Job #: B540423  
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**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		MG3111			MG3112		
<b>Sampling Date</b>		2015/05/12			2015/05/12		
<b>COC Number</b>		464671-02-01			464671-02-01		
	<b>UNITS</b>	<b>BH95-32 FIELD PRESERVED</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-33D</b>	<b>RDL</b>	<b>QC Batch</b>
Turbidity	NTU				2140	0.10	7904142
RDL = Reportable Detection Limit							

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
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**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3113			MG3114	MG3114		
Sampling Date		2015/05/12			2015/05/15 12:35	2015/05/15 12:35		
COC Number		464671-02-01			464671-02-01	464671-02-01		
	UNITS	BH95G-33D FIELD PRESERVED	RDL	QC Batch	TRIP BLANK	TRIP BLANK Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>								
Anion Sum	meq/L		N/A	7904047	0.011		N/A	7904047
Cation Sum	meq/L		N/A	7904047	0.0014		N/A	7904047
Ion Balance	N/A		0.010	7903958	0.13 (1)		0.010	7903958
Nitrate (N)	mg/L		0.0020	7903020	<0.0020		0.0020	7903020
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L		0.010	7906097	<0.010		0.010	7906099
Acidity (pH 4.5)	mg/L		0.50	7906927	<0.50		0.50	7906929
Alkalinity (Total as CaCO3)	mg/L		0.50	7906762	0.56		0.50	7906814
Total Organic Carbon (C)	mg/L		0.50	7908536	<0.50		0.50	7908536
Acidity (pH 8.3)	mg/L		0.50	7906927	<0.50		0.50	7906929
Alkalinity (PP as CaCO3)	mg/L		0.50	7906762	<0.50		0.50	7906814
Bicarbonate (HCO3)	mg/L		0.50	7906762	0.68		0.50	7906814
Carbonate (CO3)	mg/L		0.50	7906762	<0.50		0.50	7906814
Hydroxide (OH)	mg/L		0.50	7906762	<0.50		0.50	7906814
<b>Anions</b>								
Orthophosphate (P)	mg/L		0.0010	7904503	<0.0010		0.0010	7904503
Dissolved Sulphate (SO4)	mg/L		0.50	7905975	<0.50		0.50	7905975
Dissolved Chloride (Cl)	mg/L		0.50	7905974	<0.50		0.50	7905974
<b>Nutrients</b>								
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0020	7906159	<0.0020	<0.0020	0.0020	7908403
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.20	7903024	<0.020		0.020	7903024
Total Ammonia (N)	mg/L				<0.0050	<0.0050	0.0050	7904732
Nitrate plus Nitrite (N)	mg/L	0.160	0.0020	7904747	<0.0020		0.0020	7904151
Nitrite (N)	mg/L		0.0020		<0.0020		0.0020	7904159
Total Nitrogen (N)	mg/L		0.20		<0.020		0.020	7908245
Total Phosphorus (P)	mg/L	3.48	0.020	7906172	<0.0020	<0.0020	0.0020	7908404
<b>Physical Properties</b>								
Conductivity	uS/cm		1.0		1.3		1.0	7906810
pH	pH		N/A		5.86		N/A	7906796
<b>Physical Properties</b>								
Total Dissolved Solids	mg/L		1.0		2.0		1.0	7909326
Turbidity	NTU		0.10		<0.10		0.10	7904142
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Ion balance out of optimal range due to high measurement uncertainty at this level (Ion Sum < 0.4 meq/L for both cations and anions).								

Maxxam Job #: B540423  
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TETRATECH EBA  
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**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3115		MG3116			MG3126		
Sampling Date		2015/05/12		2015/05/12			2015/05/12		
COC Number		464671-02-01		464671-02-01			464671-01-01		
	UNITS	BH95-2	QC Batch	BH95-2 FIELD PRESERVED	RDL	QC Batch	DUP 01	RDL	QC Batch

**Calculated Parameters**

Anion Sum	meq/L	2.9	7904047		N/A	7904047	4.2	N/A	7904047
Cation Sum	meq/L	2.7	7904047		N/A	7904047	4.4	N/A	7904047
Filter and HNO3 Preservation	N/A	FIELD	ONSITE		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	0.96	7903958		0.010	7903958	1.0	0.010	7903958
Nitrate (N)	mg/L	1.36	7903020		0.0020	7903020	0.0052	0.0020	7903020

**Misc. Inorganics**

Fluoride (F)	mg/L	0.040	7906097		0.010	7906097	0.100	0.010	7906097
Acidity (pH 4.5)	mg/L	<0.50	7906927		0.50	7906927	<0.50	0.50	7906927
Alkalinity (Total as CaCO3)	mg/L	128	7906762		0.50	7906762	163	0.50	7906762
Total Organic Carbon (C)	mg/L	9.14	7908536		0.50	7908536	1.07	0.50	7908536
Acidity (pH 8.3)	mg/L	<0.50	7906927		0.50	7906927	<0.50	0.50	7906927
Alkalinity (PP as CaCO3)	mg/L	<0.50	7906762		0.50	7906762	<0.50	0.50	7906762
Bicarbonate (HCO3)	mg/L	157	7906762		0.50	7906762	199	0.50	7906762
Carbonate (CO3)	mg/L	<0.50	7906762		0.50	7906762	<0.50	0.50	7906762
Hydroxide (OH)	mg/L	<0.50	7906762		0.50	7906762	<0.50	0.50	7906762

**Anions**

Orthophosphate (P)	mg/L	0.016	7904503		0.0010	7904503	<0.0010	0.0010	7904503
Dissolved Sulphate (SO4)	mg/L	7.43	7905975		0.50	7905975	45.9	0.50	7905975
Dissolved Chloride (Cl)	mg/L	1.2	7905974		0.50	7905974	0.51	0.50	7905974

**Nutrients**

Total Ammonia (N)	mg/L	0.051	7906182		0.0050	7906182	0.042	0.0050	7906182
Dissolved Phosphorus (P)	mg/L		7906159	0.0156	0.0020	7906159		0.0020	7906159
Total Total Kjeldahl Nitrogen (Calc)	mg/L	<1.0	7903024		1.0	7903024	0.35	0.20	7903024
Nitrate plus Nitrite (N)	mg/L	1.36	7904151	1.24	0.0020	7904747	0.0052	0.0020	7904151
Nitrite (N)	mg/L	<0.0020	7904159		0.0020		<0.0020	0.0020	7904159
Total Nitrogen (N)	mg/L	<1.0 (1)	7908217		1.0		0.35 (1)	0.20	7908217
Total Phosphorus (P)	mg/L			8.66	0.20	7906172			

**Physical Properties**

Conductivity	uS/cm	263	7906760		1.0		397	1.0	7906760
pH	pH	8.12	7906757		N/A		8.21	N/A	7906757

**Physical Properties**

Total Dissolved Solids	mg/L	176	7905320		1.0		250	1.0	7905320
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RDL = Reportable Detection Limit

N/A = Not Applicable

(1) RDL raised due to sample matrix interference.



Maxxam Job #: B540423  
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**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MG3115		MG3116			MG3126		
Sampling Date		2015/05/12		2015/05/12			2015/05/12		
COC Number		464671-02-01		464671-02-01			464671-01-01		
	UNITS	BH95-2	QC Batch	BH95-2 FIELD PRESERVED	RDL	QC Batch	DUP 01	RDL	QC Batch
Turbidity	NTU	1530	7904142		0.10		728	0.10	7904142
RDL = Reportable Detection Limit									

Maxxam ID		MG3126		MG3127		
Sampling Date		2015/05/12		2015/05/12		
COC Number		464671-01-01		464671-01-01		
	UNITS	DUP 01 Lab-Dup	QC Batch	DUP 01 FIELD PRESERVED	RDL	QC Batch
Anions						
Orthophosphate (P)	mg/L	<0.0010	7904503		0.0010	7904503
Nutrients						
Dissolved Phosphorus (P)	mg/L		7906159	0.0023	0.0020	7906159
Nitrate plus Nitrite (N)	mg/L	0.0039	7904151	0.0100	0.0020	7904747
Nitrite (N)	mg/L	<0.0020	7904159		0.0020	
Total Phosphorus (P)	mg/L			0.732	0.020	7906172
RDL = Reportable Detection Limit						
Lab-Dup = Laboratory Initiated Duplicate						

Maxxam Job #: B540423  
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TETRATECH EBA  
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**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MG3098	MG3100	MG3102	MG3104	MG3106		
Sampling Date		2015/05/12	2015/05/12	2015/05/12	2015/05/12	2015/05/12		
COC Number		464671-02-01	464671-02-01	464671-02-01	464671-02-01	464671-02-01		
	UNITS	BH95-25	BH95-146	BH95-21	BH95-22	ART - 3 (3)	RDL	QC Batch
<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	522	415	221	198	186	0.50	7903806
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	7908099
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00076	0.00098	0.0236	0.0380	0.00135	0.00050	7906912
Dissolved Antimony (Sb)	mg/L	0.000026	0.000522	0.000088	0.000240	0.0424	0.000020	7906912
Dissolved Arsenic (As)	mg/L	0.00719	0.000605	0.00155	0.000195	0.181	0.000020	7906912
Dissolved Barium (Ba)	mg/L	0.0689	0.0150	0.0460	0.104	0.0167	0.000020	7906912
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	7906912
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	7906912
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7906912
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.0000091	0.0000063	0.000194	0.000316	0.0000050	7906912
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	7906912
Dissolved Cobalt (Co)	mg/L	0.000183	0.0000562	0.0000781	0.000330	0.00130	0.0000050	7906912
Dissolved Copper (Cu)	mg/L	0.000112	0.000275	0.000150	0.00139	<0.000050	0.000050	7906912
Dissolved Iron (Fe)	mg/L	5.35	1.11	0.266	0.0855	5.66	0.0010	7906912
Dissolved Lead (Pb)	mg/L	0.0000138	0.0000133	0.0000854	0.000274	0.000734	0.0000050	7906912
Dissolved Lithium (Li)	mg/L	0.0118	0.0213	0.00604	0.00244	0.00459	0.00050	7906912
Dissolved Manganese (Mn)	mg/L	0.373	0.0242	0.0586	0.0307	0.428	0.000050	7906912
Dissolved Molybdenum (Mo)	mg/L	0.00152	0.000284	0.000392	0.000280	0.000814	0.000050	7906912
Dissolved Nickel (Ni)	mg/L	0.000630	0.000661	0.000301	0.000721	0.00189	0.000020	7906912
Dissolved Phosphorus (P)	mg/L	0.0030	0.0054	0.0048	0.0054	0.0024	0.0020	7906912
Dissolved Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	0.000461	<0.000040	0.000040	7906912
Dissolved Silicon (Si)	mg/L	6.53	14.6	3.75	3.26	5.63	0.050	7906912
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000057	<0.0000050	0.0000050	7906912
Dissolved Strontium (Sr)	mg/L	0.505	0.426	0.205	0.184	0.217	0.000050	7906912
Dissolved Thallium (Tl)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.000174	0.0000020	7906912
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	7906912
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	0.00162	<0.00050	0.00050	7906912
Dissolved Uranium (U)	mg/L	0.00441	0.00182	0.00454	0.00261	0.00613	0.0000020	7906912
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	7906912
Dissolved Zinc (Zn)	mg/L	0.00050	0.0103	0.0194	0.00678	1.62	0.00010	7906912
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	0.00011	<0.00010	0.00023	0.00010	7906912
Dissolved Calcium (Ca)	mg/L	140	128	68.5	62.4	60.7	0.050	7903097
Dissolved Magnesium (Mg)	mg/L	42.1	23.0	12.2	10.2	8.23	0.050	7903097
Dissolved Potassium (K)	mg/L	5.71	2.65	1.58	1.60	1.94	0.050	7903097
RDL = Reportable Detection Limit								

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		MG3098	MG3100	MG3102	MG3104	MG3106		
<b>Sampling Date</b>		2015/05/12	2015/05/12	2015/05/12	2015/05/12	2015/05/12		
<b>COC Number</b>		464671-02-01	464671-02-01	464671-02-01	464671-02-01	464671-02-01		
	<b>UNITS</b>	<b>BH95-25</b>	<b>BH95-146</b>	<b>BH95-21</b>	<b>BH95-22</b>	<b>ART - 3 (3)</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Sodium (Na)	mg/L	2.05	3.31	1.26	0.920	0.877	0.050	7903097
Dissolved Sulphur (S)	mg/L	71.9	91.2	15.3	17.9	30.4	3.0	7903097
RDL = Reportable Detection Limit								

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		MG3108	MG3110	MG3112	MG3112	MG3114		
<b>Sampling Date</b>		2015/05/12	2015/05/12	2015/05/12	2015/05/12	2015/05/15 12:35		
<b>COC Number</b>		464671-02-01	464671-02-01	464671-02-01	464671-02-01	464671-02-01		
	<b>UNITS</b>	<b>ART-4</b>	<b>BH95-32</b>	<b>BH95G-33D</b>	<b>BH95G-33D Lab-Dup</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	209	201	230		<0.50	0.50	7903806
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020		<0.0000020	0.0000020	7908099
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00062	0.00202	0.00126	0.00124	<0.00050	0.00050	7906912
Dissolved Antimony (Sb)	mg/L	0.00127	0.000227	<0.000020	<0.000020	<0.000020	0.000020	7906912
Dissolved Arsenic (As)	mg/L	0.0118	0.000353	0.000215	0.000219	<0.000020	0.000020	7906912
Dissolved Barium (Ba)	mg/L	0.0319	0.168	0.0824	0.0768	<0.000020	0.000020	7906912
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	7906912
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	7906912
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	7906912
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.000130	<0.0000050	<0.0000050	<0.0000050	0.0000050	7906912
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	7906912
Dissolved Cobalt (Co)	mg/L	0.00254	0.000438	0.0000149	0.0000162	<0.0000050	0.0000050	7906912
Dissolved Copper (Cu)	mg/L	0.000123	0.000111	0.000132	0.000140	<0.000050	0.000050	7906912
Dissolved Iron (Fe)	mg/L	1.65	0.0382	0.0013	0.0013	<0.0010	0.0010	7906912
Dissolved Lead (Pb)	mg/L	<0.0000050	0.000141	0.0000062	0.0000053	<0.0000050	0.0000050	7906912
Dissolved Lithium (Li)	mg/L	0.0123	0.00161	0.00126	0.00087	<0.00050	0.00050	7906912
Dissolved Manganese (Mn)	mg/L	0.0328	0.0585	0.00131	0.00135	<0.000050	0.000050	7906912
Dissolved Molybdenum (Mo)	mg/L	0.0112	0.000714	0.00124	0.00123	<0.000050	0.000050	7906912
Dissolved Nickel (Ni)	mg/L	0.0169	0.00148	0.000781	0.000796	<0.000020	0.000020	7906912
Dissolved Phosphorus (P)	mg/L	0.0036	<0.0020	<0.0020	0.0023	<0.0020	0.0020	7906912
Dissolved Selenium (Se)	mg/L	<0.000040	0.000326	0.00383	0.00384	<0.000040	0.000040	7906912
Dissolved Silicon (Si)	mg/L	10.7	2.54	3.03	2.95	<0.050	0.050	7906912
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	7906912
Dissolved Strontium (Sr)	mg/L	0.259	0.281	0.237	0.230	<0.000050	0.000050	7906912
Dissolved Thallium (Tl)	mg/L	0.0000357	0.0000235	<0.0000020	<0.0000020	<0.0000020	0.0000020	7906912
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	7906912
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	7906912
Dissolved Uranium (U)	mg/L	0.0122	0.00130	0.00485	0.00486	<0.0000020	0.0000020	7906912
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	7906912
Dissolved Zinc (Zn)	mg/L	0.00021	0.00057	0.00040	0.00038	<0.00010	0.00010	7906912
Dissolved Zirconium (Zr)	mg/L	0.00015	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	7906912
Dissolved Calcium (Ca)	mg/L	58.4	73.4	77.5		<0.050	0.050	7903097
Dissolved Magnesium (Mg)	mg/L	15.4	4.24	8.82		<0.050	0.050	7903097

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MG3108	MG3110	MG3112	MG3112	MG3114		
Sampling Date		2015/05/12	2015/05/12	2015/05/12	2015/05/12	2015/05/15 12:35		
COC Number		464671-02-01	464671-02-01	464671-02-01	464671-02-01	464671-02-01		
	UNITS	ART-4	BH95-32	BH95G-33D	BH95G-33D Lab-Dup	TRIP BLANK	RDL	QC Batch
Dissolved Potassium (K)	mg/L	2.22	4.53	1.01		<0.050	0.050	7903097
Dissolved Sodium (Na)	mg/L	2.08	0.687	0.759		<0.050	0.050	7903097
Dissolved Sulphur (S)	mg/L	17.7	11.8	20.4		<3.0	3.0	7903097

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MG3115	MG3126		
Sampling Date		2015/05/12	2015/05/12		
COC Number		464671-02-01	464671-01-01		
	<b>UNITS</b>	<b>BH95-2</b>	<b>DUP 01</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>					
Dissolved Hardness (CaCO3)	mg/L	136	215	0.50	7903806
<b>Elements</b>					
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	7908099
<b>Dissolved Metals by ICPMS</b>					
Dissolved Aluminum (Al)	mg/L	0.00911	0.00202	0.00050	7906912
Dissolved Antimony (Sb)	mg/L	0.000098	0.000113	0.000020	7906912
Dissolved Arsenic (As)	mg/L	0.000163	0.00153	0.000020	7906912
Dissolved Barium (Ba)	mg/L	0.0315	0.0427	0.000020	7906912
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	0.000010	7906912
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	0.0000050	7906912
Dissolved Boron (B)	mg/L	<0.010	<0.010	0.010	7906912
Dissolved Cadmium (Cd)	mg/L	0.00123	<0.0000050	0.0000050	7906912
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00010	7906912
Dissolved Cobalt (Co)	mg/L	0.0000257	0.0000674	0.0000050	7906912
Dissolved Copper (Cu)	mg/L	0.00309	0.000069	0.000050	7906912
Dissolved Iron (Fe)	mg/L	0.0177	0.295	0.0010	7906912
Dissolved Lead (Pb)	mg/L	0.0000554	0.0000144	0.0000050	7906912
Dissolved Lithium (Li)	mg/L	0.00095	0.00601	0.00050	7906912
Dissolved Manganese (Mn)	mg/L	0.00193	0.0582	0.000050	7906912
Dissolved Molybdenum (Mo)	mg/L	0.000339	0.000353	0.000050	7906912
Dissolved Nickel (Ni)	mg/L	0.00102	0.000319	0.000020	7906912
Dissolved Phosphorus (P)	mg/L	0.0164	0.0023	0.0020	7906912
Dissolved Selenium (Se)	mg/L	0.00136	<0.000040	0.000040	7906912
Dissolved Silicon (Si)	mg/L	2.94	3.96	0.050	7906912
Dissolved Silver (Ag)	mg/L	0.0000113	<0.0000050	0.0000050	7906912
Dissolved Strontium (Sr)	mg/L	0.103	0.204	0.000050	7906912
Dissolved Thallium (Tl)	mg/L	0.0000077	0.0000059	0.0000020	7906912
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	0.00020	7906912
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	0.00050	7906912
Dissolved Uranium (U)	mg/L	0.000254	0.00467	0.0000020	7906912
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	0.00020	7906912
Dissolved Zinc (Zn)	mg/L	0.0205	0.00043	0.00010	7906912
Dissolved Zirconium (Zr)	mg/L	0.00010	<0.00010	0.00010	7906912
Dissolved Calcium (Ca)	mg/L	34.7	66.2	0.050	7903097
Dissolved Magnesium (Mg)	mg/L	11.8	12.1	0.050	7903097
Dissolved Potassium (K)	mg/L	0.425	1.52	0.050	7903097
RDL = Reportable Detection Limit					

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MG3115	MG3126		
Sampling Date		2015/05/12	2015/05/12		
COC Number		464671-02-01	464671-01-01		
	UNITS	BH95-2	DUP 01	RDL	QC Batch
Dissolved Sodium (Na)	mg/L	0.377	0.944	0.050	7903097
Dissolved Sulphur (S)	mg/L	<3.0	16.3	3.0	7903097
RDL = Reportable Detection Limit					

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		MG3100	MG3106		MG3114		
Sampling Date		2015/05/12	2015/05/12		2015/05/15 12:35		
COC Number		464671-02-01	464671-02-01		464671-02-01		
	UNITS	BH95-146	ART - 3 (3)	QC Batch	TRIP BLANK	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	399	199	7903095	<0.50	0.50	7903095
<b>Elements</b>							
Total Mercury (Hg)	mg/L	0.0000031	<0.0000020	7908193	<0.0000020	0.0000020	7908212
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	0.540	0.00517	7905790	0.00064	0.00050	7905790
Total Antimony (Sb)	mg/L	0.00121	0.0425	7905790	<0.000020	0.000020	7905790
Total Arsenic (As)	mg/L	0.0108	0.168	7905790	<0.000020	0.000020	7905790
Total Barium (Ba)	mg/L	0.0306	0.0158	7905790	<0.000020	0.000020	7905790
Total Beryllium (Be)	mg/L	0.000032	<0.000010	7905790	<0.000010	0.000010	7905790
Total Bismuth (Bi)	mg/L	0.0000560	<0.0000050	7905790	<0.0000050	0.0000050	7905790
Total Boron (B)	mg/L	<0.010	<0.010	7905790	<0.010	0.010	7905790
Total Cadmium (Cd)	mg/L	0.000359	0.000298	7905790	<0.0000050	0.0000050	7905790
Total Chromium (Cr)	mg/L	0.00206	<0.00010	7905790	<0.00010	0.00010	7905790
Total Cobalt (Co)	mg/L	0.000465	0.00131	7905790	<0.0000050	0.0000050	7905790
Total Copper (Cu)	mg/L	0.00703	<0.000050	7905790	<0.000050	0.000050	7905790
Total Iron (Fe)	mg/L	2.23	5.59	7905790	0.0012	0.0010	7905790
Total Lead (Pb)	mg/L	0.0143	0.00112	7905790	<0.0000050	0.0000050	7905790
Total Lithium (Li)	mg/L	0.0209	0.00443	7905790	<0.00050	0.00050	7905790
Total Manganese (Mn)	mg/L	0.0371	0.435	7905790	<0.000050	0.000050	7905790
Total Molybdenum (Mo)	mg/L	0.000373	0.000724	7905790	<0.000050	0.000050	7905790
Total Nickel (Ni)	mg/L	0.00471	0.00192	7905790	<0.000020	0.000020	7905790
Total Phosphorus (P)	mg/L	0.0192	0.0057	7905790	<0.0020	0.0020	7905790
Total Selenium (Se)	mg/L	0.000075	<0.000040	7905790	<0.000040	0.000040	7905790
Total Silicon (Si)	mg/L	16.3	5.29	7905790	<0.050	0.050	7905790
Total Silver (Ag)	mg/L	0.0000439	0.0000159	7905790	<0.0000050	0.0000050	7905790
Total Strontium (Sr)	mg/L	0.410	0.208	7905790	<0.000050	0.000050	7905790
Total Thallium (Tl)	mg/L	0.0000362	0.000247	7905790	<0.0000020	0.0000020	7905790
Total Tin (Sn)	mg/L	0.00234	<0.00020	7905790	<0.00020	0.00020	7905790
Total Titanium (Ti)	mg/L	0.0408	<0.00050	7905790	<0.00050	0.00050	7905790
Total Uranium (U)	mg/L	0.00196	0.00614	7905790	<0.0000020	0.0000020	7905790
Total Vanadium (V)	mg/L	0.00099	<0.00020	7905790	<0.00020	0.00020	7905790
Total Zinc (Zn)	mg/L	0.0491	1.42	7905790	<0.00010	0.00010	7905790
Total Zirconium (Zr)	mg/L	0.00835	0.00033	7905790	<0.00010	0.00010	7905790
Total Calcium (Ca)	mg/L	121	66.1	7903099	<0.050	0.050	7903099
Total Magnesium (Mg)	mg/L	23.4	8.24	7903099	<0.050	0.050	7903099
Total Potassium (K)	mg/L	2.93	1.91	7903099	<0.050	0.050	7903099
RDL = Reportable Detection Limit							



Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		MG3100	MG3106		MG3114		
Sampling Date		2015/05/12	2015/05/12		2015/05/15 12:35		
COC Number		464671-02-01	464671-02-01		464671-02-01		
	UNITS	BH95-146	ART - 3 (3)	QC Batch	TRIP BLANK	RDL	QC Batch
Total Sodium (Na)	mg/L	3.45	0.866	7903099	<0.050	0.050	7903099
Total Sulphur (S)	mg/L	88.5	28.5	7903099	<3.0	3.0	7903099
RDL = Reportable Detection Limit							

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		MG3098	MG3102	MG3104	MG3108	MG3110		
Sampling Date		2015/05/12	2015/05/12	2015/05/12	2015/05/12	2015/05/12		
COC Number		464671-02-01	464671-02-01	464671-02-01	464671-02-01	464671-02-01		
	UNITS	BH95-25	BH95-21	BH95-22	ART-4	BH95-32	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	610	238	310	218	528	0.50	7903095
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.000020	<0.000020	0.000065	<0.000020	<0.000020	0.000020	7908193
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	23.2	11.0	39.5	0.275	86.0	0.0030	7907046
Total Antimony (Sb)	mg/L	0.000396	0.000952	0.00423	0.0175	0.00124	0.000050	7907046
Total Arsenic (As)	mg/L	0.0390	0.0289	0.160	0.0831	0.0489	0.000020	7907046
Total Barium (Ba)	mg/L	0.408	1.62	1.09	0.0432	3.62	0.00010	7907046
Total Beryllium (Be)	mg/L	0.00149	0.000858	0.00208	0.000066	0.00434	0.000010	7907046
Total Bismuth (Bi)	mg/L	0.000846	0.000873	0.00442	0.000058	0.00302	0.000020	7907046
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	7907046
Total Cadmium (Cd)	mg/L	0.000928	0.000612	0.0213	0.0000929	0.0109	0.000050	7907046
Total Chromium (Cr)	mg/L	0.0531	0.0142	0.0782	0.512	0.219	0.00050	7907046
Total Cobalt (Co)	mg/L	0.0191	0.00826	0.0691	0.0370	0.111	0.000010	7907046
Total Copper (Cu)	mg/L	0.0723	0.0834	0.887	0.849	0.308	0.00040	7907046
Total Iron (Fe)	mg/L	60.6	34.9	206	135	203	0.0050	7907046
Total Lead (Pb)	mg/L	0.0658	0.0446	0.532	0.0200	0.297	0.000050	7907046
Total Lithium (Li)	mg/L	0.0403	0.0125	0.0386	0.0104	0.0416	0.00050	7907046
Total Manganese (Mn)	mg/L	1.07	0.339	6.30	0.279	8.69	0.00010	7907046
Total Molybdenum (Mo)	mg/L	0.00246	0.00161	0.00673	0.253	0.00939	0.000050	7907046
Total Nickel (Ni)	mg/L	0.0463	0.0170	0.127	0.350	0.183	0.00010	7907046
Total Phosphorus (P)	mg/L	3.29	0.509	2.22	0.095	3.79	0.010	7907046
Total Selenium (Se)	mg/L	0.000222	0.00106	0.00281	0.000047	0.0202	0.000040	7907046
Total Silicon (Si)	mg/L	47.6	26.3	69.2	20.7	99.9	0.10	7907046
Total Silver (Ag)	mg/L	0.000342	0.000411	0.0168	0.000654	0.00532	0.000050	7907046
Total Strontium (Sr)	mg/L	0.597	0.281	0.281	0.274	0.544	0.000050	7907046
Total Thallium (Tl)	mg/L	0.000429	0.000149	0.000769	0.0000587	0.00136	0.000020	7907046
Total Tin (Sn)	mg/L	0.00186	0.00091	0.00609	0.0420	0.00471	0.00020	7907046
Total Titanium (Ti)	mg/L	1.01	0.217	1.17	0.0727	10.4	0.0050	7907046
Total Uranium (U)	mg/L	0.00875	0.00945	0.0129	0.205	0.0115	0.000050	7907046
Total Vanadium (V)	mg/L	0.0686	0.0220	0.124	0.0130	0.608	0.00050	7907046
Total Zinc (Zn)	mg/L	0.176	0.220	2.53	0.0852	0.904	0.0010	7907046
Total Zirconium (Zr)	mg/L	0.00254	0.0101	0.0111	0.0261	0.0207	0.00010	7907046
Total Calcium (Ca)	mg/L	152	66.9	75.7	61.6	130	0.25	7903099
Total Magnesium (Mg)	mg/L	56.1	17.1	29.3	15.5	49.5	0.25	7903099
Total Potassium (K)	mg/L	13.5	4.56	11.3	2.37	21.5	0.25	7903099
RDL = Reportable Detection Limit								

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		MG3098	MG3102	MG3104	MG3108	MG3110		
Sampling Date		2015/05/12	2015/05/12	2015/05/12	2015/05/12	2015/05/12		
COC Number		464671-02-01	464671-02-01	464671-02-01	464671-02-01	464671-02-01		
	UNITS	BH95-25	BH95-21	BH95-22	ART-4	BH95-32	RDL	QC Batch
Total Sodium (Na)	mg/L	2.35	1.36	1.31	2.13	2.13	0.25	7903099
Total Sulphur (S)	mg/L	67	17	15	43	<15	15	7903099
RDL = Reportable Detection Limit								

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		MG3112	MG3115	MG3126	MG3126		
Sampling Date		2015/05/12	2015/05/12	2015/05/12	2015/05/12		
COC Number		464671-02-01	464671-02-01	464671-01-01	464671-01-01		
	UNITS	BH95G-33D	BH95-2	DUP 01	DUP 01 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	430	226	248		0.50	7903095
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	0.0000024	<0.0000020	<0.0000020	0.0000020	7908212
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	43.8	12.7	11.2		0.0030	7907046
Total Antimony (Sb)	mg/L	0.000513	0.00140	0.00101		0.000050	7907046
Total Arsenic (As)	mg/L	0.149	0.0451	0.0275		0.000020	7907046
Total Barium (Ba)	mg/L	0.839	0.307	1.69		0.00010	7907046
Total Beryllium (Be)	mg/L	0.00218	0.000647	0.000922		0.000010	7907046
Total Bismuth (Bi)	mg/L	0.00105	0.000480	0.000882		0.000020	7907046
Total Boron (B)	mg/L	<0.050	<0.050	<0.050		0.050	7907046
Total Cadmium (Cd)	mg/L	0.000724	0.0255	0.000602		0.0000050	7907046
Total Chromium (Cr)	mg/L	0.0629	0.0349	0.0145		0.00050	7907046
Total Cobalt (Co)	mg/L	0.0794	0.0394	0.00770		0.000010	7907046
Total Copper (Cu)	mg/L	0.185	0.330	0.0815		0.00040	7907046
Total Iron (Fe)	mg/L	150	59.9	36.8		0.0050	7907046
Total Lead (Pb)	mg/L	0.0683	0.169	0.0473		0.000050	7907046
Total Lithium (Li)	mg/L	0.0264	0.0110	0.0119		0.00050	7907046
Total Manganese (Mn)	mg/L	6.57	0.894	0.328		0.00010	7907046
Total Molybdenum (Mo)	mg/L	0.0140	0.0246	0.00176		0.000050	7907046
Total Nickel (Ni)	mg/L	0.296	0.201	0.0168		0.00010	7907046
Total Phosphorus (P)	mg/L	3.35	5.61	0.550		0.010	7907046
Total Selenium (Se)	mg/L	0.0103	0.00503	0.00110		0.000040	7907046
Total Silicon (Si)	mg/L	62.4	21.5	25.6		0.10	7907046
Total Silver (Ag)	mg/L	0.00180	0.00460	0.000529		0.0000050	7907046
Total Strontium (Sr)	mg/L	0.396	0.212	0.265		0.000050	7907046
Total Thallium (Tl)	mg/L	0.000389	0.000307	0.000156		0.0000020	7907046
Total Tin (Sn)	mg/L	0.00271	0.00223	0.00093		0.00020	7907046
Total Titanium (Ti)	mg/L	0.504	0.284	0.230		0.0050	7907046
Total Uranium (U)	mg/L	0.0161	0.00482	0.0118		0.0000050	7907046
Total Vanadium (V)	mg/L	0.148	0.0970	0.0208		0.00050	7907046
Total Zinc (Zn)	mg/L	0.578	2.20	0.215		0.0010	7907046
Total Zirconium (Zr)	mg/L	0.0187	0.0223	0.00905		0.00010	7907046
Total Calcium (Ca)	mg/L	119	54.5	71.7		0.25	7903099
Total Magnesium (Mg)	mg/L	32.4	21.7	16.6		0.25	7903099
RDL = Reportable Detection Limit							
Lab-Dup = Laboratory Initiated Duplicate							

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		MG3112	MG3115	MG3126	MG3126		
Sampling Date		2015/05/12	2015/05/12	2015/05/12	2015/05/12		
COC Number		464671-02-01	464671-02-01	464671-01-01	464671-01-01		
	UNITS	BH95G-33D	BH95-2	DUP 01	DUP 01 Lab-Dup	RDL	QC Batch
Total Potassium (K)	mg/L	5.79	3.29	4.48		0.25	7903099
Total Sodium (Na)	mg/L	1.59	0.50	1.32		0.25	7903099
Total Sulphur (S)	mg/L	19	<15	15		15	7903099
RDL = Reportable Detection Limit							
Lab-Dup = Laboratory Initiated Duplicate							

Maxxam Job #: B540423  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	8.0°C
Package 2	5.3°C
Package 3	4.3°C

Samples MG3099, MG3101, MG3103, MG3105, MG3107, MG3109, MG3111, MG3113, MG3116 & MG3127 bottles field preserved for Low Level N + N.

Revised report V2: Updated Client sample IDs for MG3112 and MG3113 per client request (MM4).

Revised report (V3): Client ID corrected per client request for samples MG3106 and MG3107 (MM4).

Sample MG3099-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3101-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3103-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3105-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3107-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3109-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3111-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3113-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3116-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

Sample MG3127-01 : Sample preserved in the field by client to prolong hold time for Nitrate plus Nitrite. Reported detection limit (RDL) for preserved N&N has not been established at this concentration. Results less than 0.02mg/L should be used with caution and are not suitable for compliance purposes.

**Results relate only to the items tested.**

Maxxam Job #: B540423  
Report Date: 2016/01/19

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMIN03071-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7904142	Turbidity	2015/05/18			102	80 - 120	<0.10	NTU	4.6	20
7904151	Nitrate plus Nitrite (N)	2015/05/15	108	80 - 120	105	80 - 120	<0.0020	mg/L	NC	25
7904159	Nitrite (N)	2015/05/15	104	80 - 120	102	80 - 120	<0.0020	mg/L	NC	25
7904503	Orthophosphate (P)	2015/05/15	98	80 - 120	106	80 - 120	<0.0010	mg/L	NC	20
7904732	Total Ammonia (N)	2015/05/20	95	80 - 120	106	80 - 120	<0.0050	mg/L	NC	20
7904747	Nitrate plus Nitrite (N)	2015/05/16	103	80 - 120	104	80 - 120	<0.0020	mg/L	NC	25
7905320	Total Dissolved Solids	2015/05/20	101	80 - 120	92	80 - 120	1.2, RDL=1.0	mg/L	1.5	20
7905790	Total Aluminum (Al)	2015/05/20	96	80 - 120	105	80 - 120	<0.00050	mg/L	0.59	20
7905790	Total Antimony (Sb)	2015/05/20	99	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
7905790	Total Arsenic (As)	2015/05/20	99	80 - 120	100	80 - 120	<0.000020	mg/L	0.54	20
7905790	Total Barium (Ba)	2015/05/20	98	80 - 120	105	80 - 120	<0.000020	mg/L	1.1	20
7905790	Total Beryllium (Be)	2015/05/20	96	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
7905790	Total Bismuth (Bi)	2015/05/20	96	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
7905790	Total Boron (B)	2015/05/20					<0.010	mg/L	NC	20
7905790	Total Cadmium (Cd)	2015/05/20	94	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
7905790	Total Chromium (Cr)	2015/05/20	96	80 - 120	97	80 - 120	<0.00010	mg/L	NC	20
7905790	Total Cobalt (Co)	2015/05/20	95	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
7905790	Total Copper (Cu)	2015/05/20	95	80 - 120	98	80 - 120	<0.000050	mg/L	0.36	20
7905790	Total Iron (Fe)	2015/05/20	97	80 - 120	104	80 - 120	<0.0010	mg/L	2.5	20
7905790	Total Lead (Pb)	2015/05/20	103	80 - 120	104	80 - 120	<0.0000050	mg/L	NC	20
7905790	Total Lithium (Li)	2015/05/20	95	80 - 120	97	80 - 120	<0.00050	mg/L	NC	20
7905790	Total Manganese (Mn)	2015/05/20	95	80 - 120	96	80 - 120	<0.000050	mg/L	1.2	20
7905790	Total Molybdenum (Mo)	2015/05/20	96	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
7905790	Total Nickel (Ni)	2015/05/20	96	80 - 120	98	80 - 120	<0.000020	mg/L	NC	20
7905790	Total Phosphorus (P)	2015/05/20					<0.0020	mg/L		
7905790	Total Selenium (Se)	2015/05/20	89	80 - 120	96	80 - 120	<0.000040	mg/L	NC	20
7905790	Total Silicon (Si)	2015/05/20					<0.050	mg/L	3.8	20
7905790	Total Silver (Ag)	2015/05/20	97	80 - 120	86	80 - 120	<0.0000050	mg/L	NC	20
7905790	Total Strontium (Sr)	2015/05/20	NC	80 - 120	93	80 - 120	<0.000050	mg/L	4.2	20
7905790	Total Thallium (Tl)	2015/05/20	96	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
7905790	Total Tin (Sn)	2015/05/20	98	80 - 120	100	80 - 120	<0.00020	mg/L	NC	20
7905790	Total Titanium (Ti)	2015/05/20	95	80 - 120	94	80 - 120	<0.00050	mg/L	NC	20

Maxxam Job #: B540423  
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**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7905790	Total Uranium (U)	2015/05/20	104	80 - 120	102	80 - 120	<0.0000020	mg/L	2.6	20
7905790	Total Vanadium (V)	2015/05/20	96	80 - 120	100	80 - 120	<0.00020	mg/L	NC	20
7905790	Total Zinc (Zn)	2015/05/20	NC	80 - 120	99	80 - 120	<0.00010	mg/L	0.33	20
7905790	Total Zirconium (Zr)	2015/05/20					<0.00010	mg/L	NC	20
7905974	Dissolved Chloride (Cl)	2015/05/19	NC	80 - 120	98	80 - 120	<0.50	mg/L	2.7	20
7905975	Dissolved Sulphate (SO4)	2015/05/19	NC	80 - 120	91	80 - 120	<0.50	mg/L	1.5	20
7906097	Fluoride (F)	2015/05/19	NC	80 - 120	96	80 - 120	<0.010	mg/L	0	20
7906099	Fluoride (F)	2015/05/19	101	80 - 120	98	80 - 120	<0.010	mg/L	NC	20
7906159	Dissolved Phosphorus (P)	2015/05/19	104	80 - 120	93	80 - 120	<0.0020	mg/L	NC	20
7906172	Total Phosphorus (P)	2015/05/19	NC	80 - 120	100	80 - 120	<0.0020	mg/L	0.044	20
7906174	Total Phosphorus (P)	2015/05/19	96	80 - 120	93	80 - 120	<0.0020	mg/L	NC	20
7906182	Total Ammonia (N)	2015/05/19	101	80 - 120	92	80 - 120	<0.0050	mg/L	NC	20
7906757	pH	2015/05/20			101	97 - 103			0.45	N/A
7906760	Conductivity	2015/05/20			101	80 - 120	1.2, RDL=1.0	uS/cm	0.36	20
7906762	Alkalinity (PP as CaCO3)	2015/05/20					<0.50	mg/L		
7906762	Alkalinity (Total as CaCO3)	2015/05/20	NC	80 - 120	100	80 - 120	0.80, RDL=0.50	mg/L		
7906762	Bicarbonate (HCO3)	2015/05/20					0.98, RDL=0.50	mg/L		
7906762	Carbonate (CO3)	2015/05/20					<0.50	mg/L		
7906762	Hydroxide (OH)	2015/05/20					<0.50	mg/L		
7906796	pH	2015/05/21			101	97 - 103				
7906810	Conductivity	2015/05/21			102	80 - 120	1.2, RDL=1.0	uS/cm		
7906814	Alkalinity (PP as CaCO3)	2015/05/21					<0.50	mg/L	NC	20
7906814	Alkalinity (Total as CaCO3)	2015/05/21	NC	80 - 120	91	80 - 120	<0.50	mg/L	2.0	20
7906814	Bicarbonate (HCO3)	2015/05/21					<0.50	mg/L	2.0	20
7906814	Carbonate (CO3)	2015/05/21					<0.50	mg/L	NC	20
7906814	Hydroxide (OH)	2015/05/21					<0.50	mg/L	NC	20
7906912	Dissolved Aluminum (Al)	2015/05/20	102	80 - 120	104	80 - 120	<0.00050	mg/L	NC	20
7906912	Dissolved Antimony (Sb)	2015/05/20	102	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
7906912	Dissolved Arsenic (As)	2015/05/20	106	80 - 120	102	80 - 120	<0.000020	mg/L	1.6	20
7906912	Dissolved Barium (Ba)	2015/05/20	NC	80 - 120	107	80 - 120	<0.000020	mg/L	7.1	20
7906912	Dissolved Beryllium (Be)	2015/05/20	101	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
7906912	Dissolved Bismuth (Bi)	2015/05/20	95	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20



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**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7906912	Dissolved Boron (B)	2015/05/20					<0.010	mg/L	NC	20
7906912	Dissolved Cadmium (Cd)	2015/05/20	93	80 - 120	100	80 - 120	<0.000050	mg/L	NC	20
7906912	Dissolved Chromium (Cr)	2015/05/20	98	80 - 120	98	80 - 120	<0.00010	mg/L	NC	20
7906912	Dissolved Cobalt (Co)	2015/05/20	94	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
7906912	Dissolved Copper (Cu)	2015/05/20	92	80 - 120	98	80 - 120	<0.000050	mg/L	NC	20
7906912	Dissolved Iron (Fe)	2015/05/20	102	80 - 120	107	80 - 120	<0.0010	mg/L	NC	20
7906912	Dissolved Lead (Pb)	2015/05/20	102	80 - 120	106	80 - 120	<0.0000050	mg/L	NC	20
7906912	Dissolved Lithium (Li)	2015/05/20	102	80 - 120	108	80 - 120	<0.00050	mg/L	NC	20
7906912	Dissolved Manganese (Mn)	2015/05/20	96	80 - 120	98	80 - 120	<0.000050	mg/L	3.2	20
7906912	Dissolved Molybdenum (Mo)	2015/05/20	NC	80 - 120	98	80 - 120	<0.000050	mg/L	1.1	20
7906912	Dissolved Nickel (Ni)	2015/05/20	95	80 - 120	99	80 - 120	<0.000020	mg/L	2.0	20
7906912	Dissolved Phosphorus (P)	2015/05/20					<0.0020	mg/L	NC	20
7906912	Dissolved Selenium (Se)	2015/05/20	96	80 - 120	96	80 - 120	<0.000040	mg/L	0.034	20
7906912	Dissolved Silicon (Si)	2015/05/20					<0.050	mg/L	2.5	20
7906912	Dissolved Silver (Ag)	2015/05/20	98	80 - 120	88	80 - 120	<0.0000050	mg/L	NC	20
7906912	Dissolved Strontium (Sr)	2015/05/20	NC	80 - 120	96	80 - 120	<0.000050	mg/L	3.0	20
7906912	Dissolved Thallium (Tl)	2015/05/20	87	80 - 120	100	80 - 120	<0.0000020	mg/L	NC	20
7906912	Dissolved Tin (Sn)	2015/05/20	102	80 - 120	103	80 - 120	<0.00020	mg/L	NC	20
7906912	Dissolved Titanium (Ti)	2015/05/20	95	80 - 120	98	80 - 120	<0.00050	mg/L	NC	20
7906912	Dissolved Uranium (U)	2015/05/20	100	80 - 120	104	80 - 120	<0.0000020	mg/L	0.33	20
7906912	Dissolved Vanadium (V)	2015/05/20	101	80 - 120	104	80 - 120	<0.00020	mg/L	NC	20
7906912	Dissolved Zinc (Zn)	2015/05/20	91	80 - 120	99	80 - 120	<0.00010	mg/L	NC	20
7906912	Dissolved Zirconium (Zr)	2015/05/20					<0.00010	mg/L	NC	20
7906927	Acidity (pH 4.5)	2015/05/20					<0.50	mg/L	NC	20
7906927	Acidity (pH 8.3)	2015/05/20			95	80 - 120	<0.50	mg/L	3.0	20
7906929	Acidity (pH 4.5)	2015/05/20					<0.50	mg/L	0.96	20
7906929	Acidity (pH 8.3)	2015/05/20			105	80 - 120	<0.50	mg/L	1.6	20
7907046	Total Aluminum (Al)	2015/05/23	NC	80 - 120	116	80 - 120	<0.0030	mg/L	3.3	20
7907046	Total Antimony (Sb)	2015/05/23	107	80 - 120	111	80 - 120	<0.000050	mg/L	NC	20
7907046	Total Arsenic (As)	2015/05/23	103	80 - 120	99	80 - 120	<0.000020	mg/L	7.5	20
7907046	Total Barium (Ba)	2015/05/23	NC	80 - 120	112	80 - 120	<0.00010	mg/L	3.5	20
7907046	Total Beryllium (Be)	2015/05/23	100	80 - 120	97	80 - 120	<0.000010	mg/L	NC	20

Maxxam Job #: B540423  
Report Date: 2016/01/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7907046	Total Bismuth (Bi)	2015/05/23	110	80 - 120	107	80 - 120	<0.000020	mg/L	NC	20
7907046	Total Boron (B)	2015/05/23					<0.050	mg/L	NC	20
7907046	Total Cadmium (Cd)	2015/05/23	104	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
7907046	Total Chromium (Cr)	2015/05/23	107	80 - 120	103	80 - 120	<0.00050	mg/L	NC	20
7907046	Total Cobalt (Co)	2015/05/23	107	80 - 120	103	80 - 120	<0.000010	mg/L	3.6	20
7907046	Total Copper (Cu)	2015/05/23	103	80 - 120	106	80 - 120	0.00042, RDL=0.00040 (2)	mg/L	4.4	20
7907046	Total Iron (Fe)	2015/05/23	NC	80 - 120	106	80 - 120	<0.0050	mg/L	19	20
7907046	Total Lead (Pb)	2015/05/23	115	80 - 120	113	80 - 120	<0.000050	mg/L	NC	20
7907046	Total Lithium (Li)	2015/05/23	102	80 - 120	101	80 - 120	<0.00050	mg/L	NC	20
7907046	Total Manganese (Mn)	2015/05/23	NC	80 - 120	106	80 - 120	<0.00010	mg/L	3.2	20
7907046	Total Molybdenum (Mo)	2015/05/23	121 (1)	80 - 120	110	80 - 120	<0.000050	mg/L	3.8	20
7907046	Total Nickel (Ni)	2015/05/23	105	80 - 120	102	80 - 120	<0.00010	mg/L	3.6	20
7907046	Total Phosphorus (P)	2015/05/23					<0.010	mg/L		
7907046	Total Selenium (Se)	2015/05/23	89	80 - 120	83	80 - 120	<0.000040	mg/L	NC	20
7907046	Total Silicon (Si)	2015/05/23					<0.10	mg/L		
7907046	Total Silver (Ag)	2015/05/23	113	80 - 120	113	80 - 120	<0.0000050	mg/L	NC	20
7907046	Total Strontium (Sr)	2015/05/23	NC	80 - 120	106	80 - 120	<0.000050	mg/L	8.2	20
7907046	Total Thallium (Tl)	2015/05/23	111	80 - 120	106	80 - 120	<0.0000020	mg/L	NC	20
7907046	Total Tin (Sn)	2015/05/23	112	80 - 120	113	80 - 120	<0.00020	mg/L	NC	20
7907046	Total Titanium (Ti)	2015/05/23	NC	80 - 120	109	80 - 120	<0.0050	mg/L		
7907046	Total Uranium (U)	2015/05/23	120	80 - 120	115	80 - 120	<0.0000050	mg/L	7.2	20
7907046	Total Vanadium (V)	2015/05/23	107	80 - 120	105	80 - 120	<0.00050	mg/L	NC	20
7907046	Total Zinc (Zn)	2015/05/23	90	80 - 120	95	80 - 120	<0.0010	mg/L	NC	20
7907046	Total Zirconium (Zr)	2015/05/23					<0.00010	mg/L		
7907298	Dissolved Sulphate (SO4)	2015/05/20			96	80 - 120	<0.50	mg/L	2.1	20
7908099	Dissolved Mercury (Hg)	2015/05/21	99	80 - 120	109	80 - 120	<0.0000020	mg/L	NC	20
7908193	Total Mercury (Hg)	2015/05/21	88	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
7908208	Total Nitrogen (N)	2015/05/21	NC	80 - 120	91	80 - 120	<0.020	mg/L	0.43	20
7908212	Total Mercury (Hg)	2015/05/21	97	80 - 120	108	80 - 120	<0.0000020	mg/L	NC	20
7908217	Total Nitrogen (N)	2015/05/21	NC	80 - 120	94	80 - 120	<0.020	mg/L	3.5	20

Maxxam Job #: B540423  
Report Date: 2016/01/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7908245	Total Nitrogen (N)	2015/05/21	NC	80 - 120	92	80 - 120	<0.020	mg/L	2.2	20
7908403	Dissolved Phosphorus (P)	2015/05/20	109	80 - 120	92	80 - 120	<0.0020	mg/L	NC	20
7908404	Total Phosphorus (P)	2015/05/20	103	80 - 120	92	80 - 120	<0.0020	mg/L	NC	20
7908536	Total Organic Carbon (C)	2015/05/21	104	80 - 120	108	80 - 120	<0.50	mg/L	NC	20
7909326	Total Dissolved Solids	2015/05/24	101	80 - 120	106	80 - 120	<1.0	mg/L	5.4	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) BLANK outside acceptance criteria, detection limit adjusted accordingly

Maxxam Job #: B540423  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Signature REDACTED 

\_\_\_\_\_  
Name REDACTED  BBY Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>		<b>Laboratory Use Only</b>	
Company Name: #11954 BMC MINERAL (NO. 1) LTD.	Contact Name: ACCOUNTS PAYABLE	Address: 530-1130 West Pender Street, Vancouver BC V6E 4A4	Phone: Email: <b>Email REDACTED</b>	Company Name: #31161 TETRATECH EBA	Contact Name: Name REDACTED	Address: 61 WASSON PLACE WHITEHORSE YT V1A 0H7	Phone: Email: <b>Email REDACTED</b>
Project Information		Quotation #: B50743		P.O. #: ENVMIN03071-01		Project #	
Project Name		Site #		Sampled By		Maxxam Job #: <b>BS40423</b>	
Chain Of Custody Record		Project Manager		Morgan Melnychuk		Bottle Order #: 464571	

Regulatory Criteria:	Special Instructions:	ANALYSIS REQUESTED (PLEASE BE SPECIFIC)										Turnaround Time (TAT) Required:
<input type="checkbox"/> CSR Detection limits used <input checked="" type="checkbox"/> CCME to be lower than <input type="checkbox"/> BC Water Quality CCME - AW <input type="checkbox"/> Other		Please provide advance notice for rush projects Regular (Standard) TAT: (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) 1 DAY <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: _____ Rush Confirmation Number: _____ (call lab for #)										<input checked="" type="checkbox"/>

**SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM**

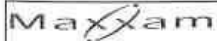
Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered? (Y/N)	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Nitrate/Nitrite	Dis. Phosphorus	Tot. Phosphorus	# of Bottles	Comments
M63098 M63099	BH95-25					X	X	X	X	X	α	α	α	13	All samples were field filtered and/or preserved as required.  TSS not required for any of the samples.
M63100 M63101	BH95-146					X	X	X	X	α	α	α			
M63102 M63103	BH95-21					X	X	X	X	α	α	α			
M63104 M63105	BH95-22					X	X	X	X	α	α	α			
M63106 M63107	ART-3					X	X	X	X	α	α	α			
M63108 M63109	ART-4					X	X	X	X	α	α	α			
M63110 M63111	BH95-32					X	X	X	X	α	α	α			
M63112 M63113	BH95-33					X	X	X	X	α	α	α			
M63114	TRIP BLANK					X	X	X	X	α	α	α			
M63115 M63116	BH95-2					α	α	α	α	α	α	α			

RELINQUISHED BY: (Signature/Print) Signature REDACTED Name REDACTED	Date: (YY/MM/DD) 2015/05/14	Time 4pm	RECEIVED BY: (Signature/Print) Signature Name REDACTED	Date: (YY/MM/DD) 2015/05/15	Time 12:35	# Jars used and not submitted	Lab Use Only
Time Sensitive <input type="checkbox"/>			Temperature (°C) on Receipt 888/565			Custody Seal on Cooler? <input type="checkbox"/> Yes <input type="checkbox"/> No	

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

Maxxam Analytics International Corporation c/o Maxxam Analytics

4.4.5



Maxxam Analytics International Corporation o/a Maxxam Analytics  
4606 Canada Way, Burnaby, British Columbia Canada V5G 1K5 Tel: (604) 734-7276 Toll-Free: 800-563-6266 Fax: (604) 731-2386 www.maxxam.ca

Chain Of Custody Record

INVOICE TO:		Report Information		Project Information		Laboratory Use Only	
Company Name: #11954 BMC MINERAL (NO. 1) LTD.	Company Name: #31161 TETRATECH EBA	Quotation #: B50743	Maxxam Job #: B540423		Bottle Order #:		
Contact Name: ACCOUNTS PAYABLE	Contact Name: Name REDACTED	P.O. #:	Chain Of Custody Record		Project Manager:		
Address: 530-1130 West Pender Street, Vancouver BC V6E 4A4	Address: 51 WASSON PLACE WHITEHORSE YT V1A 0H7	Project #: ENVMIN0304-41-01	Barcode: 04454571-01-01		Project Manager: Morgan Melnychuk		
Phone: Email REDACTED	Phone: (857) 668-9225	Project Name:	Site #:		Sampled By:		
Email: Email REDACTED	Email: Email REDACTED						

Regulatory Criteria: <input type="checkbox"/> CSR <input checked="" type="checkbox"/> CCME <input type="checkbox"/> BC Water Quality <input type="checkbox"/> Other: _____	Special Instructions:	ANALYSIS REQUESTED (PLEASE BE SPECIFIC): ROUTINE (inc. TDS) MAJOR IONS NUTRIENTS Low Level Dissolved Metals with CV Hg Low Level Total Metals with CV Hg Ds. Phosphorus Tot. Phosphorus Nitrate/Nitrite	Turnaround Time (TAT) Required: Please provide advance notice for rush projects. Regular (Standard) TAT: (will be applied if Rush TAT is not specified) Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Diatoms/Furans are > 5 days - contact your Project Manager for details. Job Specific Rush TAT (if applies to entire submission) 1 Day <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: _____ Rush Confirmation Number: _____ (not lab for #)
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SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Panel Filtered? (Y/N)	ROUTINE (inc. TDS)	MAJOR IONS	NUTRIENTS	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Ds. Phosphorus	Tot. Phosphorus	Nitrate/Nitrite	# of Bottles	Comments
1 MG3126	Dup 01					X	X	X	X	X				13	
2 MG3127						X	X	X	X	X					
3						X	X	X	X	X					
4						X	X	X	X	X					
5						X	X	X	X	X					
6						X	X	X	X	X					
7						X	X	X	X	X					
8						X	X	X	X	X					
9						X	X	X	X	X					
10						X	X	X	X	X					

RELINQUISHED BY: (Signature/Print) Signature REDACTED	Date: (YY/MM/DD) 2015/05/14	Time 4pm	RECEIVED BY: (Signature/Print) Signature REDACTED	Date: (YY/MM/DD) 2015/05/15	Time 12:35	# Jars used and not submitted	Temp Sensor <input type="checkbox"/>	Temperature (°C) on Receipt 8.88 / 56.5	Custody Seal Intact on Codes? <input type="checkbox"/> Yes <input type="checkbox"/> No
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\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD, AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.

Maxxam Analytics International Corporation o/a Maxxam Analytics

44.5

Your Project #: ENVMIN03071-01  
Your C.O.C. #: 08412558

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/08/12**  
Report #: R2022705  
Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B567068**

**Received: 2015/08/06, 08:30**

Sample Matrix: Water  
# Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO <sub>3</sub> )	1	N/A	2015/08/06	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	1	2015/08/06	2015/08/07	BBY6SOP-00026	SM 22 2320 B m
Biochemical Oxygen Demand	1	2015/08/06	2015/08/06	BBY6SOP-00045	SM 22 5210 B m
Chloride by Automated Colourimetry	1	N/A	2015/08/10	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	1	N/A	2015/08/07	BBY6SOP-00026	SM 22 2510 B m
Fluoride	1	N/A	2015/08/07	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> )	1	N/A	2015/08/10	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO <sub>3</sub> )	1	N/A	2015/08/07	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAF	1	N/A	2015/08/10	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAF	1	2015/08/10	2015/08/10	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	1	N/A	2015/08/10	BBY WI-00033	SM 22 1030E
Sum of cations, anions	1	N/A	2015/08/07	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/08/07	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	1	N/A	2015/08/07	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2015/08/10	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	1	N/A	2015/08/07	BBY7SOP-00002	EPA 6020A R1 m
Filter and HNO <sub>3</sub> Preserve for Metals	1	N/A	2015/08/07	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	1	N/A	2015/08/07	BBY6SOP-00026	SM 22 4500-H+ B m
Sulphate by Automated Colourimetry	1	N/A	2015/08/10	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	1	N/A	2015/08/10	BBY6SOP-00033	SM 22 2540 C m
Carbon (Total Organic) (1, 3)	1	N/A	2015/08/12	CAL SOP-00077	MMCW 119 1996 m
Total Suspended Solids-Low Level	1	2015/08/07	2015/08/08	BBY6SOP-00034	SM 22 2540 D
Turbidity	1	N/A	2015/08/06	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Calgary Environmental

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(3) TOC present in the sample should be considered as non-purgeable TOC.

Your Project #: ENVMIN03071-01  
Your C.O.C. #: 08412558

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/08/12**  
Report #: R2022705  
Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B567068**

**Received: 2015/08/06, 08:30**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED Burnaby Project Manager

Email: Email REDACTED

Phone REDACTED

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B567068  
Report Date: 2015/08/12

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MV2007	MV2007		
Sampling Date		2015/08/04 10:00	2015/08/04 10:00		
COC Number		08412558	08412558		
	Units	WW15-01	WW15-01 Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>					
Acidity (pH 4.5)	mg/L	<0.50		0.50	7993632
Acidity (pH 8.3)	mg/L	17.6		0.50	7993632
<b>Calculated Parameters</b>					
Anion Sum	meq/L	2.7		N/A	7993148
Cation Sum	meq/L	2.9		N/A	7993148
Filter and HNO3 Preservation	N/A	LAB		N/A	7994325
Ion Balance	N/A	1.1		0.010	7993147
<b>Demand Parameters</b>					
Biochemical Oxygen Demand	mg/L	<6.0		6.0	7992898
<b>Misc. Inorganics</b>					
Fluoride (F)	mg/L	0.081	0.079	0.010	7994997
Alkalinity (Total as CaCO3)	mg/L	32.0		0.50	7994156
Total Organic Carbon (C)	mg/L	1.2		0.50	7999241
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	7994156
Bicarbonate (HCO3)	mg/L	39.0		0.50	7994156
Carbonate (CO3)	mg/L	<0.50		0.50	7994156
Hydroxide (OH)	mg/L	<0.50		0.50	7994156
<b>Anions</b>					
Dissolved Sulphate (SO4)	mg/L	98.0		0.50	7997044
Dissolved Chloride (Cl)	mg/L	<0.50		0.50	7997040
<b>Physical Properties</b>					
Conductivity	uS/cm	267		1.0	7994161
pH	pH	6.94		N/A	7994162
<b>Physical Properties</b>					
Total Suspended Solids	mg/L	52.9		1.0	7993687
Total Dissolved Solids	mg/L	248		1.0	7993649
Turbidity	NTU	79.6		0.10	7993153
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B567068  
Report Date: 2015/08/12

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		MV2007		
<b>Sampling Date</b>		2015/08/04 10:00		
<b>COC Number</b>		08412558		
	<b>Units</b>	<b>WW15-01</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO <sub>3</sub> )	mg/L	112	0.50	7992800
<b>Elements</b>				
Dissolved Mercury (Hg)	mg/L	<0.0000020	0.0000020	7996412
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	mg/L	0.00502	0.00050	7993405
Dissolved Antimony (Sb)	mg/L	0.00110	0.000020	7993405
Dissolved Arsenic (As)	mg/L	0.00746	0.000020	7993405
Dissolved Barium (Ba)	mg/L	0.0472	0.000020	7993405
Dissolved Beryllium (Be)	mg/L	<0.000010	0.000010	7993405
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000050	7993405
Dissolved Boron (B)	mg/L	<0.010	0.010	7993405
Dissolved Cadmium (Cd)	mg/L	0.0316	0.0000050	7993405
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00010	7993405
Dissolved Cobalt (Co)	mg/L	0.00456	0.0000050	7993405
Dissolved Copper (Cu)	mg/L	0.00133	0.000050	7993405
Dissolved Iron (Fe)	mg/L	10.4	0.0010	7993405
Dissolved Lead (Pb)	mg/L	0.000782	0.0000050	7993405
Dissolved Lithium (Li)	mg/L	0.00238	0.00050	7993405
Dissolved Manganese (Mn)	mg/L	0.735	0.000050	7993405
Dissolved Molybdenum (Mo)	mg/L	0.000898	0.000050	7993405
Dissolved Nickel (Ni)	mg/L	0.0272	0.000020	7993405
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0020	7993405
Dissolved Selenium (Se)	mg/L	0.000280	0.000040	7993405
Dissolved Silicon (Si)	mg/L	6.68	0.050	7993405
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000050	7993405
Dissolved Strontium (Sr)	mg/L	0.110	0.000050	7993405
Dissolved Thallium (Tl)	mg/L	0.000114	0.0000020	7993405
Dissolved Tin (Sn)	mg/L	<0.00020	0.00020	7993405
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00050	7993405
Dissolved Uranium (U)	mg/L	0.0000630	0.0000020	7993405
Dissolved Vanadium (V)	mg/L	<0.00020	0.00020	7993405
Dissolved Zinc (Zn)	mg/L	3.61	0.00010	7993405
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00010	7993405
Dissolved Calcium (Ca)	mg/L	35.1	0.050	7993010
Dissolved Magnesium (Mg)	mg/L	6.01	0.050	7993010
Dissolved Potassium (K)	mg/L	2.14	0.050	7993010
RDL = Reportable Detection Limit				

Maxxam Job #: B567068  
Report Date: 2015/08/12

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		MV2007		
<b>Sampling Date</b>		2015/08/04 10:00		
<b>COC Number</b>		08412558		
	<b>Units</b>	<b>WW15-01</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Sodium (Na)	mg/L	3.10	0.050	7993010
Dissolved Sulphur (S)	mg/L	29.7	3.0	7993010
RDL = Reportable Detection Limit				

Maxxam Job #: B567068  
Report Date: 2015/08/12

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		MV2007		
<b>Sampling Date</b>		2015/08/04 10:00		
<b>COC Number</b>		08412558		
	<b>Units</b>	<b>WW15-01</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	125	0.50	7992901
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	7996755
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	0.256	0.00050	7994245
Total Antimony (Sb)	mg/L	0.00203	0.000020	7994245
Total Arsenic (As)	mg/L	0.0376	0.000020	7994245
Total Barium (Ba)	mg/L	0.0528	0.000020	7994245
Total Beryllium (Be)	mg/L	0.000013	0.000010	7994245
Total Bismuth (Bi)	mg/L	0.0000235	0.0000050	7994245
Total Boron (B)	mg/L	<0.010	0.010	7994245
Total Cadmium (Cd)	mg/L	0.0581	0.0000050	7994245
Total Chromium (Cr)	mg/L	0.00043	0.00010	7994245
Total Cobalt (Co)	mg/L	0.00474	0.0000050	7994245
Total Copper (Cu)	mg/L	0.00402	0.000050	7994245
Total Iron (Fe)	mg/L	22.8	0.0010	7994245
Total Lead (Pb)	mg/L	0.126	0.0000050	7994245
Total Lithium (Li)	mg/L	0.00302	0.00050	7994245
Total Manganese (Mn)	mg/L	0.717	0.000050	7994245
Total Molybdenum (Mo)	mg/L	0.00139	0.000050	7994245
Total Nickel (Ni)	mg/L	0.0273	0.000020	7994245
Total Phosphorus (P)	mg/L	0.0115	0.0020	7994245
Total Selenium (Se)	mg/L	0.000308	0.000040	7994245
Total Silicon (Si)	mg/L	12.0	0.050	7994245
Total Silver (Ag)	mg/L	0.0000452	0.0000050	7994245
Total Strontium (Sr)	mg/L	0.114	0.000050	7994245
Total Thallium (Tl)	mg/L	0.000251	0.0000020	7994245
Total Tin (Sn)	mg/L	0.00025	0.00020	7994245
Total Titanium (Ti)	mg/L	0.0138	0.00050	7994245
Total Uranium (U)	mg/L	0.000194	0.0000020	7994245
Total Vanadium (V)	mg/L	0.00026	0.00020	7994245
Total Zinc (Zn)	mg/L	3.61	0.00010	7994245
Total Zirconium (Zr)	mg/L	0.00050	0.00010	7994245
Total Calcium (Ca)	mg/L	41.3	0.050	7993011
Total Magnesium (Mg)	mg/L	5.42	0.050	7993011
Total Potassium (K)	mg/L	2.11	0.050	7993011
RDL = Reportable Detection Limit				

Maxxam Job #: B567068  
Report Date: 2015/08/12

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		MV2007		
<b>Sampling Date</b>		2015/08/04 10:00		
<b>COC Number</b>		08412558		
	<b>Units</b>	<b>WW15-01</b>	<b>RDL</b>	<b>QC Batch</b>
Total Sodium (Na)	mg/L	2.80	0.050	7993011
Total Sulphur (S)	mg/L	29.6	3.0	7993011
RDL = Reportable Detection Limit				

Maxxam Job #: B567068  
Report Date: 2015/08/12

TETRATECH EBA  
Client Project #: ENVMIN03071-01

**GENERAL COMMENTS**

**Results relate only to the items tested.**

Maxxam Job #: B567068  
Report Date: 2015/08/12

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMIN03071-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7992898	Biochemical Oxygen Demand	2015/08/06			106	85 - 115	<6.0	mg/L	0.52	20
7993153	Turbidity	2015/08/06			101	80 - 120	<0.10	NTU	NC	20
7993405	Dissolved Aluminum (Al)	2015/08/07	101	80 - 120	100	80 - 120	<0.00050	mg/L	NC	20
7993405	Dissolved Antimony (Sb)	2015/08/07	100	80 - 120	97	80 - 120	<0.000020	mg/L	NC	20
7993405	Dissolved Arsenic (As)	2015/08/07	97	80 - 120	94	80 - 120	<0.000020	mg/L	NC	20
7993405	Dissolved Barium (Ba)	2015/08/07	102	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
7993405	Dissolved Beryllium (Be)	2015/08/07	106	80 - 120	103	80 - 120	<0.000010	mg/L	NC	20
7993405	Dissolved Bismuth (Bi)	2015/08/07	98	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
7993405	Dissolved Boron (B)	2015/08/07					<0.010	mg/L	NC	20
7993405	Dissolved Cadmium (Cd)	2015/08/07	98	80 - 120	96	80 - 120	<0.0000050	mg/L	NC	20
7993405	Dissolved Chromium (Cr)	2015/08/07	103	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20
7993405	Dissolved Cobalt (Co)	2015/08/07	104	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
7993405	Dissolved Copper (Cu)	2015/08/07	106	80 - 120	106	80 - 120	<0.000050	mg/L	NC	20
7993405	Dissolved Iron (Fe)	2015/08/07	104	80 - 120	101	80 - 120	<0.0010	mg/L	NC	20
7993405	Dissolved Lead (Pb)	2015/08/07	102	80 - 120	104	80 - 120	<0.0000050	mg/L	NC	20
7993405	Dissolved Lithium (Li)	2015/08/07	99	80 - 120	92	80 - 120	<0.00050	mg/L	NC	20
7993405	Dissolved Manganese (Mn)	2015/08/07	99	80 - 120	100	80 - 120	<0.000050	mg/L	NC	20
7993405	Dissolved Molybdenum (Mo)	2015/08/07	99	80 - 120	95	80 - 120	<0.000050	mg/L	NC	20
7993405	Dissolved Nickel (Ni)	2015/08/07	104	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
7993405	Dissolved Phosphorus (P)	2015/08/07					<0.0020	mg/L		
7993405	Dissolved Selenium (Se)	2015/08/07	98	80 - 120	95	80 - 120	<0.000040	mg/L	NC	20
7993405	Dissolved Silicon (Si)	2015/08/07					<0.050	mg/L	NC	20
7993405	Dissolved Silver (Ag)	2015/08/07	98	80 - 120	90	80 - 120	<0.0000050	mg/L	NC	20
7993405	Dissolved Strontium (Sr)	2015/08/07	90	80 - 120	88	80 - 120	<0.000050	mg/L	NC	20
7993405	Dissolved Thallium (Tl)	2015/08/07	98	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
7993405	Dissolved Tin (Sn)	2015/08/07	97	80 - 120	95	80 - 120	<0.00020	mg/L	NC	20
7993405	Dissolved Titanium (Ti)	2015/08/07	93	80 - 120	95	80 - 120	<0.00050	mg/L	NC	20
7993405	Dissolved Uranium (U)	2015/08/07	108	80 - 120	110	80 - 120	<0.0000020	mg/L	NC	20
7993405	Dissolved Vanadium (V)	2015/08/07	104	80 - 120	103	80 - 120	<0.00020	mg/L	NC	20
7993405	Dissolved Zinc (Zn)	2015/08/07	105	80 - 120	104	80 - 120	<0.00010	mg/L	NC	20
7993405	Dissolved Zirconium (Zr)	2015/08/07					<0.00010	mg/L	NC	20
7993632	Acidity (pH 4.5)	2015/08/06					<0.50	mg/L		

Maxxam Job #: B567068  
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**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7993632	Acidity (pH 8.3)	2015/08/06			98	80 - 120	<0.50	mg/L		
7993649	Total Dissolved Solids	2015/08/10	103	80 - 120	112	80 - 120	<1.0	mg/L	3.5	20
7993687	Total Suspended Solids	2015/08/08			102	80 - 120	<1.0	mg/L		
7994156	Alkalinity (PP as CaCO3)	2015/08/07					<0.50	mg/L	NC	20
7994156	Alkalinity (Total as CaCO3)	2015/08/07	NC	80 - 120	99	80 - 120	0.71, RDL=0.50	mg/L	1.4	20
7994156	Bicarbonate (HCO3)	2015/08/07					0.87, RDL=0.50	mg/L	1.4	20
7994156	Carbonate (CO3)	2015/08/07					<0.50	mg/L	NC	20
7994156	Hydroxide (OH)	2015/08/07					<0.50	mg/L	NC	20
7994161	Conductivity	2015/08/07			100	80 - 120	1.7, RDL=1.0	uS/cm	0.50	20
7994162	pH	2015/08/07			101	97 - 103				
7994245	Total Aluminum (Al)	2015/08/07	106	80 - 120	100	80 - 120	<0.00050	mg/L	NC	20
7994245	Total Antimony (Sb)	2015/08/07	110	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
7994245	Total Arsenic (As)	2015/08/07	108	80 - 120	96	80 - 120	<0.000020	mg/L	3.1	20
7994245	Total Barium (Ba)	2015/08/07	NC	80 - 120	101	80 - 120	<0.000020	mg/L	4.0	20
7994245	Total Beryllium (Be)	2015/08/07	105	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
7994245	Total Bismuth (Bi)	2015/08/07	105	80 - 120	106	80 - 120	<0.0000050	mg/L	NC	20
7994245	Total Boron (B)	2015/08/07					<0.010	mg/L	NC	20
7994245	Total Cadmium (Cd)	2015/08/07	106	80 - 120	98	80 - 120	<0.0000050	mg/L	7.4	20
7994245	Total Chromium (Cr)	2015/08/07	108	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
7994245	Total Cobalt (Co)	2015/08/07	104	80 - 120	103	80 - 120	<0.0000050	mg/L	1.2	20
7994245	Total Copper (Cu)	2015/08/07	NC	80 - 120	103	80 - 120	<0.000050	mg/L	1.4	20
7994245	Total Iron (Fe)	2015/08/07	111	80 - 120	102	80 - 120	<0.0010	mg/L	NC	20
7994245	Total Lead (Pb)	2015/08/07	112	80 - 120	107	80 - 120	<0.0000050	mg/L	3.0	20
7994245	Total Lithium (Li)	2015/08/07	102	80 - 120	95	80 - 120	<0.00050	mg/L	NC	20
7994245	Total Manganese (Mn)	2015/08/07	NC	80 - 120	99	80 - 120	<0.000050	mg/L	1.8	20
7994245	Total Molybdenum (Mo)	2015/08/07	NC	80 - 120	96	80 - 120	<0.000050	mg/L	3.1	20
7994245	Total Nickel (Ni)	2015/08/07	NC	80 - 120	101	80 - 120	<0.000020	mg/L	1.3	20
7994245	Total Phosphorus (P)	2015/08/07					<0.0020	mg/L	NC	20
7994245	Total Selenium (Se)	2015/08/07	106	80 - 120	94	80 - 120	<0.000040	mg/L	2.0	20
7994245	Total Silicon (Si)	2015/08/07					<0.050	mg/L	5.6	20
7994245	Total Silver (Ag)	2015/08/07	109	80 - 120	94	80 - 120	<0.0000050	mg/L	NC	20
7994245	Total Strontium (Sr)	2015/08/07	NC	80 - 120	92	80 - 120	<0.000050	mg/L	0.64	20



Maxxam Job #: B567068  
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**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	Units	Value (%)	QC Limits
7994245	Total Thallium (Tl)	2015/08/07	110	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
7994245	Total Tin (Sn)	2015/08/07	100	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
7994245	Total Titanium (Ti)	2015/08/07	108	80 - 120	97	80 - 120	<0.00050	mg/L	NC	20
7994245	Total Uranium (U)	2015/08/07	NC	80 - 120	106	80 - 120	<0.0000020	mg/L	4.7	20
7994245	Total Vanadium (V)	2015/08/07	110	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
7994245	Total Zinc (Zn)	2015/08/07	NC	80 - 120	103	80 - 120	<0.00010	mg/L	1.2	20
7994245	Total Zirconium (Zr)	2015/08/07					<0.00010	mg/L	NC	20
7994997	Fluoride (F)	2015/08/07	100	80 - 120	100	80 - 120	<0.010	mg/L	2.5	20
7996412	Dissolved Mercury (Hg)	2015/08/10	82	80 - 120	95	80 - 120	<0.0000020	mg/L	NC	20
7996755	Total Mercury (Hg)	2015/08/10	103	80 - 120	96	80 - 120	<0.0000020	mg/L	NC	20
7997040	Dissolved Chloride (Cl)	2015/08/10	116	80 - 120	103	80 - 120	<0.50	mg/L	6.5	20
7997044	Dissolved Sulphate (SO4)	2015/08/10			95	80 - 120	<0.50	mg/L		
7999241	Total Organic Carbon (C)	2015/08/12	NC	80 - 120	95	80 - 120	<0.50	mg/L	8.5	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B567068  
Report Date: 2015/08/12

TETRATECH EBA  
Client Project #: ENVMIN03071-01

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Signature REDACTED

  
Name REDACTED Data Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Invoice Information		Report Information (if differs from invoice)			Project Information		Turnaround Time (TAT) Required				
Company Name: BMC MINERALS LTD.	Company Name: TETRATECH EBA	Quotation #: B50743	<input type="checkbox"/> Regular TAT 5 days (Most analyses)		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS						
Contact Name: ACCOUNTS PAYABLE	Contact Name: Name REDACTED	P.O. #/ AFE#:	<input type="checkbox"/> Same Day <input checked="" type="checkbox"/> 2 Days <input type="checkbox"/> 3 Days								
Address: 530-1130 WEST PENDER ST Vancouver, BC PC: V6E 4A4	Address: 61 WASSON PLACE Whitehorse, YK PC: V1A 0H7	Project #: ENVMIN03071-01	Rush TAT (Surcharges will be applied)								
Phone:	Phone: (867) 668-9220	Site Location:	<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days								
Email:	Email: Email REDACTED	Site #:	Date Required:								
Regulatory Criteria		Special Instructions		Analysis Requested			Rush Confirmation #:				
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input checked="" type="checkbox"/> Drinking Water (Camp Well) <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify) USE SCENARIO # 12485		ROUTINE (incl. TDS, Alk, EC, pH, TOC, TSS (all Turbidity)) MAJOR IONS (Chloride, Fluoride, Sulphate) NUTRIENTS (Total Nitrogen, NH4, NO2, NO3, PO4, TP, TKN) LOW LEVEL DISSOLVED METALS (incl. CV/Hg) LOW LEVEL TOTAL METALS (incl. CV/Hg)			LABORATORY USE ONLY CUSTODY SEAL Y/N Present Intact COOLING MEDIA PRESENT Y/N COMMENTS				
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM											
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE	MAJOR IONS	NUTRIENTS	LOW LEVEL DISSOLVED METALS	LOW LEVEL TOTAL METALS	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1	Camp Well MV2006	4/8/15	9	W				<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
2	WW15-01 MV2007	4/8/15	10	W	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		
3											
4											
5											
6											
7											
8											
9											
10											
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #			
Signature REDACTED Name REDACTED		5/8/2015	12:30	Signature RED Name REDACTED		2015/08/06	08:30	2015/08/06 B566989 NA B567068			

Your Project #: ENVMINO3071-01  
Your C.O.C. #: 08412729

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/08/19**  
Report #: R2027103  
Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B569283**

**Received: 2015/08/12, 14:10**

Sample Matrix: Water  
# Samples Received: 7

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	7	N/A	2015/08/14	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	2	2015/08/13	2015/08/13	BBY6SOP-00026	SM 22 2320 B m
Alkalinity - Water	5	2015/08/13	2015/08/14	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	7	N/A	2015/08/13	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	2	N/A	2015/08/13	BBY6SOP-00026	SM 22 2510 B m
Conductance - water	5	N/A	2015/08/14	BBY6SOP-00026	SM 22 2510 B m
Fluoride	7	N/A	2015/08/14	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	7	N/A	2015/08/18	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	7	N/A	2015/08/17	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	7	N/A	2015/08/17	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	1	2015/08/17	2015/08/17	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	6	2015/08/17	2015/08/18	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	6	N/A	2015/08/17	BBY WI-00033	SM 22 1030E
Ion Balance	1	N/A	2015/08/18	BBY WI-00033	SM 22 1030E
Sum of cations, anions	6	N/A	2015/08/17	Calc	
Sum of cations, anions	1	N/A	2015/08/18	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	7	N/A	2015/08/17	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	6	N/A	2015/08/15	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	1	N/A	2015/08/17	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	6	2015/08/13	2015/08/17	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2015/08/13	2015/08/18	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	7	N/A	2015/08/18	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	7	2015/08/14	2015/08/17	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	6	N/A	2015/08/14	BBY6SOP-00009	SM 22 4500-NH3- G m
Ammonia-N (Preserved)	1	N/A	2015/08/18	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	7	N/A	2015/08/13	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	7	N/A	2015/08/13	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	7	N/A	2015/08/13	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	7	N/A	2015/08/14	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	2	N/A	2015/08/13	BBY6SOP-00026	SM 22 4500-H+ B m

Your Project #: ENVMINO3071-01  
Your C.O.C. #: 08412729

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/08/19**  
Report #: R2027103  
Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B569283**

**Received: 2015/08/12, 14:10**

Sample Matrix: Water  
# Samples Received: 7

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted		
pH Water (2)	5	N/A	2015/08/14 BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	6	N/A	2015/08/14 BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2015/08/18 BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	7	N/A	2015/08/13 BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	7	N/A	2015/08/15 BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	7	N/A	2015/08/17 BBY WI-00033	Calculation
Carbon (Total Organic) (1, 3)	7	N/A	2015/08/18 EENSOP-00060	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	6	2015/08/14	2015/08/14 BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/08/18	2015/08/18 BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - unpreserved	6	N/A	2015/08/14 BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - unpreserved	1	N/A	2015/08/18 BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	3	2015/08/13	2015/08/14 BBY6SOP-00034	SM 22 2540 D
Total Suspended Solids-Low Level	4	2015/08/14	2015/08/17 BBY6SOP-00034	SM 22 2540 D
Turbidity	7	N/A	2015/08/13 BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Edmonton Environmental

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(3) TOC present in the sample should be considered as non-purgeable TOC.

#### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email Email REDACTED

Phone REDACTED

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MW4346			MW4347	MW4347		MW4348		
Sampling Date		2015/08/07 15:30			2015/08/06 16:08	2015/08/06 16:08		2015/08/06 17:40		
COC Number		08412729			08412729	08412729		08412729		
	UNITS	BHG5G-22	RDL	QC Batch	BH95G-21	BH95G-21 Lab-Dup	RDL	BH95G-25S	RDL	QC Batch
<b>Misc. Inorganics</b>										
Acidity (pH 4.5)	mg/L	<0.50	0.50	8003336	<0.50		0.50	<0.50	0.50	8003336
Acidity (pH 8.3)	mg/L	0.96	0.50	8003336	<0.50		0.50	4.29	0.50	8003336
<b>Calculated Parameters</b>										
Anion Sum	meq/L	3.4	N/A	8000694	4.3		N/A	11	N/A	8000694
Cation Sum	meq/L	3.3	N/A	8000694	4.2		N/A	11	N/A	8000694
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		N/A	FIELD	N/A	ONSITE
Ion Balance	N/A	0.96	0.010	8000602	0.97		0.010	1.0	0.010	8000602
Nitrate (N)	mg/L	0.168	0.0020	8000606	0.0024		0.0020	<0.0020	0.0020	8000606
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.052	0.010	8002150	0.091		0.010	0.120	0.010	8002150
Alkalinity (Total as CaCO3)	mg/L	127	0.50	8002048	167		0.50	332	0.50	8002048
Total Organic Carbon (C)	mg/L	3.2	0.50	8005787	2.1		0.50	3.2	0.50	8005787
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8002048	<0.50		0.50	<0.50	0.50	8002048
Bicarbonate (HCO3)	mg/L	155	0.50	8002048	204		0.50	405	0.50	8002048
Carbonate (CO3)	mg/L	<0.50	0.50	8002048	<0.50		0.50	<0.50	0.50	8002048
Hydroxide (OH)	mg/L	<0.50	0.50	8002048	<0.50		0.50	<0.50	0.50	8002048
<b>Anions</b>										
Orthophosphate (P)	mg/L	<0.0010 (1)	0.0010	8002731	<0.0010 (1)		0.0010	0.0017 (1)	0.0010	8002731
Dissolved Sulphate (SO4)	mg/L	40.8	0.50	8002070	46.0	45.0	0.50	203	5.0	8002070
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8002061	<0.50	<0.50	0.50	0.63	0.50	8002061
<b>Nutrients</b>										
Total Ammonia (N)	mg/L	0.083	0.0050	8002818	0.044		0.0050	0.40	0.0050	8002818
Dissolved Phosphorus (P)	mg/L	0.0025	0.0020	8002764	<0.0020		0.0020	0.0043	0.0020	8002764
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.414	0.020	8000532	0.295		0.020	0.482	0.020	8000532
Nitrate plus Nitrite (N)	mg/L	0.175 (1)	0.0020	8001537	0.0062 (1)		0.0020	0.0093 (1)	0.0020	8001537
Nitrite (N)	mg/L	0.0071 (1)	0.0020	8001538	0.0038 (1)		0.0020	0.0095 (1)	0.0020	8001538
Total Nitrogen (N)	mg/L	0.589	0.020	8002942	0.301		0.020	0.491	0.020	8002942
Total Phosphorus (P)	mg/L	0.0192 (1)	0.0020	8002745	0.0072 (1)		0.0020	0.0080 (1)	0.0020	8002745
<b>Physical Properties</b>										
Conductivity	uS/cm	328	1.0	8002053	403		1.0	961	1.0	8002053
pH	pH	7.80	N/A	8002054	8.02		N/A	7.88	N/A	8002054

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 N/A = Not Applicable  
 (1) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		MW4346			MW4347	MW4347		MW4348		
<b>Sampling Date</b>		2015/08/07 15:30			2015/08/06 16:08	2015/08/06 16:08		2015/08/06 17:40		
<b>COC Number</b>		08412729			08412729	08412729		08412729		
	<b>UNITS</b>	<b>BHG5G-22</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-21</b>	<b>BH95G-21 Lab-Dup</b>	<b>RDL</b>	<b>BH95G-25S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	2060 (1)	10	8001524	2830		1.0	3320	1.0	7999178
Total Dissolved Solids	mg/L	222	1.0	8000647	240 (2)		1.0	668 (2)	1.0	8000647
Turbidity	NTU	989 (3)	0.10	8000731	2120 (3)		0.10	665 (3)	0.10	8000731

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) RDL raised due to high concentration of solids in the sample.  
 (2) Sample analysed past recommended hold time.  
 (3) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MW4349			MW4350	MW4350		
Sampling Date		2015/08/06 18:36			2015/08/09 10:35	2015/08/09 10:35		
COC Number		08412729			08412729	08412729		
	UNITS	BH95G-25D	RDL	QC Batch	BH95G-23	BH95G-23 Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>								
Acidity (pH 4.5)	mg/L	<0.50	0.50	8003336	<0.50		0.50	8003336
Acidity (pH 8.3)	mg/L	9.70	0.50	8003336	5.15		0.50	8003336
<b>Calculated Parameters</b>								
Anion Sum	meq/L	12	N/A	8000694	2.6		N/A	8000694
Cation Sum	meq/L	11	N/A	8000694	3.0		N/A	8000694
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	0.98	0.010	8000602	1.1		0.010	8000602
Nitrate (N)	mg/L	0.0095	0.0020	8000606	<0.0020		0.0020	8000606
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.098	0.010	8002150	0.060	0.058	0.010	8002150
Alkalinity (Total as CaCO3)	mg/L	349	0.50	8002048	53.9		0.50	8002048
Total Organic Carbon (C)	mg/L	1.7	0.50	8005787	3.7		0.50	8005787
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8002048	<0.50		0.50	8002048
Bicarbonate (HCO3)	mg/L	425	0.50	8002048	65.7		0.50	8002048
Carbonate (CO3)	mg/L	<0.50	0.50	8002048	<0.50		0.50	8002048
Hydroxide (OH)	mg/L	<0.50	0.50	8002048	<0.50		0.50	8002048
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0015 (1)	0.0010	8002731	0.0016 (2)		0.0010	8002731
Dissolved Sulphate (SO4)	mg/L	220	5.0	8002070	72.8	71.3	0.50	8002070
Dissolved Chloride (Cl)	mg/L	1.0	0.50	8002061	<0.50	<0.50	0.50	8002061
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.10	0.0050	8006712	0.50		0.0050	8002820
Dissolved Phosphorus (P)	mg/L	0.0034	0.0020	8002764	0.0214		0.0020	8002764
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.215	0.020	8000532	2.47		0.20	8000532
Nitrate plus Nitrite (N)	mg/L	0.0095 (1)	0.0020	8001537	<0.0020 (2)		0.0020	8001537
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8001538	<0.0020 (2)		0.0020	8001538
Total Nitrogen (N)	mg/L	0.225	0.020	8002942	2.47 (3)		0.20	8002943
Total Phosphorus (P)	mg/L	0.0087 (1)	0.0020	8002745	0.0918 (2)		0.0020	8002745
<b>Physical Properties</b>								
Conductivity	uS/cm	1020	1.0	8002053	267		1.0	8002053
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time. (2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis. (3) RDL raised due to sample matrix interference.								



Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MW4349			MW4350	MW4350		
Sampling Date		2015/08/06 18:36			2015/08/09 10:35	2015/08/09 10:35		
COC Number		08412729			08412729	08412729		
	UNITS	BH95G-25D	RDL	QC Batch	BH95G-23	BH95G-23 Lab-Dup	RDL	QC Batch
pH	pH	7.66	N/A	8002054	7.33		N/A	8002054
<b>Physical Properties</b>								
Total Suspended Solids	mg/L	1560	1.0	7999178	7320 (1)		20	8001524
Total Dissolved Solids	mg/L	734 (2)	1.0	8000647	180		1.0	8000647
Turbidity	NTU	476 (3)	0.10	8000731	2960 (4)		0.50	8000731
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) RDL raised due to high concentration of solids in the sample. (2) Sample analysed past recommended hold time. (3) Sample arrived to laboratory past recommended hold time. (4) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis. RDL raised due to sample dilution.								

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MW4351			MW4352	MW4352		
Sampling Date		2015/08/09 13:30			2015/08/09 12:20	2015/08/09 12:20		
COC Number		08412729			08412729	08412729		
	UNITS	BH95G-24	RDL	QC Batch	BH95G-29	BH95G-29 Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>								
Acidity (pH 4.5)	mg/L	<0.50	0.50	8003336	<0.50		0.50	8003336
Acidity (pH 8.3)	mg/L	4.68	0.50	8003336	<0.50		0.50	8003336
<b>Calculated Parameters</b>								
Anion Sum	meq/L	8.7	N/A	8000694	4.6		N/A	8000694
Cation Sum	meq/L	8.0	N/A	8000694	4.5		N/A	8000694
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	0.92	0.010	8000602	0.99		0.010	8000602
Nitrate (N)	mg/L	0.0054	0.0020	8000606	<0.0020		0.0020	8000606
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.067	0.010	8002150	0.110		0.010	8002150
Alkalinity (Total as CaCO3)	mg/L	293	0.50	8002048	181		0.50	8002048
Total Organic Carbon (C)	mg/L	1.3	0.50	8005787	2.0		0.50	8005787
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8002048	<0.50		0.50	8002048
Bicarbonate (HCO3)	mg/L	358	0.50	8002048	221		0.50	8002048
Carbonate (CO3)	mg/L	<0.50	0.50	8002048	<0.50		0.50	8002048
Hydroxide (OH)	mg/L	<0.50	0.50	8002048	<0.50		0.50	8002048
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0010 (1)	0.0010	8002731	0.060 (1)		0.0010	8006741
Dissolved Sulphate (SO4)	mg/L	135	0.50	8002070	44.0		0.50	8002070
Dissolved Chloride (Cl)	mg/L	0.63	0.50	8002061	0.88		0.50	8002061
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.062	0.0050	8002818	0.22		0.0050	8002818
Dissolved Phosphorus (P)	mg/L	0.0040	0.0020	8002764	0.264		0.0020	8006747
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.200	0.020	8000532	1.06		0.020	8000532
Nitrate plus Nitrite (N)	mg/L	0.0116 (1)	0.0020	8001537	<0.0020 (1)	0.0032	0.0020	8001537
Nitrite (N)	mg/L	0.0062 (1)	0.0020	8001538	<0.0020 (1)	<0.0020	0.0020	8001538
Total Nitrogen (N)	mg/L	0.211	0.020	8002942	1.06		0.020	8002942
Total Phosphorus (P)	mg/L	0.0065 (1)	0.0020	8002745	0.0598 (1)		0.0020	8006746
<b>Physical Properties</b>								
Conductivity	uS/cm	768	1.0	8002053	435		1.0	8002053
pH	pH	7.81	N/A	8002054	8.03		N/A	8002054
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.								

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		MW4351			MW4352	MW4352		
<b>Sampling Date</b>		2015/08/09 13:30			2015/08/09 12:20	2015/08/09 12:20		
<b>COC Number</b>		08412729			08412729	08412729		
	<b>UNITS</b>	<b>BH95G-24</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-29</b>	<b>BH95G-29 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>								
Total Suspended Solids	mg/L	983 (1)	10	8001524	9360 (1)		20	8001524
Total Dissolved Solids	mg/L	502	1.0	8000647	258		1.0	8000647
Turbidity	NTU	198 (2)	0.10	8000731	2240 (3)		0.50	8000731
<p>RDL = Reportable Detection Limit            Lab-Dup = Laboratory Initiated Duplicate            (1) RDL raised due to high concentration of solids in the sample.            (2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.            (3) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis. RDL raised due to sample dilution.</p>								

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MW4346	MW4347	MW4348	MW4349	MW4350		
Sampling Date		2015/08/07 15:30	2015/08/06 16:08	2015/08/06 17:40	2015/08/06 18:36	2015/08/09 10:35		
COC Number		08412729	08412729	08412729	08412729	08412729		
	<b>UNITS</b>	<b>BHG5G-22</b>	<b>BH95G-21</b>	<b>BH95G-25S</b>	<b>BH95G-25D</b>	<b>BH95G-23</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	159	204	517	556	126	0.50	800563
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000020	8004814
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.00158	0.00710	0.00361	0.00330	0.00583	0.00050	8001107
Dissolved Antimony (Sb)	mg/L	0.000088	0.000069	<0.000020	0.000057	0.00303	0.000020	8001107
Dissolved Arsenic (As)	mg/L	0.000024	0.00134	0.00661	0.00163	0.0747	0.000020	8001107
Dissolved Barium (Ba)	mg/L	0.105	0.0465	0.0879	0.0229	0.0490	0.000020	8001107
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8001107
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8001107
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8001107
Dissolved Cadmium (Cd)	mg/L	0.000129	0.000078	0.000074	<0.000050	0.00169	0.000050	8001107
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	8001107
Dissolved Cobalt (Co)	mg/L	0.0000060	0.0000457	0.000307	0.000112	0.00470	0.0000050	8001107
Dissolved Copper (Cu)	mg/L	0.00644	0.000052	<0.000050	0.00370	0.000119	0.000050	8001107
Dissolved Iron (Fe)	mg/L	0.0024	0.523	5.97	1.86	6.48	0.0010	8001107
Dissolved Lead (Pb)	mg/L	<0.0000050	0.0000233	<0.0000050	0.0000658	0.000361	0.0000050	8001107
Dissolved Lithium (Li)	mg/L	<0.00050	0.00515	0.00980	0.0142	0.00185	0.00050	8001107
Dissolved Manganese (Mn)	mg/L	0.000624	0.0601	0.439	0.320	0.622	0.000050	8001107
Dissolved Molybdenum (Mo)	mg/L	0.000192	0.000336	0.00130	0.000217	0.000185	0.000050	8001107
Dissolved Nickel (Ni)	mg/L	0.000201	0.000105	0.000691	0.000339	0.00686	0.000020	8001107
Dissolved Phosphorus (P)	mg/L	0.0059	<0.0020	0.0105	0.0078	0.0052	0.0020	8001107
Dissolved Selenium (Se)	mg/L	0.000706	<0.000040	<0.000040	<0.000040	<0.000040	0.000040	8001107
Dissolved Silicon (Si)	mg/L	2.83	4.79	6.24	6.30	6.50	0.050	8001107
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000051	<0.0000050	0.0000050	8001107
Dissolved Strontium (Sr)	mg/L	0.148	0.199	0.501	0.536	0.103	0.000050	8001107
Dissolved Thallium (Tl)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000387	0.0000020	8001107
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8001107
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	8001107
Dissolved Uranium (U)	mg/L	0.00190	0.00428	0.00427	0.00597	0.000113	0.0000020	8001107
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8001107
Dissolved Zinc (Zn)	mg/L	0.00596	0.00110	0.00071	0.0125	2.03	0.00010	8001107
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	0.00036	0.00302	<0.00010	0.00010	8001107
Dissolved Calcium (Ca)	mg/L	49.4	61.2	134	132	42.8	0.050	8000603
Dissolved Magnesium (Mg)	mg/L	8.71	12.4	44.3	54.9	4.76	0.050	8000603

RDL = Reportable Detection Limit

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MW4346	MW4347	MW4348	MW4349	MW4350		
Sampling Date		2015/08/07 15:30	2015/08/06 16:08	2015/08/06 17:40	2015/08/06 18:36	2015/08/09 10:35		
COC Number		08412729	08412729	08412729	08412729	08412729		
	UNITS	BHG5G-22	BH95G-21	BH95G-25S	BH95G-25D	BH95G-23	RDL	QC Batch
Dissolved Potassium (K)	mg/L	1.35	1.50	5.95	4.43	2.13	0.050	8000603
Dissolved Sodium (Na)	mg/L	0.817	1.01	2.08	2.09	0.716	0.050	8000603
Dissolved Sulphur (S)	mg/L	13.2	15.1	73.1	78.2	25.5	3.0	8000603
RDL = Reportable Detection Limit								

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MW4351		MW4352		
Sampling Date		2015/08/09 13:30		2015/08/09 12:20		
COC Number		08412729		08412729		
	UNITS	BH95G-24	QC Batch	BH95G-29	RDL	QC Batch
<b>Misc. Inorganics</b>						
Dissolved Hardness (CaCO3)	mg/L	387	8000563	217	0.50	8000563
<b>Elements</b>						
Dissolved Mercury (Hg)	mg/L	<0.0000020	8004814	<0.0000020	0.0000020	8004814
<b>Dissolved Metals by ICPMS</b>						
Dissolved Aluminum (Al)	mg/L	0.00139	8001107	0.00966	0.00050	8001107
Dissolved Antimony (Sb)	mg/L	0.000528	8001107	0.000253	0.000020	8001107
Dissolved Arsenic (As)	mg/L	0.0103	8001107	0.00782	0.000020	8001107
Dissolved Barium (Ba)	mg/L	0.0602	8001107	0.0459	0.000020	8001107
Dissolved Beryllium (Be)	mg/L	<0.000010	8001107	<0.000010	0.000010	8001107
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8001107	<0.0000050	0.0000050	8001107
Dissolved Boron (B)	mg/L	<0.010	8001107	<0.010	0.010	8001107
Dissolved Cadmium (Cd)	mg/L	0.00375	8001107	<0.0000050	0.0000050	8001107
Dissolved Chromium (Cr)	mg/L	<0.00010	8001107	<0.00010	0.00010	8001107
Dissolved Cobalt (Co)	mg/L	0.00665	8001107	0.000347	0.0000050	8001107
Dissolved Copper (Cu)	mg/L	0.000408	8001107	<0.0000050	0.0000050	8001107
Dissolved Iron (Fe)	mg/L	0.571	8001107	0.438	0.0010	8001107
Dissolved Lead (Pb)	mg/L	0.00406	8001107	0.0000303	0.0000050	8001107
Dissolved Lithium (Li)	mg/L	0.00563	8001107	0.00290	0.00050	8001107
Dissolved Manganese (Mn)	mg/L	0.820	8001107	0.315	0.000050	8001107
Dissolved Molybdenum (Mo)	mg/L	0.00170	8001107	0.000887	0.000050	8001107
Dissolved Nickel (Ni)	mg/L	0.00212	8001107	0.000449	0.000020	8001107
Dissolved Phosphorus (P)	mg/L	<0.0020	8007960	0.302	0.0020	8001107
Dissolved Selenium (Se)	mg/L	<0.000040	8001107	<0.000040	0.000040	8001107
Dissolved Silicon (Si)	mg/L	5.17	8001107	3.24	0.050	8001107
Dissolved Silver (Ag)	mg/L	<0.0000050	8001107	<0.0000050	0.0000050	8001107
Dissolved Strontium (Sr)	mg/L	0.385	8001107	0.364	0.000050	8001107
Dissolved Thallium (Tl)	mg/L	0.000105	8001107	0.0000092	0.0000020	8001107
Dissolved Tin (Sn)	mg/L	<0.00020	8001107	<0.00020	0.00020	8001107
Dissolved Titanium (Ti)	mg/L	<0.00050	8001107	<0.00050	0.00050	8001107
Dissolved Uranium (U)	mg/L	0.00465	8001107	0.00338	0.0000020	8001107
Dissolved Vanadium (V)	mg/L	<0.00020	8001107	<0.00020	0.00020	8001107
Dissolved Zinc (Zn)	mg/L	0.845	8001107	0.00110	0.00010	8001107
Dissolved Zirconium (Zr)	mg/L	<0.00010	8001107	<0.00010	0.00010	8001107
Dissolved Calcium (Ca)	mg/L	117	8000603	67.1	0.050	8000603
Dissolved Magnesium (Mg)	mg/L	23.3	8000603	12.0	0.050	8000603
RDL = Reportable Detection Limit						

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		MW4351		MW4352		
<b>Sampling Date</b>		2015/08/09 13:30		2015/08/09 12:20		
<b>COC Number</b>		08412729		08412729		
	<b>UNITS</b>	<b>BH95G-24</b>	<b>QC Batch</b>	<b>BH95G-29</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Potassium (K)	mg/L	4.42	8000603	3.57	0.050	8000603
Dissolved Sodium (Na)	mg/L	2.44	8000603	1.52	0.050	8000603
Dissolved Sulphur (S)	mg/L	43.3	8000603	18.8	3.0	8000603
RDL = Reportable Detection Limit						

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		MW4346	MW4347	MW4348	MW4349	MW4350		
<b>Sampling Date</b>		2015/08/07 15:30	2015/08/06 16:08	2015/08/06 17:40	2015/08/06 18:36	2015/08/09 10:35		
<b>COC Number</b>		08412729	08412729	08412729	08412729	08412729		
	<b>UNITS</b>	<b>BHG5G-22</b>	<b>BH95G-21</b>	<b>BH95G-25S</b>	<b>BH95G-25D</b>	<b>BH95G-23</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	229	344	639	616	306	0.50	8000562

<b>Elements</b>								
Total Mercury (Hg)	mg/L	0.0000039	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8005280

<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	18.6	29.7	20.9	6.72	58.1	0.0030	8001419
Total Antimony (Sb)	mg/L	0.00326	0.00216	0.000366	0.000780	0.135	0.000050	8001419
Total Arsenic (As)	mg/L	0.0717	0.0813	0.0439	0.0158	1.36	0.000020	8001419
Total Barium (Ba)	mg/L	0.509	11.4	0.402	0.629	3.39	0.00010	8001419
Total Beryllium (Be)	mg/L	0.000959	0.00167	0.00157	0.000617	0.00212	0.000010	8001419
Total Bismuth (Bi)	mg/L	0.00191	0.00257	0.000844	0.000398	0.0393	0.000020	8001419
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8001419
Total Cadmium (Cd)	mg/L	0.00994	0.00165	0.00108	0.000438	0.857	0.0000050	8001419
Total Chromium (Cr)	mg/L	0.0385	0.0520	0.0546	0.00886	0.167	0.00050	8001419
Total Cobalt (Co)	mg/L	0.0334	0.0279	0.0180	0.00476	0.0937	0.000010	8001419
Total Copper (Cu)	mg/L	0.360	0.333	0.0856	0.0221	4.45	0.00020	8001419
Total Iron (Fe)	mg/L	62.0	133	57.6	19.3	276	0.0050	8001419
Total Lead (Pb)	mg/L	0.191	0.132	0.0629	0.0287	17.7	0.000050	8001419
Total Lithium (Li)	mg/L	0.0166	0.0272	0.0393	0.0176	0.0453	0.00050	8001419
Total Manganese (Mn)	mg/L	2.79	0.918	0.907	0.566	2.96	0.00010	8001419
Total Molybdenum (Mo)	mg/L	0.00256	0.00288	0.00209	0.000760	0.00669	0.000050	8001419
Total Nickel (Ni)	mg/L	0.0578	0.0599	0.0478	0.0100	0.221	0.00010	8001419
Total Phosphorus (P)	mg/L	0.723	2.47	1.14	0.347	5.24	0.010	8001419
Total Selenium (Se)	mg/L	0.00129	0.00243	0.000283	0.000181	0.0225	0.000040	8001419
Total Silicon (Si)	mg/L	31.7	44.9	41.3	17.3	60.7	0.10	8001419
Total Silver (Ag)	mg/L	0.00733	0.00175	0.000275	0.000133	0.150	0.0000050	8001419
Total Strontium (Sr)	mg/L	0.186	0.514	0.577	0.589	0.243	0.000050	8001419
Total Thallium (Tl)	mg/L	0.000365	0.000398	0.000383	0.000110	0.0133	0.0000020	8001419
Total Tin (Sn)	mg/L	0.00242	0.00110	0.00109	0.00078	0.00570	0.00020	8001419
Total Titanium (Ti)	mg/L	0.635	0.556	0.751	0.122	3.38	0.0050	8001419
Total Uranium (U)	mg/L	0.00674	0.0192	0.00916	0.00856	0.0391	0.0000050	8001419
Total Vanadium (V)	mg/L	0.0543	0.0750	0.0612	0.0123	0.191	0.00050	8001419
Total Zinc (Zn)	mg/L	1.07	0.814	0.182	0.509	25.1	0.0010	8001419
Total Zirconium (Zr)	mg/L	0.00266	0.0132	0.00144	0.00288	0.0129	0.00010	8001419
Total Calcium (Ca)	mg/L	61.9	90.1	160	145	66.1	0.25	8000604
Total Magnesium (Mg)	mg/L	18.2	28.8	58.3	61.5	34.3	0.25	8000604

RDL = Reportable Detection Limit



Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		MW4346	MW4347	MW4348	MW4349	MW4350		
Sampling Date		2015/08/07 15:30	2015/08/06 16:08	2015/08/06 17:40	2015/08/06 18:36	2015/08/09 10:35		
COC Number		08412729	08412729	08412729	08412729	08412729		
	UNITS	BHG5G-22	BH95G-21	BH95G-25S	BH95G-25D	BH95G-23	RDL	QC Batch
Total Potassium (K)	mg/L	6.14	8.35	12.3	6.49	11.8	0.25	8000604
Total Sodium (Na)	mg/L	1.09	1.71	2.49	2.15	1.02	0.25	8000604
Total Sulphur (S)	mg/L	<15	19	73	78	26	15	8000604
RDL = Reportable Detection Limit								

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		MW4351		MW4352		
Sampling Date		2015/08/09 13:30		2015/08/09 12:20		
COC Number		08412729		08412729		
	UNITS	BH95G-24	QC Batch	BH95G-29	RDL	QC Batch
<b>Calculated Parameters</b>						
Total Hardness (CaCO3)	mg/L	484	8000562	775	0.50	8000562
<b>Elements</b>						
Total Mercury (Hg)	mg/L	0.0000251	8004830	<0.0000020	0.0000020	8005280
<b>Total Metals by ICPMS</b>						
Total Aluminum (Al)	mg/L	13.4	8001419	79.8	0.0030	8001419
Total Antimony (Sb)	mg/L	0.00600	8001419	0.00207	0.000050	8001419
Total Arsenic (As)	mg/L	0.0750	8001419	0.134	0.000020	8001419
Total Barium (Ba)	mg/L	1.04	8001419	1.97	0.00010	8001419
Total Beryllium (Be)	mg/L	0.000628	8001419	0.00617	0.000010	8001419
Total Bismuth (Bi)	mg/L	0.00127	8001419	0.00482	0.000020	8001419
Total Boron (B)	mg/L	<0.050	8001419	0.052	0.050	8001419
Total Cadmium (Cd)	mg/L	0.0540	8001419	0.0212	0.0000050	8001419
Total Chromium (Cr)	mg/L	0.0349	8001419	0.173	0.00050	8001419
Total Cobalt (Co)	mg/L	0.0227	8001419	0.0836	0.000010	8001419
Total Copper (Cu)	mg/L	1.56	8001419	0.565	0.00020	8001419
Total Iron (Fe)	mg/L	34.1	8001419	161	0.0050	8001419
Total Lead (Pb)	mg/L	0.243	8001419	0.786	0.000050	8001419
Total Lithium (Li)	mg/L	0.0188	8001419	0.104	0.00050	8001419
Total Manganese (Mn)	mg/L	1.60	8001419	5.44	0.00010	8001419
Total Molybdenum (Mo)	mg/L	0.00364	8001419	0.00390	0.000050	8001419
Total Nickel (Ni)	mg/L	0.0364	8001419	0.228	0.00010	8001419
Total Phosphorus (P)	mg/L	0.744	8001419	12.1	0.010	8001419
Total Selenium (Se)	mg/L	0.00290	8001419	0.00239	0.000040	8001419
Total Silicon (Si)	mg/L	26.4	8001419	106	0.10	8001419
Total Silver (Ag)	mg/L	0.00286	8001419	0.00426	0.0000050	8001419
Total Strontium (Sr)	mg/L	0.464	8001419	1.33	0.000050	8001419
Total Thallium (Tl)	mg/L	0.00139	8001419	0.00186	0.0000020	8001419
Total Tin (Sn)	mg/L	0.00107	8001419	0.00190	0.00020	8001419
Total Titanium (Ti)	mg/L	0.917	8001419	0.876	0.0050	8001419
Total Uranium (U)	mg/L	0.00664	8001419	0.0486	0.0000050	8001419
Total Vanadium (V)	mg/L	0.0433	8001419	0.225	0.00050	8001419
Total Zinc (Zn)	mg/L	3.17	8001419	3.07	0.0010	8001419
Total Zirconium (Zr)	mg/L	0.00267	8001419	0.00558	0.00010	8001419
Total Calcium (Ca)	mg/L	139	8000604	202	0.25	8000604
Total Magnesium (Mg)	mg/L	33.2	8000604	65.5	0.25	8000604
RDL = Reportable Detection Limit						

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		MW4351		MW4352		
<b>Sampling Date</b>		2015/08/09 13:30		2015/08/09 12:20		
<b>COC Number</b>		08412729		08412729		
	<b>UNITS</b>	<b>BH95G-24</b>	<b>QC Batch</b>	<b>BH95G-29</b>	<b>RDL</b>	<b>QC Batch</b>
Total Potassium (K)	mg/L	9.42	8000604	22.7	0.25	8000604
Total Sodium (Na)	mg/L	2.53	8000604	2.65	0.25	8000604
Total Sulphur (S)	mg/L	45	8000604	19	15	8000604
RDL = Reportable Detection Limit						

Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.7°C
Package 2	7.3°C

Sample MW4352-01 : Total Phosphorus is less than dissolved Phosphorus; Re-analysis yields similar results.

Sample MW4351, Elements by ICPMS Low Level (dissolved): Test repeated.

**Results relate only to the items tested.**

Maxxam Job #: B569283  
Report Date: 2015/08/19

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
7999178	Total Suspended Solids	2015/08/13			100	80 - 120	<1.0	mg/L		
8000647	Total Dissolved Solids	2015/08/15	94	80 - 120	100	80 - 120	1.2, RDL=1.0	mg/L	0.50	20
8000731	Turbidity	2015/08/13			102	80 - 120	<0.10	NTU	0.73	20
8001107	Dissolved Aluminum (Al)	2015/08/15	104	80 - 120	105	80 - 120	<0.00050	mg/L	1.1	20
8001107	Dissolved Antimony (Sb)	2015/08/15	104	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8001107	Dissolved Arsenic (As)	2015/08/15	108	80 - 120	98	80 - 120	<0.000020	mg/L	NC	20
8001107	Dissolved Barium (Ba)	2015/08/15	NC	80 - 120	105	80 - 120	<0.000020	mg/L	0.15	20
8001107	Dissolved Beryllium (Be)	2015/08/15	102	80 - 120	102	80 - 120	<0.000010	mg/L	NC	20
8001107	Dissolved Bismuth (Bi)	2015/08/15	100	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8001107	Dissolved Boron (B)	2015/08/15					<0.010	mg/L	NC	20
8001107	Dissolved Cadmium (Cd)	2015/08/15	97	80 - 120	101	80 - 120	<0.0000050	mg/L	0.080	20
8001107	Dissolved Chromium (Cr)	2015/08/15	101	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8001107	Dissolved Cobalt (Co)	2015/08/15	100	80 - 120	102	80 - 120	<0.0000050	mg/L	5.4	20
8001107	Dissolved Copper (Cu)	2015/08/15	99	80 - 120	104	80 - 120	<0.000050	mg/L	5.8	20
8001107	Dissolved Iron (Fe)	2015/08/15	98	80 - 120	102	80 - 120	<0.0010	mg/L	15	20
8001107	Dissolved Lead (Pb)	2015/08/15	104	80 - 120	103	80 - 120	<0.0000050	mg/L	2.5	20
8001107	Dissolved Lithium (Li)	2015/08/15	NC	80 - 120	96	80 - 120	<0.00050	mg/L	3.4	20
8001107	Dissolved Manganese (Mn)	2015/08/15	NC	80 - 120	102	80 - 120	<0.000050	mg/L	0.50	20
8001107	Dissolved Molybdenum (Mo)	2015/08/15	111	80 - 120	97	80 - 120	<0.000050	mg/L	1.5	20
8001107	Dissolved Nickel (Ni)	2015/08/15	99	80 - 120	103	80 - 120	<0.000020	mg/L	10	20
8001107	Dissolved Phosphorus (P)	2015/08/15					<0.0020	mg/L		
8001107	Dissolved Selenium (Se)	2015/08/15	106	80 - 120	95	80 - 120	<0.000040	mg/L	16	20
8001107	Dissolved Silicon (Si)	2015/08/15					<0.050	mg/L	1.0	20
8001107	Dissolved Silver (Ag)	2015/08/15	105	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8001107	Dissolved Strontium (Sr)	2015/08/15	NC	80 - 120	96	80 - 120	<0.000050	mg/L	0.19	20
8001107	Dissolved Thallium (Tl)	2015/08/15	116	80 - 120	102	80 - 120	<0.0000020	mg/L	7.4	20
8001107	Dissolved Tin (Sn)	2015/08/15	116	80 - 120	106	80 - 120	<0.00020	mg/L	NC	20
8001107	Dissolved Titanium (Ti)	2015/08/15	105	80 - 120	95	80 - 120	<0.00050	mg/L	NC	20
8001107	Dissolved Uranium (U)	2015/08/15	110	80 - 120	102	80 - 120	<0.0000020	mg/L	3.2	20
8001107	Dissolved Vanadium (V)	2015/08/15	106	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8001107	Dissolved Zinc (Zn)	2015/08/15	NC	80 - 120	103	80 - 120	<0.00010	mg/L	3.0	20

Maxxam Job #: B569283  
Report Date: 2015/08/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8001107	Dissolved Zirconium (Zr)	2015/08/15					<0.00010	mg/L	NC	20
8001419	Total Aluminum (Al)	2015/08/17	NC	80 - 120	108	80 - 120	<0.0030	mg/L	1.3	20
8001419	Total Antimony (Sb)	2015/08/17	NC	80 - 120	98	80 - 120	<0.000050	mg/L	1.2	20
8001419	Total Arsenic (As)	2015/08/17	108	80 - 120	99	80 - 120	<0.000020	mg/L	12	20
8001419	Total Barium (Ba)	2015/08/17	NC	80 - 120	99	80 - 120	<0.00010	mg/L	1.9	20
8001419	Total Beryllium (Be)	2015/08/17	94	80 - 120	97	80 - 120	<0.000010	mg/L	0.55	20
8001419	Total Bismuth (Bi)	2015/08/17	96	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8001419	Total Boron (B)	2015/08/17					<0.050	mg/L	2.4	20
8001419	Total Cadmium (Cd)	2015/08/17	102	80 - 120	99	80 - 120	<0.0000050	mg/L	12	20
8001419	Total Chromium (Cr)	2015/08/17	89	80 - 120	108	80 - 120	<0.00050	mg/L	8.1	20
8001419	Total Cobalt (Co)	2015/08/17	100	80 - 120	106	80 - 120	<0.000010	mg/L	2.6	20
8001419	Total Copper (Cu)	2015/08/17	106	80 - 120	105	80 - 120	<0.00020	mg/L	11	20
8001419	Total Iron (Fe)	2015/08/17	NC	80 - 120	111	80 - 120	<0.0050	mg/L	3.8	20
8001419	Total Lead (Pb)	2015/08/17	97	80 - 120	107	80 - 120	<0.000050	mg/L	6.3	20
8001419	Total Lithium (Li)	2015/08/17	NC	80 - 120	97	80 - 120	<0.00050	mg/L	2.5	20
8001419	Total Manganese (Mn)	2015/08/17	NC	80 - 120	103	80 - 120	<0.00010	mg/L	7.0	20
8001419	Total Molybdenum (Mo)	2015/08/17	NC	80 - 120	100	80 - 120	<0.000050	mg/L	7.1	20
8001419	Total Nickel (Ni)	2015/08/17	NC	80 - 120	105	80 - 120	<0.00010	mg/L	7.9	20
8001419	Total Phosphorus (P)	2015/08/17					<0.010	mg/L		
8001419	Total Selenium (Se)	2015/08/17	94	80 - 120	88	80 - 120	<0.000040	mg/L	1.2	20
8001419	Total Silicon (Si)	2015/08/17					<0.10	mg/L	8.8	20
8001419	Total Silver (Ag)	2015/08/17	106	80 - 120	94	80 - 120	<0.0000050	mg/L	8.0	20
8001419	Total Strontium (Sr)	2015/08/17	NC	80 - 120	95	80 - 120	<0.000050	mg/L	3.7	20
8001419	Total Thallium (Tl)	2015/08/17	91	80 - 120	101	80 - 120	<0.0000020	mg/L	19	20
8001419	Total Tin (Sn)	2015/08/17	85	80 - 120	96	80 - 120	<0.00020	mg/L	NC	20
8001419	Total Titanium (Ti)	2015/08/17	NC	80 - 120	99	80 - 120	<0.0050	mg/L	8.2	20
8001419	Total Uranium (U)	2015/08/17	104	80 - 120	108	80 - 120	<0.0000050	mg/L	2.3	20
8001419	Total Vanadium (V)	2015/08/17	NC	80 - 120	99	80 - 120	<0.00050	mg/L	8.1	20
8001419	Total Zinc (Zn)	2015/08/17	105	80 - 120	107	80 - 120	<0.0010	mg/L	NC	20
8001419	Total Zirconium (Zr)	2015/08/17					<0.00010	mg/L	8.9	20
8001524	Total Suspended Solids	2015/08/17			104	80 - 120	<1.0	mg/L		

Maxxam Job #: B569283  
Report Date: 2015/08/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8001537	Nitrate plus Nitrite (N)	2015/08/13	103	80 - 120	106	80 - 120	<0.0020	mg/L	NC	25
8001538	Nitrite (N)	2015/08/13	100	80 - 120	104	80 - 120	<0.0020	mg/L	NC	25
8002048	Alkalinity (PP as CaCO3)	2015/08/13					<0.50	mg/L		
8002048	Alkalinity (Total as CaCO3)	2015/08/13	NC	80 - 120	100	80 - 120	<0.50	mg/L		
8002048	Bicarbonate (HCO3)	2015/08/13					<0.50	mg/L		
8002048	Carbonate (CO3)	2015/08/13					<0.50	mg/L		
8002048	Hydroxide (OH)	2015/08/13					<0.50	mg/L		
8002053	Conductivity	2015/08/13			102	80 - 120	<1.0	uS/cm		
8002054	pH	2015/08/13			102	97 - 103				
8002061	Dissolved Chloride (Cl)	2015/08/13	115	80 - 120	99	80 - 120	<0.50	mg/L	NC	20
8002070	Dissolved Sulphate (SO4)	2015/08/13	NC	80 - 120	94	80 - 120	<0.50	mg/L	2.0	20
8002150	Fluoride (F)	2015/08/14	104	80 - 120	100	80 - 120	<0.010	mg/L	3.4	20
8002731	Orthophosphate (P)	2015/08/14	99	80 - 120	93	80 - 120			NC	20
8002745	Total Phosphorus (P)	2015/08/14	92	80 - 120	104	80 - 120	<0.0020	mg/L	NC	20
8002764	Dissolved Phosphorus (P)	2015/08/14			99	80 - 120	<0.0020	mg/L		
8002818	Total Ammonia (N)	2015/08/14	NC	80 - 120	108	80 - 120	<0.0050	mg/L	0.28	20
8002820	Total Ammonia (N)	2015/08/14	113	80 - 120	110	80 - 120	0.0077, RDL=0.0050	mg/L	5.0	20
8002942	Total Nitrogen (N)	2015/08/17	NC	80 - 120	86	80 - 120	<0.020	mg/L	3.6	20
8002943	Total Nitrogen (N)	2015/08/17	112	80 - 120	84	80 - 120	<0.020	mg/L	NC	20
8003336	Acidity (pH 4.5)	2015/08/14					<0.50	mg/L		
8003336	Acidity (pH 8.3)	2015/08/14			99	80 - 120	<0.50	mg/L		
8004814	Dissolved Mercury (Hg)	2015/08/17	89	80 - 120	86	80 - 120	<0.0000020	mg/L	NC	20
8004830	Total Mercury (Hg)	2015/08/17	87	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
8005280	Total Mercury (Hg)	2015/08/18	89	80 - 120	90	80 - 120	<0.0000020	mg/L	NC	20
8005787	Total Organic Carbon (C)	2015/08/18	96	80 - 120	99	80 - 120	<0.50	mg/L	NC	20
8006712	Total Ammonia (N)	2015/08/18	NC	80 - 120	107	80 - 120	<0.0050	mg/L	0.74	20
8006741	Orthophosphate (P)	2015/08/18	97	80 - 120	95	80 - 120	<0.0010	mg/L	0.71	20
8006746	Total Phosphorus (P)	2015/08/18	96	80 - 120	112	80 - 120	<0.0020	mg/L	NC	20
8006747	Dissolved Phosphorus (P)	2015/08/18			112	80 - 120	<0.0020	mg/L		

Maxxam Job #: B569283  
Report Date: 2015/08/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8007960	Dissolved Phosphorus (P)	2015/08/19					<0.0020	mg/L		

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).



Maxxam Job #: B569283  
Report Date: 2015/08/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Sampler Initials: KR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Signature REDACTED

\_\_\_\_\_  
Name REDACTED Validation Coordinator

Signature REDACTED

\_\_\_\_\_  
Name REDACTED Senior Analyst

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Burnaby: 4 B569283

**CHAIN OF CUSTODY RECORD**



1566 CO 08412729

BBY FCD-00077/05

Page 1 of 1

Invoice Information		Project Information		Turnaround Time (TAT) Required		
Company Name: #11954 BMC Mineral (NO. 1) LTD.	Company Name: #31161 Tatra Tech EBA	Quotation #: 850743	<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)			
Contact Name: ACCOUNTS PAYABLE	Contact Name: Name REDACTED	P.O. #/AFER:	PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS			
Address: 530-1130 West Pender Street, Vancouver	Address: 63 Watson Place	Project #: ENVMNO3071-01	Rush TAT (Surcharges will be applied)			
BC: _____ PC: V6E 4A4	Whitehorse, YT _____ PC: Y1A 0K3	Site Location: Kudu Ze Kayah	<input type="checkbox"/> Same Day	<input type="checkbox"/> 2 Days	<input type="checkbox"/> 3 Days	
Phone: _____	Phone: 867-668-6325	Site #: _____	<input type="checkbox"/> 1 Day	<input type="checkbox"/> _____	<input type="checkbox"/> _____	
Email: Email REDACTED	Email: Email REDACTED	Sampled By: _____	Date Required: _____			
Regulatory Criteria		Special Instructions		Analysis Requested		
<input type="checkbox"/> BC CSR Soil	<input type="checkbox"/> BC CSR Water	<input type="checkbox"/> Pesticide Cooper	Analysis Requested			
<input type="checkbox"/> CCME (Specify)	<input type="checkbox"/> Other (Specify)	<input type="checkbox"/> Ship Sample Bottles (Please Specify)	Rush Confirmation #:			
<input type="checkbox"/> Drinking Water	<input type="checkbox"/> DL Water Quality		LABORATORY USE ONLY			
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM				CUSTODY SEAL Y / N / NA		
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	COOLER TEMPERATURES	
1	BH95G-22	MW4346	8/7/2015	15:30	water	Present: N, Intact: N
2	BH95G-21	MW4347	8/6/2015	16:08	water	Present: N, Intact: N
3	BH95G-255	MW4348	8/6/2015	17:40	water	Present: N, Intact: N
4	BH95G-250	MW4349	8/6/2015	18:36	water	Present: N, Intact: N
5	BH95G-23	MW4350	8/9/2015	10:35	water	Present: N, Intact: N
6	BH95G-24	MW4351	8/9/2015	13:30	water	Present: N, Intact: N
7	BH95G-29	MW4352	8/9/2015	12:20	water	Present: N, Intact: N
8						
9						
10						
RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #
Signature REDACTED	2015/08/09		Signature REI Name REDACTED	2015/08/12	14:10	B 569283
Name REDACTED						

Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08404951

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2016/01/19**  
 Report #: R2119190  
 Version: 2 - Revision

### CERTIFICATE OF ANALYSIS – REVISED REPORT

**MAXXAM JOB #: B569978**

**Received: 2015/08/14, 13:00**

Sample Matrix: Water  
 # Samples Received: 3

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	3	N/A	2015/08/20 BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	3	2015/08/15	2015/08/15 BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	3	N/A	2015/08/17 BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	3	N/A	2015/08/15 BBY6SOP-00026	SM 22 2510 B m
Fluoride	3	N/A	2015/08/17 BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	3	N/A	2015/08/19 BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	3	N/A	2015/08/19 BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	3	N/A	2015/08/20 BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	3	2015/08/19	2015/08/20 BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	3	N/A	2015/08/19 BBY WI-00033	SM 22 1030E
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	3	N/A	2015/08/19 BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	3	N/A	2015/08/19 BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	3	N/A	2015/08/19 BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	3	N/A	2015/08/19 BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	3	2015/08/18	2015/08/19 BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	3	N/A	2015/08/18 BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	3	N/A	2015/08/15 BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	3	N/A	2015/08/15 BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	3	N/A	2015/08/15 BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	3	N/A	2015/08/19 BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	3	N/A	2015/08/15 BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	3	N/A	2015/08/15 BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	2	N/A	2015/08/17 BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate by Automated Colourimetry	1	N/A	2015/08/18 BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	3	N/A	2015/08/17 BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	3	N/A	2015/08/19 BBY WI-00033	Calculation
Carbon (Total Organic) (1, 3)	3	N/A	2015/08/20 EENSOP-00060	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	3	2015/08/17	2015/08/17 BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	3	N/A	2015/08/17 BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	3	2015/08/18	2015/08/19 BBY6SOP-00034	SM 22 2540 D

Your Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08404951

Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2016/01/19**  
Report #: R2119190  
Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B569978**

**Received: 2015/08/14, 13:00**

Sample Matrix: Water  
# Samples Received: 3

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Analytical Method</b>
Turbidity	3	N/A	2015/08/15	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Maxxam Edmonton Environmental
- (2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.
- (3) TOC present in the sample should be considered as non-purgeable TOC.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Name REDACTED, Burnaby Project Manager  
Email: MEmail REDACTED  
phone REDACTED

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B569978  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MW8217	MW8217		MW8218	MW8218		MW8219		
Sampling Date		2015/08/11	2015/08/11		2015/08/11	2015/08/11		2015/08/11		
COC Number		08404951	08404951		08404951	08404951		08404951		
	UNITS	ART - 3 (1)	ART - 3 (1) Lab-Dup	QC Batch	ART - 3 (3)	ART - 3 (3) Lab-Dup	RDL	BH95G-146	RDL	QC Batch

**Calculated Parameters**

Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		N/A	FIELD	N/A	ONSITE
Ion Balance	N/A	1.0		8001732	1.1		0.010	1.1	0.010	8001732
Nitrate (N)	mg/L	<0.0020		8001957	<0.0020		0.0020	<0.0020	0.0020	8001957

**Misc. Inorganics**

Fluoride (F)	mg/L	0.150		8005224	0.160		0.010	0.300	0.010	8005224
Acidity (pH 4.5)	mg/L	<0.50		8009106	<0.50		0.50	<0.50	0.50	8009106
Alkalinity (Total as CaCO3)	mg/L	103		8003392	105		0.50	133	0.50	8003392
Total Organic Carbon (C)	mg/L	0.58		8008842	0.58		0.50	1.2	0.50	8008842
Acidity (pH 8.3)	mg/L	4.18		8009106	2.04		0.50	<0.50	0.50	8009106
Alkalinity (PP as CaCO3)	mg/L	<0.50		8003392	<0.50		0.50	<0.50	0.50	8003392
Bicarbonate (HCO3)	mg/L	126		8003392	128		0.50	163	0.50	8003392
Carbonate (CO3)	mg/L	<0.50		8003392	<0.50		0.50	<0.50	0.50	8003392
Hydroxide (OH)	mg/L	<0.50		8003392	<0.50		0.50	<0.50	0.50	8003392

**Anions**

Orthophosphate (P)	mg/L	0.0013 (1)		8003354	0.0012 (1)	0.0010	0.0010	0.0018 (1)	0.0010	8003354
Dissolved Sulphate (SO4)	mg/L	100		8006693	88.5		0.50	255	5.0	8005936
Dissolved Chloride (Cl)	mg/L	<0.50		8005938	<0.50	<0.50	0.50	<0.50	0.50	8005938

**Nutrients**

Total Ammonia (N)	mg/L	0.033		8006760	0.045		0.0050	0.13	0.0050	8006712
Dissolved Phosphorus (P)	mg/L	0.0204	0.0197	8004798	0.0141		0.0020	<0.0020	0.0020	8004798
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.176		8001960	0.096		0.020	0.151	0.020	8001960
Nitrate plus Nitrite (N)	mg/L	0.0089 (1)		8003598	0.0047 (1)		0.0020	<0.0020 (1)	0.0020	8003598
Nitrite (N)	mg/L	0.0073 (1)		8003599	0.0077 (1)		0.0020	<0.0020 (1)	0.0020	8003599
Total Nitrogen (N)	mg/L	0.185		8006752	0.101		0.020	0.151	0.020	8006752
Total Phosphorus (P)	mg/L	0.0235	0.0227	8004800	0.0189		0.0020	0.0971	0.0020	8004800

**Physical Properties**

Conductivity	uS/cm	387		8003391	392		1.0	771	1.0	8003391
pH	pH	7.44		8003389	7.42		N/A	7.92	N/A	8003389

**Physical Properties**

Total Suspended Solids	mg/L	9.3		8006050	10.1		1.0	31.5	1.0	8006050
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RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B569978  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MW8217	MW8217		MW8218	MW8218		MW8219		
Sampling Date		2015/08/11	2015/08/11		2015/08/11	2015/08/11		2015/08/11		
COC Number		08404951	08404951		08404951	08404951		08404951		
	UNITS	ART - 3 (1)	ART - 3 (1) Lab-Dup	QC Batch	ART - 3 (3)	ART - 3 (3) Lab-Dup	RDL	BH95G-146	RDL	QC Batch
Total Dissolved Solids	mg/L	268	276	8003313	262		1.0	612	1.0	8003313
Turbidity	NTU	36.9 (1)		8003152	46.4 (1)		0.10	44.1 (1)	0.10	8003152

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

(1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam ID		MW8219		
Sampling Date		2015/08/11		
COC Number		08404951		
	UNITS	BH95G-146 Lab-Dup	RDL	QC Batch

Misc. Inorganics				
Fluoride (F)	mg/L	0.300	0.010	8005224
Anions				
Dissolved Sulphate (SO4)	mg/L	255	5.0	8005936
Nutrients				
Nitrate plus Nitrite (N)	mg/L	<0.0020	0.0020	8003598
Nitrite (N)	mg/L	<0.0020	0.0020	8003599
RDL = Reportable Detection Limit				
Lab-Dup = Laboratory Initiated Duplicate				

Maxxam Job #: B569978  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MW8217	MW8218		MW8219		
Sampling Date		2015/08/11	2015/08/11		2015/08/11		
COC Number		08404951	08404951		08404951		
	UNITS	ART - 3 (1)	ART - 3 (3)	QC Batch	BH95G-146	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	191	199	8001731	413	0.50	8001731
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	8009266	<0.000020	0.000020	8009266
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00186	0.00193	8004455	0.00315	0.00050	8004455
Dissolved Antimony (Sb)	mg/L	0.0390	0.0332	8004455	0.00112	0.000020	8004455
Dissolved Arsenic (As)	mg/L	0.156	0.140	8004455	0.00452	0.000020	8004455
Dissolved Barium (Ba)	mg/L	0.0176	0.0192	8004455	0.0126	0.000020	8004455
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	8004455	<0.000010	0.000010	8004455
Dissolved Bismuth (Bi)	mg/L	0.0000184	0.0000053	8004455	0.0000060	0.0000050	8004455
Dissolved Boron (B)	mg/L	<0.010	<0.010	8004455	<0.010	0.010	8004455
Dissolved Cadmium (Cd)	mg/L	0.000424	0.000877	8004455	<0.0000050	0.0000050	8004455
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	8004455	<0.00010	0.00010	8004455
Dissolved Cobalt (Co)	mg/L	0.00167	0.00186	8004455	0.0000607	0.0000050	8004455
Dissolved Copper (Cu)	mg/L	<0.000050	<0.000050	8004455	0.000074	0.000050	8004455
Dissolved Iron (Fe)	mg/L	6.68	6.75	8004455	0.982	0.0010	8004455
Dissolved Lead (Pb)	mg/L	0.000626	0.00211	8004455	<0.0000050	0.0000050	8004455
Dissolved Lithium (Li)	mg/L	0.00476	0.00446	8013419	0.0234	0.00050	8004455
Dissolved Manganese (Mn)	mg/L	0.507	0.531	8004455	0.0508	0.000050	8004455
Dissolved Molybdenum (Mo)	mg/L	0.000647	0.000596	8004455	0.000291	0.000050	8004455
Dissolved Nickel (Ni)	mg/L	0.00242	0.00267	8004455	0.000246	0.000020	8004455
Dissolved Phosphorus (P)	mg/L	<0.0020	0.0024	8004455	<0.0020	0.0020	8004455
Dissolved Selenium (Se)	mg/L	<0.000040	<0.000040	8004455	<0.000040	0.000040	8004455
Dissolved Silicon (Si)	mg/L	5.72	5.68	8004455	14.0	0.050	8004455
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	8004455	<0.0000050	0.0000050	8004455
Dissolved Strontium (Sr)	mg/L	0.204	0.209	8004455	0.390	0.000050	8004455
Dissolved Thallium (Tl)	mg/L	0.000256	0.000478	8004455	0.0000269	0.0000020	8004455
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	8004455	<0.00020	0.00020	8004455
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	8004455	<0.00050	0.00050	8004455
Dissolved Uranium (U)	mg/L	0.00523	0.00555	8004455	0.00231	0.0000020	8004455
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	8004455	<0.00020	0.00020	8004455
Dissolved Zinc (Zn)	mg/L	2.27	2.35	8004455	0.00383	0.00010	8004455
Dissolved Zirconium (Zr)	mg/L	0.00013	0.00014	8004455	<0.00010	0.00010	8004455
Dissolved Calcium (Ca)	mg/L	63.1	65.6	8001955	129	0.050	8001955
Dissolved Magnesium (Mg)	mg/L	8.18	8.44	8001955	22.0	0.050	8001955
RDL = Reportable Detection Limit							

Maxxam Job #: B569978  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MW8217	MW8218		MW8219		
Sampling Date		2015/08/11	2015/08/11		2015/08/11		
COC Number		08404951	08404951		08404951		
	UNITS	ART - 3 (1)	ART - 3 (3)	QC Batch	BH95G-146	RDL	QC Batch
Dissolved Potassium (K)	mg/L	1.76	1.76	8001955	2.36	0.050	8001955
Dissolved Sodium (Na)	mg/L	0.874	0.893	8001955	3.39	0.050	8001955
Dissolved Sulphur (S)	mg/L	29.8	29.8	8001955	86.9	3.0	8001955
RDL = Reportable Detection Limit							



Maxxam Job #: B569978  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		MW8217	MW8218	MW8219		
Sampling Date		2015/08/11	2015/08/11	2015/08/11		
COC Number		08404951	08404951	08404951		
	UNITS	ART - 3 (1)	ART - 3 (3)	BH95G-146	RDL	QC Batch
<b>Calculated Parameters</b>						
Total Hardness (CaCO3)	mg/L	199	196	437	0.50	8001954
<b>Elements</b>						
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	0.0000020	8007815
<b>Total Metals by ICPMS</b>						
Total Aluminum (Al)	mg/L	0.00571	0.00831	0.0958	0.00050	8007424
Total Antimony (Sb)	mg/L	0.0436	0.0331	0.00569	0.000020	8007424
Total Arsenic (As)	mg/L	0.172	0.148	0.0250	0.000020	8007424
Total Barium (Ba)	mg/L	0.0183	0.0196	0.0180	0.000020	8007424
Total Beryllium (Be)	mg/L	<0.000010	<0.000010	0.000014	0.000010	8007424
Total Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000050	8007424
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	0.010	8007424
Total Cadmium (Cd)	mg/L	0.000482	0.000953	0.0000837	0.0000050	8007424
Total Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00036	0.00010	8007424
Total Cobalt (Co)	mg/L	0.00174	0.00186	0.000112	0.0000050	8007424
Total Copper (Cu)	mg/L	0.000155	0.000263	0.00118	0.000050	8007424
Total Iron (Fe)	mg/L	7.05	6.57	1.98	0.0010	8007424
Total Lead (Pb)	mg/L	0.000788	0.00234	0.00620	0.0000050	8007424
Total Lithium (Li)	mg/L	0.00504	0.00484	0.0220	0.00050	8007424
Total Manganese (Mn)	mg/L	0.526	0.543	0.0468	0.000050	8007424
Total Molybdenum (Mo)	mg/L	0.000662	0.000571	0.000322	0.000050	8007424
Total Nickel (Ni)	mg/L	0.00260	0.00271	0.000438	0.000020	8007424
Total Phosphorus (P)	mg/L	<0.0020	0.0032	0.0055	0.0020	8007424
Total Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	0.000040	8007424
Total Silicon (Si)	mg/L	6.22	6.11	15.9	0.050	8007424
Total Silver (Ag)	mg/L	<0.0000050	<0.0000050	0.0000087	0.0000050	8007424
Total Strontium (Sr)	mg/L	0.222	0.216	0.448	0.000050	8007424
Total Thallium (Tl)	mg/L	0.000267	0.000517	0.0000254	0.0000020	8007424
Total Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	8007424
Total Titanium (Ti)	mg/L	<0.00050	<0.00050	0.00595	0.00050	8007424
Total Uranium (U)	mg/L	0.00552	0.00594	0.00240	0.0000020	8007424
Total Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	8007424
Total Zinc (Zn)	mg/L	2.30	2.39	0.0702	0.00010	8007424
Total Zirconium (Zr)	mg/L	0.00015	0.00018	0.00016	0.00010	8007424
Total Calcium (Ca)	mg/L	65.1	63.5	131	0.050	8001956
Total Magnesium (Mg)	mg/L	8.83	9.01	26.4	0.050	8001956
RDL = Reportable Detection Limit						

Maxxam Job #: B569978  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		MW8217	MW8218	MW8219		
Sampling Date		2015/08/11	2015/08/11	2015/08/11		
COC Number		08404951	08404951	08404951		
	UNITS	ART - 3 (1)	ART - 3 (3)	BH95G-146	RDL	QC Batch
Total Potassium (K)	mg/L	2.06	2.04	2.92	0.050	8001956
Total Sodium (Na)	mg/L	1.34	0.976	4.11	0.050	8001956
Total Sulphur (S)	mg/L	34.7	34.7	104	3.0	8001956
RDL = Reportable Detection Limit						

Maxxam Job #: B569978  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.7°C
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Revised report (V2): Client ID corrected per client request for samples MW8217 and MW8218 (MM4).

Sample MW8218-01 : Revised report V2: Updated Client Sample ID for MW8217 and MW8218 per client request (MM4)

Sample MW8217, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample MW8218, Elements by ICPMS Low Level (dissolved): Test repeated.

**Results relate only to the items tested.**

Maxxam Job #: B569978  
Report Date: 2016/01/19

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8003152	Turbidity	2015/08/15			103	80 - 120	<0.10	NTU	NC (1)	20
8003313	Total Dissolved Solids	2015/08/17	102	80 - 120	106	80 - 120	1.2, RDL=1.0	mg/L	2.9	20
8003354	Orthophosphate (P)	2015/08/15	99	80 - 120	95	80 - 120	<0.0010	mg/L	NC	20
8003389	pH	2015/08/15			102	97 - 103	5.39	pH	0.49	N/A
8003391	Conductivity	2015/08/15			97	80 - 120	<1.0	uS/cm	0.39	20
8003392	Alkalinity (PP as CaCO3)	2015/08/15					<0.50	mg/L	NC	20
8003392	Alkalinity (Total as CaCO3)	2015/08/15	NC	80 - 120	101	80 - 120	<0.50	mg/L	1.4	20
8003392	Bicarbonate (HCO3)	2015/08/15					<0.50	mg/L	1.4	20
8003392	Carbonate (CO3)	2015/08/15					<0.50	mg/L	NC	20
8003392	Hydroxide (OH)	2015/08/15					<0.50	mg/L	NC	20
8003598	Nitrate plus Nitrite (N)	2015/08/15	96	80 - 120	110	80 - 120	<0.0020	mg/L	NC	25
8003599	Nitrite (N)	2015/08/15	97	80 - 120	102	80 - 120	<0.0020	mg/L	NC	25
8004455	Dissolved Aluminum (Al)	2015/08/19	101	80 - 120	108	80 - 120	<0.00050	mg/L	11	20
8004455	Dissolved Antimony (Sb)	2015/08/19	102	80 - 120	103	80 - 120	<0.000020	mg/L	14	20
8004455	Dissolved Arsenic (As)	2015/08/19	106	80 - 120	100	80 - 120	<0.000020	mg/L	1.9	20
8004455	Dissolved Barium (Ba)	2015/08/19	NC	80 - 120	108	80 - 120	<0.000020	mg/L	0.29	20
8004455	Dissolved Beryllium (Be)	2015/08/19	103	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
8004455	Dissolved Bismuth (Bi)	2015/08/19	98	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8004455	Dissolved Boron (B)	2015/08/19					<0.010	mg/L	4.4	20
8004455	Dissolved Cadmium (Cd)	2015/08/19	99	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8004455	Dissolved Chromium (Cr)	2015/08/19	106	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20
8004455	Dissolved Cobalt (Co)	2015/08/19	103	80 - 120	106	80 - 120	<0.0000050	mg/L	13	20
8004455	Dissolved Copper (Cu)	2015/08/19	101	80 - 120	107	80 - 120	<0.000050	mg/L	6.6	20
8004455	Dissolved Iron (Fe)	2015/08/19	91	80 - 120	110	80 - 120	<0.0010	mg/L	8.9	20
8004455	Dissolved Lead (Pb)	2015/08/19	102	80 - 120	108	80 - 120	<0.0000050	mg/L	NC	20
8004455	Dissolved Lithium (Li)	2015/08/19	NC	80 - 120	101	80 - 120	<0.00050	mg/L	0.29	20
8004455	Dissolved Manganese (Mn)	2015/08/19	91	80 - 120	102	80 - 120	<0.000050	mg/L	0.65	20
8004455	Dissolved Molybdenum (Mo)	2015/08/19	NC	80 - 120	101	80 - 120	<0.000050	mg/L	3.0	20
8004455	Dissolved Nickel (Ni)	2015/08/19	97	80 - 120	105	80 - 120	<0.000020	mg/L	2.8	20
8004455	Dissolved Phosphorus (P)	2015/08/19					<0.0020	mg/L		
8004455	Dissolved Selenium (Se)	2015/08/19	102	80 - 120	96	80 - 120	<0.000040	mg/L	NC	20

Maxxam Job #: B569978  
Report Date: 2016/01/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8004455	Dissolved Silicon (Si)	2015/08/19					<0.050	mg/L	1.8	20
8004455	Dissolved Silver (Ag)	2015/08/19	104	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8004455	Dissolved Strontium (Sr)	2015/08/19	NC	80 - 120	98	80 - 120	<0.000050	mg/L	0.45	20
8004455	Dissolved Thallium (Tl)	2015/08/19	94	80 - 120	103	80 - 120	<0.0000020	mg/L	NC	20
8004455	Dissolved Tin (Sn)	2015/08/19	105	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8004455	Dissolved Titanium (Ti)	2015/08/19	100	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8004455	Dissolved Uranium (U)	2015/08/19	103	80 - 120	104	80 - 120	<0.0000020	mg/L	1.3	20
8004455	Dissolved Vanadium (V)	2015/08/19	107	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8004455	Dissolved Zinc (Zn)	2015/08/19	102	80 - 120	103	80 - 120	<0.00010	mg/L		
8004455	Dissolved Zirconium (Zr)	2015/08/19					<0.00010	mg/L	NC	20
8004798	Dissolved Phosphorus (P)	2015/08/17	88	80 - 120	96	80 - 120	<0.0020	mg/L	3.8	20
8004800	Total Phosphorus (P)	2015/08/17	89	80 - 120	99	80 - 120	<0.0020	mg/L	NC	20
8005224	Fluoride (F)	2015/08/17			100	80 - 120	<0.010	mg/L	0	20
8005936	Dissolved Sulphate (SO4)	2015/08/17	NC	80 - 120	103	80 - 120	<0.50	mg/L	0.12	20
8005938	Dissolved Chloride (Cl)	2015/08/17			99	80 - 120	<0.50	mg/L	NC	20
8006050	Total Suspended Solids	2015/08/19			104	80 - 120	<1.0	mg/L		
8006693	Dissolved Sulphate (SO4)	2015/08/18			98	80 - 120	0.55, RDL=0.50	mg/L	NC (2)	20
8006712	Total Ammonia (N)	2015/08/18	NC	80 - 120	107	80 - 120	<0.0050	mg/L	0.74	20
8006752	Total Nitrogen (N)	2015/08/19	NC	80 - 120	105	80 - 120	<0.020	mg/L	5.8	20
8006760	Total Ammonia (N)	2015/08/18	NC	80 - 120	114	80 - 120	<0.0050	mg/L	3.5	20
8007424	Total Aluminum (Al)	2015/08/19	108	80 - 120	107	80 - 120	<0.00050	mg/L	1.1	20
8007424	Total Antimony (Sb)	2015/08/19	107	80 - 120	103	80 - 120	<0.000020	mg/L	4.3	20
8007424	Total Arsenic (As)	2015/08/19	102	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8007424	Total Barium (Ba)	2015/08/19	112	80 - 120	107	80 - 120	<0.000020	mg/L	0.99	20
8007424	Total Beryllium (Be)	2015/08/19	102	80 - 120	106	80 - 120	<0.000010	mg/L	NC	20
8007424	Total Bismuth (Bi)	2015/08/19	105	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8007424	Total Boron (B)	2015/08/19					<0.010	mg/L	NC	20
8007424	Total Cadmium (Cd)	2015/08/19	104	80 - 120	105	80 - 120	<0.0000050	mg/L	6.0	20
8007424	Total Chromium (Cr)	2015/08/19	106	80 - 120	108	80 - 120	<0.00010	mg/L	0.064	20
8007424	Total Cobalt (Co)	2015/08/19	106	80 - 120	108	80 - 120	<0.0000050	mg/L	6.8	20
8007424	Total Copper (Cu)	2015/08/19	106	80 - 120	108	80 - 120	<0.000050	mg/L	6.6	20

Maxxam Job #: B569978  
Report Date: 2016/01/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8007424	Total Iron (Fe)	2015/08/19	105	80 - 120	111	80 - 120	<0.0010	mg/L	2.0	20
8007424	Total Lead (Pb)	2015/08/19	112	80 - 120	109	80 - 120	<0.0000050	mg/L	2.7	20
8007424	Total Lithium (Li)	2015/08/19	99	80 - 120	107	80 - 120	<0.00050	mg/L	5.9	20
8007424	Total Manganese (Mn)	2015/08/19	101	80 - 120	103	80 - 120	<0.000050	mg/L	0.74	20
8007424	Total Molybdenum (Mo)	2015/08/19	102	80 - 120	96	80 - 120	<0.000050	mg/L	0.91	20
8007424	Total Nickel (Ni)	2015/08/19	104	80 - 120	105	80 - 120	<0.000020	mg/L	6.0	20
8007424	Total Phosphorus (P)	2015/08/19					<0.0020	mg/L	5.9	20
8007424	Total Selenium (Se)	2015/08/19	97	80 - 120	102	80 - 120	<0.000040	mg/L	NC	20
8007424	Total Silicon (Si)	2015/08/19					<0.050	mg/L	0.41	20
8007424	Total Silver (Ag)	2015/08/19	89	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8007424	Total Strontium (Sr)	2015/08/19	99	80 - 120	98	80 - 120	<0.000050	mg/L	1.5	20
8007424	Total Thallium (Tl)	2015/08/19	107	80 - 120	103	80 - 120	<0.0000020	mg/L	NC	20
8007424	Total Tin (Sn)	2015/08/19	108	80 - 120	104	80 - 120	<0.00020	mg/L	NC	20
8007424	Total Titanium (Ti)	2015/08/19	103	80 - 120	103	80 - 120	<0.00050	mg/L	NC	20
8007424	Total Uranium (U)	2015/08/19	110	80 - 120	107	80 - 120	<0.0000020	mg/L	0.51	20
8007424	Total Vanadium (V)	2015/08/19	101	80 - 120	104	80 - 120	<0.00020	mg/L	NC	20
8007424	Total Zinc (Zn)	2015/08/19	101	80 - 120	109	80 - 120	<0.00010	mg/L	18	20
8007424	Total Zirconium (Zr)	2015/08/19					<0.00010	mg/L	NC	20
8007815	Total Mercury (Hg)	2015/08/20	93	80 - 120	90	80 - 120	<0.0000020	mg/L	NC	20
8008842	Total Organic Carbon (C)	2015/08/20	NC	80 - 120	98	80 - 120	<0.50	mg/L	0.52	20
8009106	Acidity (pH 4.5)	2015/08/20					<0.50	mg/L	NC	20
8009106	Acidity (pH 8.3)	2015/08/20			100	80 - 120	0.68, RDL=0.50	mg/L	1.0	20
8009266	Dissolved Mercury (Hg)	2015/08/20	92	80 - 120	95	80 - 120	<0.0000020	mg/L	NC	20

Maxxam Job #: B569978  
Report Date: 2016/01/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8013419	Dissolved Lithium (Li)	2015/08/26	NC	80 - 120	102	80 - 120	<0.00050	mg/L		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

(2) RDL raised due to sample matrix interference.

Maxxam Job #: B569978  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Signature REDACTED

\_\_\_\_\_  
Name REDACTED BBY Scientific Specialist

Signature REDACTED

\_\_\_\_\_  
Name REDACTED M.Sc., Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Invoice Information		Report Information (if differs from invoice)				Project Information				Turnaround Time (TAT) Required			
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)			
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS			
Address: 530-1130 West Pender Street, Vancouver BC PC: V6E 4A4		Address: 61 Wasson Place Whitehorse, YT PC: V1A 0H7				Project #: ENVMINO3071-01				Rush TAT (Surcharges will be applied)			
Phone:		Phone: 867-668-6225				Site Location: Kudz Ze Kayah				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days			
Email: Email REDACTED		Email: Email REDACTED				Site #: Name REDACTED				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days			
Date Required:		Sampled By:											
Regulatory Criteria		Special Instructions		Analysis Requested						Rush Confirmation #:			
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		ROUTINE (incl. TDS) _____ MAJOR IONS _____ NUTRIENTS (INCLUDING NO3, NO2, TOTAL P) _____ Low Level Dissolved Metals with CV/Hg _____ Low Level Total Metals with CV/Hg _____ Phosphorus (LL Tot, dissolved)-FF/FP _____						LABORATORY USE ONLY CUSTODY SEAL Y (N) _____ COOLER TEMPERATURES _____ Present Intact COOLING MEDIA PRESENT Y/N _____			
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM													
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (INCLUDING NO3, NO2, TOTAL P)	Low Level Dissolved Metals with CV/Hg	Low Level Total Metals with CV/Hg	Phosphorus (LL Tot, dissolved)-FF/FP	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	COMMENTS
1	ART-3(1)	MW8217	8/11/2015	water	X	X	X	X	X	X	13		Dissolved metals and phosphorus were field filtered and preserved.
2	ART-3(2)	MW8218	8/11/2015	water	X	X	X	X	X	X	13		Total metals were field preserved.
3	BH95G-146	MW8219	8/11/2015	water	X	X	X	X	X	X	13		Project number on bottles incorrect. Please change to project number above
4													
5													
6													
7													
8													
9													
10													
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)		TIME: (HH:MM)		RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)		TIME: (HH:MM)		MAXXAM JOB #	
						Signature REI Name REDACTED		2015/08/14		18:00		B569978	



Your Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08412985

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/08/31**  
Report #: R2032763  
Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B572767**

**Received: 2015/08/24, 09:50**

Sample Matrix: Water  
# Samples Received: 1

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Acidity pH 4.5 & pH 8.3 (as CaCO <sub>3</sub> )	1	N/A	2015/08/24	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	1	2015/08/24	2015/08/24	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	1	N/A	2015/08/24	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	1	N/A	2015/08/24	BBY6SOP-00026	SM 22 2510 B m
Fluoride	1	N/A	2015/08/25	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> )	1	N/A	2015/08/27	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO <sub>3</sub> )	1	N/A	2015/08/27	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	1	N/A	2015/08/25	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	1	2015/08/26	2015/08/26	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	1	N/A	2015/08/27	BBY WI-00033	SM 22 1030E
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/08/27	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	1	N/A	2015/08/27	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2015/08/25	2015/08/27	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2015/08/27	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	1	2015/08/25	2015/08/25	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	1	N/A	2015/08/26	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	1	N/A	2015/08/25	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	1	N/A	2015/08/25	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	1	N/A	2015/08/26	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO <sub>3</sub> Preserve for Metals	1	N/A	2015/08/25	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	1	N/A	2015/08/25	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	1	N/A	2015/08/25	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	1	N/A	2015/08/24	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	1	N/A	2015/08/27	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	1	N/A	2015/08/26	BBY WI-00033	Calculation
Carbon (Total Organic) (1, 3)	1	N/A	2015/08/27	EENVSOP-00060	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/08/25	2015/08/25	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	1	N/A	2015/08/25	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	1	2015/08/26	2015/08/27	BBY6SOP-00034	SM 22 2540 D
Turbidity	1	N/A	2015/08/24	BBY6SOP-00027	SM 22 2130 B m

Your Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08412985

Name REDACTED  
TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/08/31**  
Report #: R2032763  
Version: 1 - Final

### **CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B572767**

**Received: 2015/08/24, 09:50**

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Maxxam Edmonton Environmental
- (2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.
- (3) TOC present in the sample should be considered as non-purgeable TOC.

#### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Name REDACTED, Burnaby Project Manager  
Email: Email REDACTED  
Phone REDACTED

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B572767  
Report Date: 2015/08/31

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		MY5547	MY5547		
Sampling Date		2015/08/19	2015/08/19		
COC Number		08412985	08412985		
	UNITS	BH95G-131	BH95G-131 Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>					
Acidity (pH 4.5)	mg/L	<0.50		0.50	8013216
Acidity (pH 8.3)	mg/L	16.7		0.50	8013216
<b>Calculated Parameters</b>					
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE
Ion Balance	N/A	1.0		0.010	8012861
Nitrate (N)	mg/L	0.0028		0.0020	8012662
<b>Misc. Inorganics</b>					
Fluoride (F)	mg/L	0.095		0.010	8014903
Alkalinity (Total as CaCO3)	mg/L	430		0.50	8014940
Total Organic Carbon (C)	mg/L	2.5	1.5	0.50	8017440
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8014940
Bicarbonate (HCO3)	mg/L	524		0.50	8014940
Carbonate (CO3)	mg/L	<0.50		0.50	8014940
Hydroxide (OH)	mg/L	<0.50		0.50	8014940
<b>Anions</b>					
Orthophosphate (P)	mg/L	0.0021 (1)		0.0010	8015233
Dissolved Sulphate (SO4)	mg/L	231		5.0	8015097
Dissolved Chloride (Cl)	mg/L	1.0		0.50	8015095
<b>Nutrients</b>					
Total Ammonia (N)	mg/L	0.032		0.0050	8016819
Dissolved Phosphorus (P)	mg/L	0.0113		0.0020	8015250
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.163		0.020	8012665
Nitrate plus Nitrite (N)	mg/L	0.0028 (1)		0.0020	8015182
Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8015185
Total Nitrogen (N)	mg/L	0.166		0.020	8016717
Total Phosphorus (P)	mg/L	0.162		0.0020	8015246
<b>Physical Properties</b>					
Conductivity	uS/cm	1160		1.0	8014942
pH	pH	7.77		N/A	8014943
<b>Physical Properties</b>					
Total Suspended Solids	mg/L	161 (2)		5.0	8015991
Total Dissolved Solids	mg/L	824	858	1.0	8016734
Turbidity	NTU	135 (1)		0.10	8013442
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					
(1) Sample arrived to laboratory past recommended hold time.					
(2) RDL raised due to high concentration of solids in the sample.					

Maxxam Job #: B572767  
Report Date: 2015/08/31

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MY5547	MY5547		
Sampling Date		2015/08/19	2015/08/19		
COC Number		08412985	08412985		
	UNITS	BH95G-131	BH95G-131 Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>					
Dissolved Hardness (CaCO3)	mg/L	683		0.50	8012659
<b>Elements</b>					
Dissolved Mercury (Hg)	mg/L	<0.000020		0.000020	8014676
<b>Dissolved Metals by ICPMS</b>					
Dissolved Aluminum (Al)	mg/L	0.00079	0.00081	0.00050	8016184
Dissolved Antimony (Sb)	mg/L	0.000909	0.000922	0.000020	8016184
Dissolved Arsenic (As)	mg/L	0.00169	0.00172	0.000020	8016184
Dissolved Barium (Ba)	mg/L	0.0199	0.0194	0.000020	8016184
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	0.000010	8016184
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	0.0000050	8016184
Dissolved Boron (B)	mg/L	<0.010	<0.010	0.010	8016184
Dissolved Cadmium (Cd)	mg/L	0.0000070	0.0000080	0.0000050	8016184
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00010	8016184
Dissolved Cobalt (Co)	mg/L	0.0000980	0.0000960	0.0000050	8016184
Dissolved Copper (Cu)	mg/L	0.000061	0.000065	0.000050	8016184
Dissolved Iron (Fe)	mg/L	0.832	0.823	0.0010	8016184
Dissolved Lead (Pb)	mg/L	0.00167	0.00168	0.0000050	8016184
Dissolved Lithium (Li)	mg/L	0.0141	0.0149	0.00050	8016184
Dissolved Manganese (Mn)	mg/L	0.193	0.196	0.000050	8016184
Dissolved Molybdenum (Mo)	mg/L	0.000083	0.000076	0.000050	8016184
Dissolved Nickel (Ni)	mg/L	0.000193	0.000204	0.000020	8016184
Dissolved Phosphorus (P)	mg/L	0.0146	0.0142	0.0020	8016184
Dissolved Selenium (Se)	mg/L	<0.000040	<0.000040	0.000040	8016184
Dissolved Silicon (Si)	mg/L	9.96	10.4	0.050	8016184
Dissolved Silver (Ag)	mg/L	0.0000090	0.0000120	0.0000050	8016184
Dissolved Strontium (Sr)	mg/L	0.767	0.777	0.000050	8016184
Dissolved Thallium (Tl)	mg/L	0.0000060	0.0000050	0.0000020	8016184
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	0.00020	8016184
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	0.00050	8016184
Dissolved Uranium (U)	mg/L	0.0205	0.0202	0.0000020	8016184
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	0.00020	8016184
Dissolved Zinc (Zn)	mg/L	0.00378	0.00380	0.00010	8016184
Dissolved Zirconium (Zr)	mg/L	0.00573	0.00624	0.00010	8016184
Dissolved Calcium (Ca)	mg/L	171		0.050	8012660
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B572767  
Report Date: 2015/08/31

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		MY5547	MY5547		
Sampling Date		2015/08/19	2015/08/19		
COC Number		08412985	08412985		
	UNITS	BH95G-131	BH95G-131 Lab-Dup	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	62.3		0.050	8012660
Dissolved Potassium (K)	mg/L	4.18		0.050	8012660
Dissolved Sodium (Na)	mg/L	1.54		0.050	8012660
Dissolved Sulphur (S)	mg/L	89.2		3.0	8012660
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B572767  
Report Date: 2015/08/31

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		MY5547		
Sampling Date		2015/08/19		
COC Number		08412985		
	UNITS	BH95G-131	RDL	QC Batch
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	693	0.50	8012658
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8016214
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	0.981	0.0030	8014497
Total Antimony (Sb)	mg/L	0.0529	0.000050	8014497
Total Arsenic (As)	mg/L	0.140	0.000020	8014497
Total Barium (Ba)	mg/L	0.0483	0.00010	8014497
Total Beryllium (Be)	mg/L	0.000114	0.000010	8014497
Total Bismuth (Bi)	mg/L	0.000140	0.000020	8014497
Total Boron (B)	mg/L	<0.050	0.050	8014497
Total Cadmium (Cd)	mg/L	0.000698	0.0000050	8014497
Total Chromium (Cr)	mg/L	0.00187	0.00050	8014497
Total Cobalt (Co)	mg/L	0.000754	0.000010	8014497
Total Copper (Cu)	mg/L	0.00632	0.00020	8014497
Total Iron (Fe)	mg/L	14.6	0.0050	8014497
Total Lead (Pb)	mg/L	0.519	0.000050	8014497
Total Lithium (Li)	mg/L	0.0151	0.00050	8014497
Total Manganese (Mn)	mg/L	0.246	0.00010	8014497
Total Molybdenum (Mo)	mg/L	0.000286	0.000050	8014497
Total Nickel (Ni)	mg/L	0.00175	0.00010	8014497
Total Phosphorus (P)	mg/L	0.115	0.010	8014497
Total Selenium (Se)	mg/L	0.000312	0.000040	8014497
Total Silicon (Si)	mg/L	12.4	0.10	8014497
Total Silver (Ag)	mg/L	0.000557	0.0000050	8014497
Total Strontium (Sr)	mg/L	0.791	0.000050	8014497
Total Thallium (Tl)	mg/L	0.0000720	0.0000020	8014497
Total Tin (Sn)	mg/L	0.00091	0.00020	8014497
Total Titanium (Ti)	mg/L	0.0552	0.0050	8014497
Total Uranium (U)	mg/L	0.0221	0.0000050	8014497
Total Vanadium (V)	mg/L	0.00319	0.00050	8014497
Total Zinc (Zn)	mg/L	0.132	0.0010	8014497
Total Zirconium (Zr)	mg/L	0.123	0.00010	8014497
Total Calcium (Ca)	mg/L	177	0.25	8012661
Total Magnesium (Mg)	mg/L	60.9	0.25	8012661
RDL = Reportable Detection Limit				

Maxxam Job #: B572767  
Report Date: 2015/08/31

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		MY5547		
<b>Sampling Date</b>		2015/08/19		
<b>COC Number</b>		08412985		
	<b>UNITS</b>	<b>BH95G-131</b>	<b>RDL</b>	<b>QC Batch</b>
Total Potassium (K)	mg/L	4.67	0.25	8012661
Total Sodium (Na)	mg/L	1.50	0.25	8012661
Total Sulphur (S)	mg/L	90	15	8012661
RDL = Reportable Detection Limit				



Maxxam Job #: B572767  
Report Date: 2015/08/31

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C
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**Results relate only to the items tested.**

Maxxam Job #: B572767  
Report Date: 2015/08/31

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8013216	Acidity (pH 4.5)	2015/08/24					<0.50	mg/L	NC	20
8013216	Acidity (pH 8.3)	2015/08/24			99	80 - 120	<0.50	mg/L	NC	20
8013442	Turbidity	2015/08/24			102	80 - 120	<0.10	NTU	NC	20
8014497	Total Aluminum (Al)	2015/08/27	NC	80 - 120	103	80 - 120	<0.0030	mg/L	6.0	20
8014497	Total Antimony (Sb)	2015/08/27	104	80 - 120	111	80 - 120	<0.000050	mg/L	NC	20
8014497	Total Arsenic (As)	2015/08/27	103	80 - 120	102	80 - 120	<0.000020	mg/L	3.6	20
8014497	Total Barium (Ba)	2015/08/27	NC	80 - 120	111	80 - 120	<0.00010	mg/L	7.7	20
8014497	Total Beryllium (Be)	2015/08/27	90	80 - 120	87	80 - 120	<0.000010	mg/L	NC	20
8014497	Total Bismuth (Bi)	2015/08/27	107	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8014497	Total Boron (B)	2015/08/27					<0.050	mg/L	NC	20
8014497	Total Cadmium (Cd)	2015/08/27	102	80 - 120	104	80 - 120	<0.0000050	mg/L	NC	20
8014497	Total Chromium (Cr)	2015/08/27	104	80 - 120	104	80 - 120	<0.00050	mg/L	NC	20
8014497	Total Cobalt (Co)	2015/08/27	103	80 - 120	104	80 - 120	<0.000010	mg/L	0.88	20
8014497	Total Copper (Cu)	2015/08/27	101	80 - 120	107	80 - 120	0.00033, RDL=0.00020	mg/L	2.2	20
8014497	Total Iron (Fe)	2015/08/27	NC	80 - 120	111	80 - 120	<0.0050	mg/L	2.7	20
8014497	Total Lead (Pb)	2015/08/27	108	80 - 120	106	80 - 120	<0.000050	mg/L	NC	20
8014497	Total Lithium (Li)	2015/08/27	108	80 - 120	104	80 - 120	<0.00050	mg/L	NC	20
8014497	Total Manganese (Mn)	2015/08/27	NC	80 - 120	106	80 - 120	<0.00010	mg/L	3.5	20
8014497	Total Molybdenum (Mo)	2015/08/27	NC	80 - 120	102	80 - 120	<0.000050	mg/L	3.0	20
8014497	Total Nickel (Ni)	2015/08/27	100	80 - 120	101	80 - 120	<0.00010	mg/L	1.4	20
8014497	Total Phosphorus (P)	2015/08/27					<0.010	mg/L		
8014497	Total Selenium (Se)	2015/08/27	91	80 - 120	93	80 - 120	<0.000040	mg/L	NC	20
8014497	Total Silicon (Si)	2015/08/27					<0.10	mg/L	3.7	20
8014497	Total Silver (Ag)	2015/08/27	109	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8014497	Total Strontium (Sr)	2015/08/27	NC	80 - 120	109	80 - 120	<0.000050	mg/L	2.0	20
8014497	Total Thallium (Tl)	2015/08/27	107	80 - 120	102	80 - 120	<0.0000020	mg/L	NC	20
8014497	Total Tin (Sn)	2015/08/27	102	80 - 120	103	80 - 120	<0.00020	mg/L	NC	20
8014497	Total Titanium (Ti)	2015/08/27	NC	80 - 120	110	80 - 120	<0.0050	mg/L	3.1	20
8014497	Total Uranium (U)	2015/08/27	107	80 - 120	104	80 - 120	<0.0000050	mg/L	2.1	20
8014497	Total Vanadium (V)	2015/08/27	105	80 - 120	106	80 - 120	<0.00050	mg/L	NC	20

Maxxam Job #: B572767  
Report Date: 2015/08/31

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8014497	Total Zinc (Zn)	2015/08/27	98	80 - 120	102	80 - 120	<0.0010	mg/L	NC	20
8014497	Total Zirconium (Zr)	2015/08/27					<0.00010	mg/L	NC	20
8014676	Dissolved Mercury (Hg)	2015/08/25	92	80 - 120	94	80 - 120	<0.0000020	mg/L	NC	20
8014903	Fluoride (F)	2015/08/25	104	80 - 120	102	80 - 120	<0.010	mg/L	4.1	20
8014940	Alkalinity (PP as CaCO3)	2015/08/24					<0.50	mg/L	NC	20
8014940	Alkalinity (Total as CaCO3)	2015/08/24	NC	80 - 120	93	80 - 120	0.56, RDL=0.50	mg/L	0.44	20
8014940	Bicarbonate (HCO3)	2015/08/24					0.68, RDL=0.50	mg/L	0.44	20
8014940	Carbonate (CO3)	2015/08/24					<0.50	mg/L	NC	20
8014940	Hydroxide (OH)	2015/08/24					<0.50	mg/L	NC	20
8014942	Conductivity	2015/08/24			100	80 - 120	1.2, RDL=1.0	uS/cm	1.3	20
8014943	pH	2015/08/25			102	97 - 103				
8015095	Dissolved Chloride (Cl)	2015/08/24	NC	80 - 120	96	80 - 120	<0.50	mg/L	0.36	20
8015097	Dissolved Sulphate (SO4)	2015/08/24	NC	80 - 120	91	80 - 120	<0.50	mg/L	NC	20
8015182	Nitrate plus Nitrite (N)	2015/08/25	102	80 - 120	106	80 - 120	<0.0020	mg/L	NC	25
8015185	Nitrite (N)	2015/08/25	96	80 - 120	100	80 - 120	<0.0020	mg/L	NC	25
8015233	Orthophosphate (P)	2015/08/25	101	80 - 120	98	80 - 120	<0.0010	mg/L	NC	20
8015246	Total Phosphorus (P)	2015/08/25	93	80 - 120	99	80 - 120	<0.0020	mg/L	NC	20
8015250	Dissolved Phosphorus (P)	2015/08/25	91	80 - 120	101	80 - 120	<0.0020	mg/L	NC	20
8015991	Total Suspended Solids	2015/08/26			100	80 - 120	<1.0	mg/L		
8016184	Dissolved Aluminum (Al)	2015/08/27	97	80 - 120	98	80 - 120	<0.00050	mg/L	NC	20
8016184	Dissolved Antimony (Sb)	2015/08/27	NC	80 - 120	105	80 - 120	<0.000020	mg/L	1.4	20
8016184	Dissolved Arsenic (As)	2015/08/27	103	80 - 120	101	80 - 120	<0.000020	mg/L	1.6	20
8016184	Dissolved Barium (Ba)	2015/08/27	NC	80 - 120	105	80 - 120	<0.000020	mg/L	2.3	20
8016184	Dissolved Beryllium (Be)	2015/08/27	90	80 - 120	91	80 - 120	<0.000010	mg/L	NC	20
8016184	Dissolved Bismuth (Bi)	2015/08/27	91	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8016184	Dissolved Boron (B)	2015/08/27					<0.010	mg/L	NC	20
8016184	Dissolved Cadmium (Cd)	2015/08/27	94	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8016184	Dissolved Chromium (Cr)	2015/08/27	96	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8016184	Dissolved Cobalt (Co)	2015/08/27	93	80 - 120	102	80 - 120	<0.0000050	mg/L	2.1	20
8016184	Dissolved Copper (Cu)	2015/08/27	91	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8016184	Dissolved Iron (Fe)	2015/08/27	NC	80 - 120	107	80 - 120	<0.0010	mg/L	1.0	20

Maxxam Job #: B572767  
Report Date: 2015/08/31

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8016184	Dissolved Lead (Pb)	2015/08/27	94	80 - 120	102	80 - 120	<0.0000050	mg/L	0.60	20
8016184	Dissolved Lithium (Li)	2015/08/27	NC	80 - 120	103	80 - 120	<0.00050	mg/L	5.1	20
8016184	Dissolved Manganese (Mn)	2015/08/27	NC	80 - 120	100	80 - 120	<0.000050	mg/L	1.4	20
8016184	Dissolved Molybdenum (Mo)	2015/08/27	102	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8016184	Dissolved Nickel (Ni)	2015/08/27	91	80 - 120	101	80 - 120	<0.000020	mg/L	5.5	20
8016184	Dissolved Phosphorus (P)	2015/08/27					<0.0020	mg/L	2.7	20
8016184	Dissolved Selenium (Se)	2015/08/27	97	80 - 120	95	80 - 120	<0.000040	mg/L	NC	20
8016184	Dissolved Silicon (Si)	2015/08/27					<0.050	mg/L	3.9	20
8016184	Dissolved Silver (Ag)	2015/08/27	97	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8016184	Dissolved Strontium (Sr)	2015/08/27	NC	80 - 120	102	80 - 120	<0.000050	mg/L	1.3	20
8016184	Dissolved Thallium (Tl)	2015/08/27	94	80 - 120	100	80 - 120	<0.0000020	mg/L	NC	20
8016184	Dissolved Tin (Sn)	2015/08/27	104	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8016184	Dissolved Titanium (Ti)	2015/08/27	95	80 - 120	100	80 - 120	<0.00050	mg/L	NC	20
8016184	Dissolved Uranium (U)	2015/08/27	NC	80 - 120	101	80 - 120	<0.0000020	mg/L	1.7	20
8016184	Dissolved Vanadium (V)	2015/08/27	100	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8016184	Dissolved Zinc (Zn)	2015/08/27	94	80 - 120	102	80 - 120	<0.00010	mg/L	0.48	20
8016184	Dissolved Zirconium (Zr)	2015/08/27					<0.00010	mg/L	8.6	20
8016214	Total Mercury (Hg)	2015/08/26	109	80 - 120	105	80 - 120	<0.0000020	mg/L	NC	20
8016717	Total Nitrogen (N)	2015/08/25			93	80 - 120	<0.020	mg/L		
8016734	Total Dissolved Solids	2015/08/27	NC	80 - 120	98	80 - 120	<1.0	mg/L	4.0	20
8016819	Total Ammonia (N)	2015/08/26	105	80 - 120	107	80 - 120	0.0076, RDL=0.0050	mg/L	NC	20
8017440	Total Organic Carbon (C)	2015/08/27	97	80 - 120	108	80 - 120	<0.50	mg/L	NC	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B572767  
Report Date: 2015/08/31

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

Signature REDACTED

\_\_\_\_\_

Name REDACTED Analyst

Signature REDACTED

\_\_\_\_\_

Name REDACTED Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Invoice Information		Report Information (if differs from invoice)				Project Informat.				Turnaround Time (TAT) Required			
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)			
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS			
Address: 530-1130 West Pender Street, Vancouver BC PC: V6E 4A4		Address: 61 Wasson Place Whitehorse, YT PC: V1A 0H7				Project #: ENVMINO3071-01				Rush TAT (Surcharges will be applied)			
Phone:		Phone: 867-668-6225				Site Location: Kudz Ze Kayah				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days			
Email: Email REDACTED		Email: Email REDACTED				Site #: *				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days			
Date Required:		Sampled By: Name REDACTED											
Regulatory Criteria		Special Instructions		Analysis Requested				Rush Confirmation #:					
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input checked="" type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) AW <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		ROUTINE (incl. TDS) MAJOR IONS NUTRIENTS (INCLUDING NO3, NO2, TOTAL P) Low Level Dissolved Metals with CV Hg Low Level Total Metals with CV Hg Phosphorus (L Tot, dissolved) P/P				LABORATORY USE ONLY CUSTODY SEAL Y (N) COOLER TEMPERATURES Present Intact NA 545 COOLING MEDIA PRESENT Y (N)					
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM													
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (INCLUDING NO3, NO2, TOTAL P)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus (L Tot, dissolved) P/P	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	COMMENTS
1	BH95G-131	MV6547	8/19/2015	water	x	x	x	x	x	x	13		Dissolved metals and phosphorus were field filtered and preserved.
2													Total metals were field preserved.
3													Project number on bottles incorrect.
4													Please change to project number
5													above
6													
7													
8													
9													
10													
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #					
Signature RED Name REDACTED		2015/08/21	11:30	Signature REDACTED Name REDACTED		2015/08/24	09:50	B572767					

Your Project #: ENVMINO3071-01

Site Location: KUDZ ZE KAYAH

Your C.O.C. #: 08411518

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/09/16**

Report #: R2042194

Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B577451**

**Received: 2015/09/04, 12:50**

Sample Matrix: Water

# Samples Received: 3

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	3	N/A	2015/09/08 BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	3	2015/09/08	2015/09/08 BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	3	N/A	2015/09/08 BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	3	N/A	2015/09/08 BBY6SOP-00026	SM 22 2510 B m
Fluoride	3	N/A	2015/09/08 BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	1	N/A	2015/09/11 BBY7SOP-00002	EPA 6020a R1 m
Hardness Total (calculated as CaCO3)	2	N/A	2015/09/15 BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	3	N/A	2015/09/11 BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	3	N/A	2015/09/10 BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	3	2015/09/10	2015/09/11 BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	3	N/A	2015/09/11 BBY WI-00033	SM 22 1030E
Sum of cations, anions	3	N/A	2015/09/15 Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	3	N/A	2015/09/11 BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	3	N/A	2015/09/11 BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2015/09/09	2015/09/10 BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2015/09/11 BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	2	N/A	2015/09/15 BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	2	N/A	2015/09/13 BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	3	2015/09/14	2015/09/14 BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	3	N/A	2015/09/09 BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	3	N/A	2015/09/12 BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	3	N/A	2015/09/12 BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	3	N/A	2015/09/12 BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	2	N/A	2015/09/11 BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	1	N/A	2015/09/12 BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	3	N/A	2015/09/08 BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	3	N/A	2015/09/05 BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	3	N/A	2015/09/08 BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	3	N/A	2015/09/08 BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	3	N/A	2015/09/11 BBY WI-00033	Calculation

Your Project #: ENVMINO3071-01

Site Location: KUDZ ZE KAYAH

Your C.O.C. #: 08411518

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/09/16**

Report #: R2042194

Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B577451**

**Received: 2015/09/04, 12:50**

Sample Matrix: Water

# Samples Received: 3

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Carbon (Total Organic) (1, 3)	3	N/A	2015/09/09	CAL SOP-00077	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	3	2015/09/08	2015/09/08	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	3	N/A	2015/09/12	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	3	2015/09/05	2015/09/08	BBY6SOP-00034	SM 22 2540 D
Turbidity	3	N/A	2015/09/09	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Calgary Environmental

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(3) TOC present in the sample should be considered as non-purgeable TOC.

### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED Burnaby Project Manager

Email: Email REDACTED

Phone REDACTED

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

### RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		NB5022		NB5023	NB5023			NB5024		
Sampling Date		2015/09/01 18:15		2015/09/01 15:50	2015/09/01 15:50			2015/09/01 15:50		
COC Number		08411518		08411518	08411518			08411518		
	UNITS	MW15-01	RDL	MW15-02	MW15-02 Lab-Dup	RDL	QC Batch	DUP02	RDL	QC Batch
<b>Misc. Inorganics</b>										
Acidity (pH 4.5)	mg/L	<0.50	0.50	<0.50		0.50	8030958	<0.50	0.50	8030958
Acidity (pH 8.3)	mg/L	<0.50	0.50	<0.50		0.50	8030958	<0.50	0.50	8030958
<b>Calculated Parameters</b>										
Anion Sum	meq/L	4.7	N/A	3.4		N/A	8037624	4.6	N/A	8037624
Cation Sum	meq/L	4.9	N/A	3.7		N/A	8037624	5.0	N/A	8037624
Filter and HNO3 Preservation	N/A	FIELD	N/A	FIELD		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	1.0	0.010	1.1		0.010	8028793	1.1	0.010	8028793
Nitrate (N)	mg/L	0.189	0.0020	0.399		0.0020	8034352	0.191	0.0020	8034352
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.094	0.010	0.089		0.010	8030911	0.093	0.010	8030911
Alkalinity (Total as CaCO3)	mg/L	179	0.50	130		0.50	8031291	174	0.50	8031287
Total Organic Carbon (C)	mg/L	0.54	0.50	1.5		0.50	8032141	<0.50	0.50	8032141
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	<0.50		0.50	8031291	<0.50	0.50	8031287
Bicarbonate (HCO3)	mg/L	218	0.50	159		0.50	8031291	213	0.50	8031287
Carbonate (CO3)	mg/L	<0.50	0.50	<0.50		0.50	8031291	<0.50	0.50	8031287
Hydroxide (OH)	mg/L	<0.50	0.50	<0.50		0.50	8031291	<0.50	0.50	8031287
<b>Anions</b>										
Orthophosphate (P)	mg/L	<0.0010 (1)	0.0010	0.0072 (1)		0.0010	8029516	<0.0010 (1)	0.0010	8029516
Dissolved Sulphate (SO4)	mg/L	52.1	0.50	37.4		0.50	8031198	50.6	0.50	8031198
Dissolved Chloride (Cl)	mg/L	0.80	0.50	0.68		0.50	8031192	0.80	0.50	8031192
<b>Nutrients</b>										
Total Ammonia (N)	mg/L	0.0073	0.0050	0.019		0.0050	8032573	<0.0050	0.0050	8032573
Dissolved Phosphorus (P)	mg/L	0.0029	0.0020	0.0048	0.0050	0.0020	8031191	0.0021	0.0020	8031191
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.078	0.020	0.173		0.020	8027896	0.113	0.020	8027896
Nitrate plus Nitrite (N)	mg/L	0.189 (1)	0.0020	0.399 (1)		0.0020	8035960	0.191 (1)	0.0020	8035960
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	<0.0020 (1)		0.0020	8035961	<0.0020 (1)	0.0020	8035961
Total Nitrogen (N)	mg/L	0.268	0.020	0.572		0.020	8037051	0.305	0.020	8037051
Total Phosphorus (P)	mg/L	0.0029	0.0020	0.612		0.020	8037263	0.0032	0.0020	8037263
<b>Physical Properties</b>										
Conductivity	uS/cm	432	1.0	323		1.0	8031293	428	1.0	8031290
pH	pH	8.16	N/A	7.94		N/A	8031292	8.00	N/A	8031289
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.										

Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NB5022		NB5023	NB5023			NB5024		
<b>Sampling Date</b>		2015/09/01 18:15		2015/09/01 15:50	2015/09/01 15:50			2015/09/01 15:50		
<b>COC Number</b>		08411518		08411518	08411518			08411518		
	<b>UNITS</b>	<b>MW15-01</b>	<b>RDL</b>	<b>MW15-02</b>	<b>MW15-02 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP02</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	<1.0	1.0	410 (1)		5.0	8027639	1.0	1.0	8027639
Total Dissolved Solids	mg/L	286	1.0	206		1.0	8028914	274	1.0	8028914
Turbidity	NTU	0.27 (2)	0.10	291 (2)		0.10	8028900	0.24 (2)	0.10	8028900

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) RDL raised due to high concentration of solids in the sample.  
 (2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB5022	NB5022	NB5023	NB5024		
Sampling Date		2015/09/01 18:15	2015/09/01 18:15	2015/09/01 15:50	2015/09/01 15:50		
COC Number		08411518	08411518	08411518	08411518		
	UNITS	MW15-01	MW15-01 Lab-Dup	MW15-02	DUP02	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	239		181	243	0.50	8027586
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	0.000020	8032268
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00636		0.00599	0.00308	0.00050	8031063
Dissolved Antimony (Sb)	mg/L	<0.000020		0.000030	0.000032	0.000020	8031063
Dissolved Arsenic (As)	mg/L	0.000880		0.000114	0.000877	0.000020	8031063
Dissolved Barium (Ba)	mg/L	0.0966		0.0159	0.0979	0.000020	8031063
Dissolved Beryllium (Be)	mg/L	<0.000010		<0.000010	<0.000010	0.000010	8031063
Dissolved Bismuth (Bi)	mg/L	<0.0000050		<0.0000050	<0.0000050	0.0000050	8031063
Dissolved Boron (B)	mg/L	<0.010		<0.010	<0.010	0.010	8031063
Dissolved Cadmium (Cd)	mg/L	<0.0000050		0.0000070	<0.0000050	0.0000050	8031063
Dissolved Chromium (Cr)	mg/L	<0.00010		<0.00010	<0.00010	0.00010	8031063
Dissolved Cobalt (Co)	mg/L	0.0000400		0.0000400	0.0000380	0.0000050	8031063
Dissolved Copper (Cu)	mg/L	0.000072		0.000613	0.000062	0.000050	8031063
Dissolved Iron (Fe)	mg/L	0.0122		0.0022	0.0074	0.0010	8031063
Dissolved Lead (Pb)	mg/L	0.0000250		<0.0000050	<0.0000050	0.0000050	8031063
Dissolved Lithium (Li)	mg/L	0.00175		0.00114	0.00175	0.00050	8031063
Dissolved Manganese (Mn)	mg/L	0.00190		0.00285	0.00183	0.000050	8031063
Dissolved Molybdenum (Mo)	mg/L	0.000830		0.000951	0.000888	0.000050	8031063
Dissolved Nickel (Ni)	mg/L	0.000167		0.000346	0.000154	0.000020	8031063
Dissolved Phosphorus (P)	mg/L	0.0046		0.0042	0.0029	0.0020	8031063
Dissolved Selenium (Se)	mg/L	0.00150		0.000371	0.00161	0.000040	8031063
Dissolved Silicon (Si)	mg/L	2.48		1.96	2.53	0.050	8031063
Dissolved Silver (Ag)	mg/L	<0.0000050		<0.0000050	<0.0000050	0.0000050	8031063
Dissolved Strontium (Sr)	mg/L	0.297		0.157	0.297	0.000050	8031063
Dissolved Thallium (Tl)	mg/L	<0.0000020		0.0000020	<0.0000020	0.0000020	8031063
Dissolved Tin (Sn)	mg/L	<0.00020		<0.00020	<0.00020	0.00020	8031063
Dissolved Titanium (Ti)	mg/L	<0.00050		<0.00050	<0.00050	0.00050	8031063
Dissolved Uranium (U)	mg/L	0.00302		0.00176	0.00299	0.0000020	8031063
Dissolved Vanadium (V)	mg/L	<0.00020		<0.00020	<0.00020	0.00020	8031063
Dissolved Zinc (Zn)	mg/L	0.00031		0.00071	0.00025	0.00010	8031063
Dissolved Zirconium (Zr)	mg/L	<0.00010		<0.00010	<0.00010	0.00010	8031063
Dissolved Calcium (Ca)	mg/L	77.5		61.7	79.0	0.050	8028319
RDL = Reportable Detection Limit							
Lab-Dup = Laboratory Initiated Duplicate							

Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB5022	NB5022	NB5023	NB5024		
Sampling Date		2015/09/01 18:15	2015/09/01 18:15	2015/09/01 15:50	2015/09/01 15:50		
COC Number		08411518	08411518	08411518	08411518		
	UNITS	MW15-01	MW15-01 Lab-Dup	MW15-02	DUP02	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	10.9		6.49	11.1	0.050	8028319
Dissolved Potassium (K)	mg/L	2.43		0.519	2.41	0.050	8028319
Dissolved Sodium (Na)	mg/L	0.715		0.843	0.740	0.050	8028319
Dissolved Sulphur (S)	mg/L	18.8		13.8	17.6	3.0	8028319
RDL = Reportable Detection Limit							
Lab-Dup = Laboratory Initiated Duplicate							

Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NB5022	NB5024		
Sampling Date		2015/09/01 18:15	2015/09/01 15:50		
COC Number		08411518	08411518		
	UNITS	MW15-01	DUP02	RDL	QC Batch
<b>Calculated Parameters</b>					
Total Hardness (CaCO3)	mg/L	233	233	0.50	8027461
<b>Elements</b>					
Total Mercury (Hg)	mg/L	<0.000020	<0.000020	0.000020	8033755
<b>Total Metals by ICPMS</b>					
Total Aluminum (Al)	mg/L	0.0153	0.0180	0.00050	8031123
Total Antimony (Sb)	mg/L	0.000023	<0.000020	0.000020	8031123
Total Arsenic (As)	mg/L	0.00105	0.000961	0.000020	8031123
Total Barium (Ba)	mg/L	0.0980	0.0990	0.000020	8031123
Total Beryllium (Be)	mg/L	<0.000010	<0.000010	0.000010	8031123
Total Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	0.0000050	8031123
Total Boron (B)	mg/L	<0.010	<0.010	0.010	8031123
Total Cadmium (Cd)	mg/L	<0.0000050	<0.0000050	0.0000050	8031123
Total Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00010	8031123
Total Cobalt (Co)	mg/L	0.0000540	0.0000710	0.0000050	8031123
Total Copper (Cu)	mg/L	0.000119	0.000152	0.000050	8031123
Total Iron (Fe)	mg/L	0.0381	0.0440	0.0010	8031123
Total Lead (Pb)	mg/L	0.0000120	0.0000160	0.0000050	8031123
Total Lithium (Li)	mg/L	0.00187	0.00186	0.00050	8031123
Total Manganese (Mn)	mg/L	0.00238	0.00246	0.000050	8031123
Total Molybdenum (Mo)	mg/L	0.000860	0.000850	0.000050	8031123
Total Nickel (Ni)	mg/L	0.000208	0.000225	0.000020	8031123
Total Phosphorus (P)	mg/L	0.0043	0.0047	0.0020	8031123
Total Selenium (Se)	mg/L	0.00173	0.00144	0.000040	8031123
Total Silicon (Si)	mg/L	2.12	2.06	0.050	8031123
Total Silver (Ag)	mg/L	<0.0000050	<0.0000050	0.0000050	8031123
Total Strontium (Sr)	mg/L	0.283	0.286	0.000050	8031123
Total Thallium (Tl)	mg/L	<0.0000020	<0.0000020	0.0000020	8031123
Total Tin (Sn)	mg/L	<0.00020	<0.00020	0.00020	8031123
Total Titanium (Ti)	mg/L	<0.00050	<0.00050	0.00050	8031123
Total Uranium (U)	mg/L	0.00303	0.00302	0.0000020	8031123
Total Vanadium (V)	mg/L	<0.00020	<0.00020	0.00020	8031123
Total Zinc (Zn)	mg/L	0.00036	0.00038	0.00010	8031123
Total Zirconium (Zr)	mg/L	0.00010	0.00012	0.00010	8031123
Total Calcium (Ca)	mg/L	74.9	74.6	0.050	8028118
Total Magnesium (Mg)	mg/L	11.2	11.3	0.050	8028118
RDL = Reportable Detection Limit					

Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NB5022	NB5024		
Sampling Date		2015/09/01 18:15	2015/09/01 15:50		
COC Number		08411518	08411518		
	UNITS	MW15-01	DUP02	RDL	QC Batch
Total Potassium (K)	mg/L	2.49	2.56	0.050	8028118
Total Sodium (Na)	mg/L	0.760	0.802	0.050	8028118
Total Sulphur (S)	mg/L	18.4	16.4	3.0	8028118
RDL = Reportable Detection Limit					

Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		NB5023		
<b>Sampling Date</b>		2015/09/01 15:50		
<b>COC Number</b>		08411518		
	<b>UNITS</b>	<b>MW15-02</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	232	0.50	8027461
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8033755
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	6.57	0.0030	8032303
Total Antimony (Sb)	mg/L	0.000276	0.000050	8032303
Total Arsenic (As)	mg/L	0.00371	0.000020	8032303
Total Barium (Ba)	mg/L	0.0991	0.00010	8032303
Total Beryllium (Be)	mg/L	0.000177	0.000010	8032303
Total Bismuth (Bi)	mg/L	0.000071	0.000020	8032303
Total Boron (B)	mg/L	<0.050	0.050	8032303
Total Cadmium (Cd)	mg/L	0.000355	0.0000050	8032303
Total Chromium (Cr)	mg/L	0.0104	0.00050	8032303
Total Cobalt (Co)	mg/L	0.00538	0.000010	8032303
Total Copper (Cu)	mg/L	0.0256	0.00020	8032303
Total Iron (Fe)	mg/L	17.2	0.0050	8032303
Total Lead (Pb)	mg/L	0.00620	0.000050	8032303
Total Lithium (Li)	mg/L	0.00451	0.00050	8032303
Total Manganese (Mn)	mg/L	0.310	0.00010	8032303
Total Molybdenum (Mo)	mg/L	0.00323	0.000050	8032303
Total Nickel (Ni)	mg/L	0.0124	0.00010	8032303
Total Phosphorus (P)	mg/L	0.614	0.010	8032303
Total Selenium (Se)	mg/L	0.00108	0.000040	8032303
Total Silicon (Si)	mg/L	10.8	0.10	8032303
Total Silver (Ag)	mg/L	0.00413	0.0000050	8032303
Total Strontium (Sr)	mg/L	0.215	0.000050	8032303
Total Thallium (Tl)	mg/L	0.0000720	0.0000020	8032303
Total Tin (Sn)	mg/L	0.00075	0.00020	8032303
Total Titanium (Ti)	mg/L	0.386	0.0050	8032303
Total Uranium (U)	mg/L	0.00238	0.0000050	8032303
Total Vanadium (V)	mg/L	0.0276	0.00050	8032303
Total Zinc (Zn)	mg/L	0.0752	0.0010	8032303
Total Zirconium (Zr)	mg/L	0.00328	0.00010	8032303
Total Calcium (Ca)	mg/L	76.5	0.25	8028118
Total Magnesium (Mg)	mg/L	9.88	0.25	8028118
RDL = Reportable Detection Limit				

Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		NB5023		
<b>Sampling Date</b>		2015/09/01 15:50		
<b>COC Number</b>		08411518		
	<b>UNITS</b>	<b>MW15-02</b>	<b>RDL</b>	<b>QC Batch</b>
Total Potassium (K)	mg/L	1.71	0.25	8028118
Total Sodium (Na)	mg/L	1.05	0.25	8028118
Total Sulphur (S)	mg/L	15	15	8028118
RDL = Reportable Detection Limit				



Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	9.3°C
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Sample NB5023-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

**Results relate only to the items tested.**

Maxxam Job #: B577451  
Report Date: 2015/09/16

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8027639	Total Suspended Solids	2015/09/08			103	80 - 120	<1.0	mg/L		
8028900	Turbidity	2015/09/09			102	80 - 120	<0.10	NTU	0.84	20
8028914	Total Dissolved Solids	2015/09/08	100	80 - 120	102	80 - 120	<1.0	mg/L	2.6	20
8029516	Orthophosphate (P)	2015/09/05	106	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20
8030911	Fluoride (F)	2015/09/08	110	80 - 120	106	80 - 120	0.013, RDL=0.010	mg/L	NC	20
8030958	Acidity (pH 4.5)	2015/09/08					<0.50	mg/L	1.6	20
8030958	Acidity (pH 8.3)	2015/09/08			99	80 - 120	<0.50	mg/L	2.0	20
8031063	Dissolved Aluminum (Al)	2015/09/11	106	80 - 120	107	80 - 120	<0.00050	mg/L	NC	20
8031063	Dissolved Antimony (Sb)	2015/09/11	105	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8031063	Dissolved Arsenic (As)	2015/09/11	102	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8031063	Dissolved Barium (Ba)	2015/09/11	101	80 - 120	99	80 - 120	<0.000020	mg/L	3.8	20
8031063	Dissolved Beryllium (Be)	2015/09/11	101	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
8031063	Dissolved Bismuth (Bi)	2015/09/11	103	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8031063	Dissolved Boron (B)	2015/09/11					<0.010	mg/L	NC	20
8031063	Dissolved Cadmium (Cd)	2015/09/11	101	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8031063	Dissolved Chromium (Cr)	2015/09/11	98	80 - 120	95	80 - 120	<0.00010	mg/L	NC	20
8031063	Dissolved Cobalt (Co)	2015/09/11	97	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8031063	Dissolved Copper (Cu)	2015/09/11	NC	80 - 120	96	80 - 120	<0.000050	mg/L	2.3	20
8031063	Dissolved Iron (Fe)	2015/09/11	107	80 - 120	105	80 - 120	<0.0010	mg/L	NC	20
8031063	Dissolved Lead (Pb)	2015/09/11	102	80 - 120	99	80 - 120	<0.0000050	mg/L	1.1	20
8031063	Dissolved Lithium (Li)	2015/09/11	97	80 - 120	94	80 - 120	<0.00050	mg/L	NC	20
8031063	Dissolved Manganese (Mn)	2015/09/11	101	80 - 120	98	80 - 120	<0.000050	mg/L	0.63	20
8031063	Dissolved Molybdenum (Mo)	2015/09/11	105	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8031063	Dissolved Nickel (Ni)	2015/09/11	98	80 - 120	94	80 - 120	<0.000020	mg/L	NC	20
8031063	Dissolved Phosphorus (P)	2015/09/11					<0.0020	mg/L		
8031063	Dissolved Selenium (Se)	2015/09/11	99	80 - 120	92	80 - 120	<0.000040	mg/L	NC	20
8031063	Dissolved Silicon (Si)	2015/09/11					<0.050	mg/L	NC	20
8031063	Dissolved Silver (Ag)	2015/09/11	104	80 - 120	95	80 - 120	0.0000080, RDL=0.0000050	mg/L	NC	20
8031063	Dissolved Strontium (Sr)	2015/09/11	NC	80 - 120	99	80 - 120	<0.000050	mg/L	3.5	20
8031063	Dissolved Thallium (Tl)	2015/09/11	101	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20

Maxxam Job #: B577451  
Report Date: 2015/09/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8031063	Dissolved Tin (Sn)	2015/09/11	101	80 - 120	99	80 - 120	<0.00020	mg/L	NC	20
8031063	Dissolved Titanium (Ti)	2015/09/11	102	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8031063	Dissolved Uranium (U)	2015/09/11	98	80 - 120	96	80 - 120	<0.0000020	mg/L	NC	20
8031063	Dissolved Vanadium (V)	2015/09/11	99	80 - 120	94	80 - 120	<0.00020	mg/L	NC	20
8031063	Dissolved Zinc (Zn)	2015/09/11	NC	80 - 120	97	80 - 120	<0.00010	mg/L	1.3	20
8031063	Dissolved Zirconium (Zr)	2015/09/11					<0.00010	mg/L	NC	20
8031123	Total Aluminum (Al)	2015/09/13	106	80 - 120	112	80 - 120	<0.00050	mg/L	NC	20
8031123	Total Antimony (Sb)	2015/09/13	98	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8031123	Total Arsenic (As)	2015/09/13	105	80 - 120	108	80 - 120	<0.000020	mg/L	NC	20
8031123	Total Barium (Ba)	2015/09/13	101	80 - 120	106	80 - 120	<0.000020	mg/L	NC	20
8031123	Total Beryllium (Be)	2015/09/13	106	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8031123	Total Bismuth (Bi)	2015/09/13	99	80 - 120	106	80 - 120	<0.0000050	mg/L		
8031123	Total Boron (B)	2015/09/13					<0.010	mg/L		
8031123	Total Cadmium (Cd)	2015/09/13	101	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8031123	Total Chromium (Cr)	2015/09/13	103	80 - 120	108	80 - 120	<0.00010	mg/L	NC	20
8031123	Total Cobalt (Co)	2015/09/13	102	80 - 120	106	80 - 120	<0.0000050	mg/L		
8031123	Total Copper (Cu)	2015/09/13	105	80 - 120	97	80 - 120	<0.000050	mg/L	NC	20
8031123	Total Iron (Fe)	2015/09/13	123 (1)	80 - 120	99	80 - 120	<0.0010	mg/L	NC	20
8031123	Total Lead (Pb)	2015/09/13	101	80 - 120	107	80 - 120	<0.0000050	mg/L	NC	20
8031123	Total Lithium (Li)	2015/09/13	103	80 - 120	106	80 - 120	<0.00050	mg/L		
8031123	Total Manganese (Mn)	2015/09/13	102	80 - 120	109	80 - 120	<0.000050	mg/L		
8031123	Total Molybdenum (Mo)	2015/09/13	99	80 - 120	105	80 - 120	<0.000050	mg/L		
8031123	Total Nickel (Ni)	2015/09/13	103	80 - 120	109	80 - 120	<0.000020	mg/L		
8031123	Total Phosphorus (P)	2015/09/13					<0.0020	mg/L		
8031123	Total Selenium (Se)	2015/09/13	104	80 - 120	105	80 - 120	<0.000040	mg/L	NC	20
8031123	Total Silicon (Si)	2015/09/13					<0.050	mg/L		
8031123	Total Silver (Ag)	2015/09/13	99	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8031123	Total Strontium (Sr)	2015/09/13	97	80 - 120	102	80 - 120	<0.000050	mg/L		
8031123	Total Thallium (Tl)	2015/09/13	100	80 - 120	107	80 - 120	<0.0000020	mg/L	NC	20
8031123	Total Tin (Sn)	2015/09/13	98	80 - 120	108	80 - 120	<0.00020	mg/L		
8031123	Total Titanium (Ti)	2015/09/13	96	80 - 120	102	80 - 120	<0.00050	mg/L		

Maxxam Job #: B577451  
Report Date: 2015/09/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8031123	Total Uranium (U)	2015/09/13	96	80 - 120	103	80 - 120	<0.0000020	mg/L		
8031123	Total Vanadium (V)	2015/09/13	100	80 - 120	109	80 - 120	<0.00020	mg/L		
8031123	Total Zinc (Zn)	2015/09/13	109	80 - 120	109	80 - 120	<0.00010	mg/L	NC	20
8031123	Total Zirconium (Zr)	2015/09/13					<0.00010	mg/L		
8031191	Dissolved Phosphorus (P)	2015/09/08	90	80 - 120	98	80 - 120	<0.0020	mg/L	NC	20
8031192	Dissolved Chloride (Cl)	2015/09/08	NC	80 - 120	94	80 - 120	<0.50	mg/L	1.5	20
8031198	Dissolved Sulphate (SO4)	2015/09/08	101	80 - 120	91	80 - 120	<0.50	mg/L	NC	20
8031287	Alkalinity (PP as CaCO3)	2015/09/08					<0.50	mg/L	NC	20
8031287	Alkalinity (Total as CaCO3)	2015/09/08	NC	80 - 120	93	80 - 120	<0.50	mg/L	1.5	20
8031287	Bicarbonate (HCO3)	2015/09/08					<0.50	mg/L	1.5	20
8031287	Carbonate (CO3)	2015/09/08					<0.50	mg/L	NC	20
8031287	Hydroxide (OH)	2015/09/08					<0.50	mg/L	NC	20
8031289	pH	2015/09/08			101	97 - 103			1.4	N/A
8031290	Conductivity	2015/09/08			99	80 - 120	1.3, RDL=1.0	uS/cm	7.9	20
8031291	Alkalinity (PP as CaCO3)	2015/09/09					<0.50	mg/L	NC	20
8031291	Alkalinity (Total as CaCO3)	2015/09/09	NC	80 - 120	93	80 - 120	<0.50	mg/L	0.98	20
8031291	Bicarbonate (HCO3)	2015/09/09					<0.50	mg/L	0.98	20
8031291	Carbonate (CO3)	2015/09/09					<0.50	mg/L	NC	20
8031291	Hydroxide (OH)	2015/09/09					<0.50	mg/L	NC	20
8031292	pH	2015/09/09			102	97 - 103			0.75	N/A
8031293	Conductivity	2015/09/09			98	80 - 120	1.7, RDL=1.0	uS/cm	0.15	20
8032141	Total Organic Carbon (C)	2015/09/09	NC	80 - 120	109	80 - 120	<0.50	mg/L	0.92	20
8032268	Dissolved Mercury (Hg)	2015/09/10	96	80 - 120	90	80 - 120	<0.0000020	mg/L	NC	20
8032303	Total Aluminum (Al)	2015/09/10	NC	80 - 120	131 (2)	80 - 120	<0.0030	mg/L	6.2	20
8032303	Total Antimony (Sb)	2015/09/10	104	80 - 120	102	80 - 120	<0.000050	mg/L	NC	20
8032303	Total Arsenic (As)	2015/09/10	102	80 - 120	102	80 - 120	<0.000020	mg/L	2.8	20
8032303	Total Barium (Ba)	2015/09/10	NC	80 - 120	107	80 - 120	<0.00010	mg/L	0.67	20
8032303	Total Beryllium (Be)	2015/09/10	111	80 - 120	107	80 - 120	<0.000010	mg/L	NC	20
8032303	Total Bismuth (Bi)	2015/09/10	102	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8032303	Total Boron (B)	2015/09/10					<0.050	mg/L	NC	20
8032303	Total Cadmium (Cd)	2015/09/10	97	80 - 120	96	80 - 120	<0.0000050	mg/L	NC	20

Maxxam Job #: B577451  
Report Date: 2015/09/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8032303	Total Chromium (Cr)	2015/09/10	98	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8032303	Total Cobalt (Co)	2015/09/10	96	80 - 120	98	80 - 120	<0.000010	mg/L	3.7	20
8032303	Total Copper (Cu)	2015/09/10	91	80 - 120	96	80 - 120	0.00035, RDL=0.00020	mg/L		
8032303	Total Iron (Fe)	2015/09/10	NC	80 - 120	112	80 - 120	<0.0050	mg/L	2.4	20
8032303	Total Lead (Pb)	2015/09/10	98	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8032303	Total Lithium (Li)	2015/09/10	NC	80 - 120	113	80 - 120	<0.00050	mg/L	2.4	20
8032303	Total Manganese (Mn)	2015/09/10	NC	80 - 120	100	80 - 120	<0.00010	mg/L	2.6	20
8032303	Total Molybdenum (Mo)	2015/09/10	NC	80 - 120	101	80 - 120	<0.000050	mg/L	0.27	20
8032303	Total Nickel (Ni)	2015/09/10	93	80 - 120	97	80 - 120	<0.00010	mg/L	0.78	20
8032303	Total Phosphorus (P)	2015/09/10					<0.010	mg/L		
8032303	Total Selenium (Se)	2015/09/10	96	80 - 120	92	80 - 120	<0.000040	mg/L	NC	20
8032303	Total Silicon (Si)	2015/09/10					<0.10	mg/L	1.4	20
8032303	Total Silver (Ag)	2015/09/10	98	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8032303	Total Strontium (Sr)	2015/09/10	NC	80 - 120	104	80 - 120	<0.000050	mg/L	0.26	20
8032303	Total Thallium (Tl)	2015/09/10	102	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8032303	Total Tin (Sn)	2015/09/10	102	80 - 120	105	80 - 120	<0.00020	mg/L	NC	20
8032303	Total Titanium (Ti)	2015/09/10	112	80 - 120	90	80 - 120	<0.0050	mg/L	NC	20
8032303	Total Uranium (U)	2015/09/10	101	80 - 120	95	80 - 120	<0.0000050	mg/L	2.6	20
8032303	Total Vanadium (V)	2015/09/10	98	80 - 120	98	80 - 120	<0.00050	mg/L	NC	20
8032303	Total Zinc (Zn)	2015/09/10	NC	80 - 120	96	80 - 120	<0.0010	mg/L	8.5	20
8032303	Total Zirconium (Zr)	2015/09/10					<0.00010	mg/L	1.4	20
8032573	Total Ammonia (N)	2015/09/09	103	80 - 120	90	80 - 120	<0.0050	mg/L	NC	20
8033755	Total Mercury (Hg)	2015/09/11	88	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
8035960	Nitrate plus Nitrite (N)	2015/09/12			99	80 - 120	<0.0020	mg/L		
8035961	Nitrite (N)	2015/09/12			94	80 - 120	<0.0020	mg/L		
8037051	Total Nitrogen (N)	2015/09/14			93	80 - 120	<0.020	mg/L		

Maxxam Job #: B577451  
Report Date: 2015/09/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8037263	Total Phosphorus (P)	2015/09/12			97	80 - 120	<0.0020	mg/L		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

(2) Blank Spike for (Aluminum) outside acceptance criteria (10% of analytes failure allowed).


Maxxam Job #: B577451  
Report Date: 2015/09/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH


### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).


Signature REDACTED

  
Name REDACTED Validation Coordinator

Signature REDACTED

  
Name REDACTED Scientific Specialist

Signature REDACTED

  
Name REDACTED c., B.Ed., P.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



**CHAIN OF CUSTODY RECORD**

Burnaby: 4606 Canada Way, Burnaby, BC V5G 1K5. Toll Free (800) 665-8566

COC #:



08411518

BBY FCD-00077/05

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Lead Time (TAT) Required				
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)				
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS				
Address: 530-1130 West Pender Street, Vancouver BC V6E 4A4		Address: 61 Wasson Place Whitehorse, YT PC: V1A 0H7				Project #: ENVMIN03071-01				Rush TAT (Surcharges will be applied)				
Phone: Email REDACTED		Phone: 867-668-6225				Site Location: Kudz Ze Kayah				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days				
Email: Email REDACTED		Email: Email REDACTED				Site #: Name REDACTED				Date Required:				
Sampled By:														
Regulatory Criteria		Special Instructions		Analysis Requested						Rush Confirmation #:				
<input type="checkbox"/> BC Landfill <input type="checkbox"/> BC CW Water <input checked="" type="checkbox"/> CCME (Specify) AL <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		Analysis Requested: [Grid of checkboxes for various analytes including NO3, NO2, TOTAL P, etc.]						LABORATORY USE ONLY CUSTODY SEAL: Y / N COOLER TEMPERATURES: 9, 10, 9 COOLING MEDIA PRESENT: Y / N				
Sample ID	Location	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	NO3 (ppm)	NO2 (ppm)	TOTAL P (ppm)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus (ppm Tot, dissolved) FF/PP	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	COMMENTS
1	MW15-01	NBS022	15/09/01	18:15	water	x	x	x	x	x	x	13		Dissolved metals and phosphorus were field filtered and preserved.
2	MW15-02	NBS023	15/09/01	15:50	water	x	x	x	x	x	x	13		Total metals were field preserved.
3	Dup02	NBS024	15/09/01	15:50	water	x	x	x	x	x	x	13		Project number on bottles incorrect.
4														Please change to project number
5														above
6														
7														
8														
9														
10														



B577451



Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08411530

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/09/14**  
 Report #: R2040652  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B577626**

**Received: 2015/09/05, 12:36**

Sample Matrix: Water  
 # Samples Received: 2

Analyses	Quantity	Date Extracted	Date Analyzed	Laboratory Method	Analytical Method
Acidity pH 4.5 & pH 8.3 (as CaCO3)	2	N/A	2015/09/08	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	2	2015/09/08	2015/09/09	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	2	N/A	2015/09/08	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	2	N/A	2015/09/09	BBY6SOP-00026	SM 22 2510 B m
Fluoride	2	N/A	2015/09/08	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	2	N/A	2015/09/11	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	2	N/A	2015/09/11	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	2	N/A	2015/09/11	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	2	2015/09/11	2015/09/11	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	1	N/A	2015/09/11	BBY WI-00033	SM 22 1030E
Ion Balance	1	N/A	2015/09/14	BBY WI-00033	SM 22 1030E
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	2	N/A	2015/09/11	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	2	N/A	2015/09/11	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	2	N/A	2015/09/11	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	2	N/A	2015/09/11	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	2	2015/09/10	2015/09/10	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	2	N/A	2015/09/09	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	2	N/A	2015/09/05	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	2	N/A	2015/09/05	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	2	N/A	2015/09/05	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	2	N/A	2015/09/11	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	2	N/A	2015/09/09	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	1	N/A	2015/09/05	BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2015/09/14	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	2	N/A	2015/09/08	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	2	N/A	2015/09/10	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	2	N/A	2015/09/11	BBY WI-00033	Calculation
Carbon (Total Organic) (1, 3)	2	N/A	2015/09/10	CAL SOP-00077	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/09/08	2015/09/08	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/09/14	2015/09/14	BBY6SOP-00013	SM 22 4500-P E m

Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08411530

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/09/14**  
 Report #: R2040652  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B577626**

**Received: 2015/09/05, 12:36**

Sample Matrix: Water  
 # Samples Received: 2

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Phosphorus	2	N/A	2015/09/08	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	2	2015/09/08	2015/09/09	BBY6SOP-00034	SM 22 2540 D
Turbidity	2	N/A	2015/09/09	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Maxxam Calgary Environmental
- (2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.
- (3) TOC present in the sample should be considered as non-purgeable TOC.

#### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED Burnaby Project Manager

Email: Email REDACTED

phone REDACTED

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B577626  
Report Date: 2015/09/14

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NB6862	NB6862		NB6863		
Sampling Date		2015/09/02 19:00	2015/09/02 19:00		2015/09/03 17:45		
COC Number		08411530	08411530		08411530		
	UNITS	MW15-08S	MW15-08S Lab-Dup	QC Batch	MW15D-08D	RDL	QC Batch
<b>Misc. Inorganics</b>							
Acidity (pH 4.5)	mg/L	<0.50		8030958	<0.50	0.50	8030958
Acidity (pH 8.3)	mg/L	<0.50		8030958	5.63	0.50	8030958
<b>Calculated Parameters</b>							
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	1.1		8029265	1.1	0.010	8029265
Nitrate (N)	mg/L	0.215		8028978	<0.0020	0.0020	8028978
<b>Misc. Inorganics</b>							
Fluoride (F)	mg/L	0.093		8030911	0.610	0.010	8030911
Alkalinity (Total as CaCO3)	mg/L	175		8031298	250	0.50	8031298
Total Organic Carbon (C)	mg/L	0.76		8033276	0.53	0.50	8033276
Alkalinity (PP as CaCO3)	mg/L	<0.50		8031298	<0.50	0.50	8031298
Bicarbonate (HCO3)	mg/L	213		8031298	305	0.50	8031298
Carbonate (CO3)	mg/L	<0.50		8031298	<0.50	0.50	8031298
Hydroxide (OH)	mg/L	<0.50		8031298	<0.50	0.50	8031298
<b>Anions</b>							
Orthophosphate (P)	mg/L	<0.0010		8029516	0.0045 (1)	0.0010	8037447
Dissolved Sulphate (SO4)	mg/L	23.9		8031202	43.9	0.50	8031202
Dissolved Chloride (Cl)	mg/L	0.87		8031201	1.3	0.50	8031201
<b>Nutrients</b>							
Total Ammonia (N)	mg/L	0.011		8032575	0.13	0.0050	8032575
Dissolved Phosphorus (P)	mg/L	<0.0020		8031191	0.0796	0.0020	8037451
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.058		8029413	0.161	0.020	8029413
Nitrate plus Nitrite (N)	mg/L	0.215		8029507	<0.0020	0.0020	8029507
Nitrite (N)	mg/L	<0.0020		8029508	<0.0020	0.0020	8029508
Total Nitrogen (N)	mg/L	0.273		8033606	0.161	0.020	8033606
Total Phosphorus (P)	mg/L	0.0026		8031189	0.0795	0.0020	8031189
<b>Physical Properties</b>							
Conductivity	uS/cm	372		8031301	540	1.0	8031301
pH	pH	8.26		8031300	7.96	N/A	8031300
<b>Physical Properties</b>							
Total Suspended Solids	mg/L	<1.0		8030500	43.4	1.0	8030500
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample was originally analysed within hold time. Data quality required investigation. Re-analysis was completed past recommended hold time.							

Maxxam Job #: B577626  
Report Date: 2015/09/14

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NB6862	NB6862		NB6863		
Sampling Date		2015/09/02 19:00	2015/09/02 19:00		2015/09/03 17:45		
COC Number		08411530	08411530		08411530		
	UNITS	MW15-08S	MW15-08S Lab-Dup	QC Batch	MW15D-08D	RDL	QC Batch
Total Dissolved Solids	mg/L	228	262	8031669	342	1.0	8031669
Turbidity	NTU	<0.10		8028900	52.6	0.10	8028900
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate							

Maxxam Job #: B577626  
Report Date: 2015/09/14

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB6862	NB6862	NB6863		
Sampling Date		2015/09/02 19:00	2015/09/02 19:00	2015/09/03 17:45		
COC Number		08411530	08411530	08411530		
	UNITS	MW15-08S	MW15-08S Lab-Dup	MW15D-08D	RDL	QC Batch
<b>Misc. Inorganics</b>						
Dissolved Hardness (CaCO3)	mg/L	211		310	0.50	8029115
<b>Elements</b>						
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	0.0000020	8033708
<b>Dissolved Metals by ICPMS</b>						
Dissolved Aluminum (Al)	mg/L	0.00201		0.00356	0.00050	8031063
Dissolved Antimony (Sb)	mg/L	<0.000020		0.000073	0.000020	8031063
Dissolved Arsenic (As)	mg/L	0.000357		0.00262	0.000020	8031063
Dissolved Barium (Ba)	mg/L	0.0631		0.0344	0.000020	8031063
Dissolved Beryllium (Be)	mg/L	<0.000010		<0.000010	0.000010	8031063
Dissolved Bismuth (Bi)	mg/L	<0.0000050		<0.0000050	0.0000050	8031063
Dissolved Boron (B)	mg/L	<0.010		<0.010	0.010	8031063
Dissolved Cadmium (Cd)	mg/L	0.0000590		0.0000180	0.0000050	8031063
Dissolved Chromium (Cr)	mg/L	<0.00010		<0.00010	0.00010	8031063
Dissolved Cobalt (Co)	mg/L	0.000649		0.000295	0.0000050	8031063
Dissolved Copper (Cu)	mg/L	0.000706		<0.000050	0.000050	8031063
Dissolved Iron (Fe)	mg/L	0.0043		0.655	0.0010	8031063
Dissolved Lead (Pb)	mg/L	0.0000120		0.0000120	0.0000050	8031063
Dissolved Lithium (Li)	mg/L	0.00206		0.0393	0.00050	8031063
Dissolved Manganese (Mn)	mg/L	0.0180		0.181	0.000050	8031063
Dissolved Molybdenum (Mo)	mg/L	0.00257		0.000433	0.000050	8031063
Dissolved Nickel (Ni)	mg/L	0.00489		0.00128	0.000020	8031063
Dissolved Phosphorus (P)	mg/L	0.0033		0.0050	0.0020	8031063
Dissolved Selenium (Se)	mg/L	0.00148		<0.000040	0.000040	8031063
Dissolved Silicon (Si)	mg/L	3.57		12.2	0.050	8031063
Dissolved Silver (Ag)	mg/L	0.0000120		0.0000060	0.0000050	8031063
Dissolved Strontium (Sr)	mg/L	0.229		0.385	0.000050	8031063
Dissolved Thallium (Tl)	mg/L	0.0000040		0.0000030	0.0000020	8031063
Dissolved Tin (Sn)	mg/L	<0.00020		<0.00020	0.00020	8031063
Dissolved Titanium (Ti)	mg/L	<0.00050		<0.00050	0.00050	8031063
Dissolved Uranium (U)	mg/L	0.00221		0.00103	0.0000020	8031063
Dissolved Vanadium (V)	mg/L	<0.00020		<0.00020	0.00020	8031063
Dissolved Zinc (Zn)	mg/L	0.00412		0.00161	0.00010	8031063
Dissolved Zirconium (Zr)	mg/L	<0.00010		<0.00010	0.00010	8031063
RDL = Reportable Detection Limit						
Lab-Dup = Laboratory Initiated Duplicate						

Maxxam Job #: B577626  
Report Date: 2015/09/14

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB6862	NB6862	NB6863		
Sampling Date		2015/09/02 19:00	2015/09/02 19:00	2015/09/03 17:45		
COC Number		08411530	08411530	08411530		
	UNITS	MW15-08S	MW15-08S Lab-Dup	MW15D-08D	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	74.5		84.8	0.050	8029410
Dissolved Magnesium (Mg)	mg/L	5.97		23.8	0.050	8029410
Dissolved Potassium (K)	mg/L	1.47		4.54	0.050	8029410
Dissolved Sodium (Na)	mg/L	1.21		5.69	0.050	8029410
Dissolved Sulphur (S)	mg/L	9.0		15.2	3.0	8029410
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate						

Maxxam Job #: B577626  
Report Date: 2015/09/14

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NB6862	NB6863		
Sampling Date		2015/09/02 19:00	2015/09/03 17:45		
COC Number		08411530	08411530		
	UNITS	MW15-08S	MW15D-08D	RDL	QC Batch
<b>Calculated Parameters</b>					
Total Hardness (CaCO3)	mg/L	200	350	0.50	8029122
<b>Elements</b>					
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	8034881
<b>Total Metals by ICPMS</b>					
Total Aluminum (Al)	mg/L	0.0250	3.17	0.00050	8032170
Total Antimony (Sb)	mg/L	<0.000020	0.000092	0.000020	8032170
Total Arsenic (As)	mg/L	0.000356	0.00690	0.000020	8032170
Total Barium (Ba)	mg/L	0.0622	0.0441	0.000020	8032170
Total Beryllium (Be)	mg/L	<0.000010	0.000117	0.000010	8032170
Total Bismuth (Bi)	mg/L	<0.0000050	0.0000120	0.0000050	8032170
Total Boron (B)	mg/L	<0.010	<0.010	0.010	8032170
Total Cadmium (Cd)	mg/L	0.0000590	0.0000960	0.0000050	8032170
Total Chromium (Cr)	mg/L	<0.00010	0.0138	0.00010	8032170
Total Cobalt (Co)	mg/L	0.000619	0.00316	0.0000050	8032170
Total Copper (Cu)	mg/L	0.000701	0.00272	0.000050	8032170
Total Iron (Fe)	mg/L	0.0512	7.05	0.0010	8032170
Total Lead (Pb)	mg/L	0.0000170	0.00124	0.0000050	8032170
Total Lithium (Li)	mg/L	0.00194	0.0410	0.00050	8032170
Total Manganese (Mn)	mg/L	0.0179	0.323	0.000050	8032170
Total Molybdenum (Mo)	mg/L	0.00260	0.000644	0.000050	8032170
Total Nickel (Ni)	mg/L	0.00472	0.00762	0.000020	8032170
Total Phosphorus (P)	mg/L	0.0030	0.0880	0.0020	8032170
Total Selenium (Se)	mg/L	0.00156	<0.000040	0.000040	8032170
Total Silicon (Si)	mg/L	3.64	16.9	0.050	8032170
Total Silver (Ag)	mg/L	<0.0000050	0.000625	0.0000050	8032170
Total Strontium (Sr)	mg/L	0.217	0.407	0.000050	8032170
Total Thallium (Tl)	mg/L	0.0000040	0.0000180	0.0000020	8032170
Total Tin (Sn)	mg/L	<0.00020	0.00033	0.00020	8032170
Total Titanium (Ti)	mg/L	0.00152	0.0903	0.00050	8032170
Total Uranium (U)	mg/L	0.00220	0.00141	0.0000020	8032170
Total Vanadium (V)	mg/L	<0.00020	0.0164	0.00020	8032170
Total Zinc (Zn)	mg/L	0.00406	0.00951	0.00010	8032170
Total Zirconium (Zr)	mg/L	<0.00010	0.00134	0.00010	8032170
Total Calcium (Ca)	mg/L	69.9	96.1	0.050	8029411
RDL = Reportable Detection Limit					

Maxxam Job #: B577626  
Report Date: 2015/09/14

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NB6862	NB6863		
Sampling Date		2015/09/02 19:00	2015/09/03 17:45		
COC Number		08411530	08411530		
	UNITS	MW15-08S	MW15D-08D	RDL	QC Batch
Total Magnesium (Mg)	mg/L	6.10	26.6	0.050	8029411
Total Potassium (K)	mg/L	1.42	4.91	0.050	8029411
Total Sodium (Na)	mg/L	1.16	5.87	0.050	8029411
Total Sulphur (S)	mg/L	8.6	15.4	3.0	8029411
RDL = Reportable Detection Limit					



Maxxam Job #: B577626  
Report Date: 2015/09/14

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	7.7°C
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**Results relate only to the items tested.**

Maxxam Job #: B577626  
Report Date: 2015/09/14

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8028900	Turbidity	2015/09/09			102	80 - 120	<0.10	NTU	0.84	20
8029507	Nitrate plus Nitrite (N)	2015/09/05			105	80 - 120	<0.0020	mg/L		
8029508	Nitrite (N)	2015/09/05			102	80 - 120	<0.0020	mg/L		
8029516	Orthophosphate (P)	2015/09/05	106	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20
8030500	Total Suspended Solids	2015/09/09			103	80 - 120	<1.0	mg/L		
8030911	Fluoride (F)	2015/09/08	110	80 - 120	106	80 - 120	0.013, RDL=0.010	mg/L	NC	20
8030958	Acidity (pH 4.5)	2015/09/08					<0.50	mg/L	1.6	20
8030958	Acidity (pH 8.3)	2015/09/08			99	80 - 120	<0.50	mg/L	2.0	20
8031063	Dissolved Aluminum (Al)	2015/09/11	106	80 - 120	107	80 - 120	<0.00050	mg/L	NC	20
8031063	Dissolved Antimony (Sb)	2015/09/11	105	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8031063	Dissolved Arsenic (As)	2015/09/11	102	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8031063	Dissolved Barium (Ba)	2015/09/11	101	80 - 120	99	80 - 120	<0.000020	mg/L	3.8	20
8031063	Dissolved Beryllium (Be)	2015/09/11	101	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
8031063	Dissolved Bismuth (Bi)	2015/09/11	103	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8031063	Dissolved Boron (B)	2015/09/11					<0.010	mg/L	NC	20
8031063	Dissolved Cadmium (Cd)	2015/09/11	101	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8031063	Dissolved Chromium (Cr)	2015/09/11	98	80 - 120	95	80 - 120	<0.00010	mg/L	NC	20
8031063	Dissolved Cobalt (Co)	2015/09/11	97	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8031063	Dissolved Copper (Cu)	2015/09/11	NC	80 - 120	96	80 - 120	<0.000050	mg/L	2.3	20
8031063	Dissolved Iron (Fe)	2015/09/11	107	80 - 120	105	80 - 120	<0.0010	mg/L	NC	20
8031063	Dissolved Lead (Pb)	2015/09/11	102	80 - 120	99	80 - 120	<0.0000050	mg/L	1.1	20
8031063	Dissolved Lithium (Li)	2015/09/11	97	80 - 120	94	80 - 120	<0.00050	mg/L	NC	20
8031063	Dissolved Manganese (Mn)	2015/09/11	101	80 - 120	98	80 - 120	<0.000050	mg/L	0.63	20
8031063	Dissolved Molybdenum (Mo)	2015/09/11	105	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8031063	Dissolved Nickel (Ni)	2015/09/11	98	80 - 120	94	80 - 120	<0.000020	mg/L	NC	20
8031063	Dissolved Phosphorus (P)	2015/09/11					<0.0020	mg/L		
8031063	Dissolved Selenium (Se)	2015/09/11	99	80 - 120	92	80 - 120	<0.000040	mg/L	NC	20
8031063	Dissolved Silicon (Si)	2015/09/11					<0.050	mg/L	NC	20
8031063	Dissolved Silver (Ag)	2015/09/11	104	80 - 120	95	80 - 120	0.0000080, RDL=0.0000050	mg/L	NC	20

Maxxam Job #: B577626  
Report Date: 2015/09/14

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8031063	Dissolved Strontium (Sr)	2015/09/11	NC	80 - 120	99	80 - 120	<0.000050	mg/L	3.5	20
8031063	Dissolved Thallium (Tl)	2015/09/11	101	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8031063	Dissolved Tin (Sn)	2015/09/11	101	80 - 120	99	80 - 120	<0.00020	mg/L	NC	20
8031063	Dissolved Titanium (Ti)	2015/09/11	102	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8031063	Dissolved Uranium (U)	2015/09/11	98	80 - 120	96	80 - 120	<0.0000020	mg/L	NC	20
8031063	Dissolved Vanadium (V)	2015/09/11	99	80 - 120	94	80 - 120	<0.00020	mg/L	NC	20
8031063	Dissolved Zinc (Zn)	2015/09/11	NC	80 - 120	97	80 - 120	<0.00010	mg/L	1.3	20
8031063	Dissolved Zirconium (Zr)	2015/09/11					<0.00010	mg/L	NC	20
8031189	Total Phosphorus (P)	2015/09/08	NC	80 - 120	98	80 - 120	<0.0020	mg/L	1.3	20
8031191	Dissolved Phosphorus (P)	2015/09/08	90	80 - 120	98	80 - 120	<0.0020	mg/L	NC	20
8031201	Dissolved Chloride (Cl)	2015/09/08	NC	80 - 120	96	80 - 120	<0.50	mg/L	4.2	20
8031202	Dissolved Sulphate (SO4)	2015/09/08			90	80 - 120	<0.50	mg/L		
8031298	Alkalinity (PP as CaCO3)	2015/09/09					<0.50	mg/L	NC	20
8031298	Alkalinity (Total as CaCO3)	2015/09/09	NC	80 - 120	93	80 - 120	0.60, RDL=0.50	mg/L	0.64	20
8031298	Bicarbonate (HCO3)	2015/09/09					0.73, RDL=0.50	mg/L	0.64	20
8031298	Carbonate (CO3)	2015/09/09					<0.50	mg/L	NC	20
8031298	Hydroxide (OH)	2015/09/09					<0.50	mg/L	NC	20
8031300	pH	2015/09/09			102	97 - 103			0	N/A
8031301	Conductivity	2015/09/09			99	80 - 120	1.2, RDL=1.0	uS/cm	1.7	20
8031669	Total Dissolved Solids	2015/09/10	101	80 - 120	92	80 - 120	1.2, RDL=1.0	mg/L	14	20
8032170	Total Aluminum (Al)	2015/09/11	NC	80 - 120	104	80 - 120	<0.00050	mg/L		
8032170	Total Antimony (Sb)	2015/09/11	102	80 - 120	102	80 - 120	<0.000020	mg/L		
8032170	Total Arsenic (As)	2015/09/11	103	80 - 120	99	80 - 120	<0.000020	mg/L		
8032170	Total Barium (Ba)	2015/09/11	NC	80 - 120	96	80 - 120	<0.000020	mg/L		
8032170	Total Beryllium (Be)	2015/09/11	102	80 - 120	94	80 - 120	<0.000010	mg/L		
8032170	Total Bismuth (Bi)	2015/09/11	95	80 - 120	101	80 - 120	<0.0000050	mg/L		
8032170	Total Boron (B)	2015/09/11					<0.010	mg/L		
8032170	Total Cadmium (Cd)	2015/09/11	93	80 - 120	97	80 - 120	<0.0000050	mg/L		
8032170	Total Chromium (Cr)	2015/09/11	90	80 - 120	95	80 - 120	<0.00010	mg/L		
8032170	Total Cobalt (Co)	2015/09/11	91	80 - 120	96	80 - 120	<0.0000050	mg/L		
8032170	Total Copper (Cu)	2015/09/11	84	80 - 120	95	80 - 120	<0.000050	mg/L		

Maxxam Job #: B577626  
Report Date: 2015/09/14

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8032170	Total Iron (Fe)	2015/09/11	NC	80 - 120	103	80 - 120	<0.0010	mg/L		
8032170	Total Lead (Pb)	2015/09/11	95	80 - 120	98	80 - 120	<0.0000050	mg/L		
8032170	Total Lithium (Li)	2015/09/11	101	80 - 120	87	80 - 120	<0.00050	mg/L		
8032170	Total Manganese (Mn)	2015/09/11	NC	80 - 120	98	80 - 120	<0.000050	mg/L		
8032170	Total Molybdenum (Mo)	2015/09/11	NC	80 - 120	104	80 - 120	<0.000050	mg/L		
8032170	Total Nickel (Ni)	2015/09/11	87	80 - 120	96	80 - 120	<0.000020	mg/L		
8032170	Total Phosphorus (P)	2015/09/11					<0.0020	mg/L		
8032170	Total Selenium (Se)	2015/09/11	95	80 - 120	97	80 - 120	<0.000040	mg/L		
8032170	Total Silicon (Si)	2015/09/11					<0.050	mg/L		
8032170	Total Silver (Ag)	2015/09/11	93	80 - 120	95	80 - 120	<0.0000050	mg/L		
8032170	Total Strontium (Sr)	2015/09/11	NC	80 - 120	96	80 - 120	<0.000050	mg/L		
8032170	Total Thallium (Tl)	2015/09/11	95	80 - 120	98	80 - 120	<0.0000020	mg/L		
8032170	Total Tin (Sn)	2015/09/11	101	80 - 120	100	80 - 120	<0.00020	mg/L		
8032170	Total Titanium (Ti)	2015/09/11	NC	80 - 120	94	80 - 120	<0.00050	mg/L		
8032170	Total Uranium (U)	2015/09/11	99	80 - 120	95	80 - 120	<0.0000020	mg/L		
8032170	Total Vanadium (V)	2015/09/11	93	80 - 120	96	80 - 120	<0.00020	mg/L		
8032170	Total Zinc (Zn)	2015/09/11	82	80 - 120	99	80 - 120	<0.00010	mg/L		
8032170	Total Zirconium (Zr)	2015/09/11					<0.00010	mg/L		
8032575	Total Ammonia (N)	2015/09/09	121 (1)	80 - 120	97	80 - 120	<0.0050	mg/L	NC	20
8033276	Total Organic Carbon (C)	2015/09/10	105	80 - 120	96	80 - 120	<0.50	mg/L	11	20
8033606	Total Nitrogen (N)	2015/09/10	NC	80 - 120	101	80 - 120	<0.020	mg/L	9.0	20
8033708	Dissolved Mercury (Hg)	2015/09/11	95	80 - 120	96	80 - 120	<0.0000020	mg/L	NC	20
8034881	Total Mercury (Hg)	2015/09/11	85	80 - 120	84	80 - 120	<0.0000020	mg/L	NC	20
8037447	Orthophosphate (P)	2015/09/14	99	80 - 120	92	80 - 120	<0.0010	mg/L	NC	20

Maxxam Job #: B577626  
Report Date: 2015/09/14

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8037451	Dissolved Phosphorus (P)	2015/09/14	93	80 - 120	104	80 - 120	<0.0020	mg/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).


(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.


Maxxam Job #: B577626  
Report Date: 2015/09/14

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

  
name REDACTED Data Validation Coordinator

  
name REDACTED M.Sc., B.Ed., P.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				(TAT) Required				
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)				
Contact Name: ACCOUNTS PAYABLE		Contact Name: name REDACTED				P.O. #: / AFE#:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS				
Address: 530-1130 West Pender Street, Vancouver		Address: 61 Wasson Place				Project #: ENVMINO3071-01				Rush TAT (Surcharges will be applied)				
BC PC: V6E 4A4		Whitehorse, YT PC: V1A 0H7				Site Location: Kudz Ze Kayah				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days				
Phone: Email REDACTED		Phone: 867-668-6225				Site #: Name REDACTED				Date Required:				
Email: Email REDACTED		Email: Email REDACTED				Sampled By:								
Regulatory Criteria		Special Instructions		Analysis Requested				Rush Confirmation #:						
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		MAJOR IONS: _____ NUTRIENTS (INCLUDING NO <sub>3</sub> , NO <sub>2</sub> , TOX/ALN): _____ Low Level Dissolved Metals with CV Hg _____ Low Level Total Metals with CV Hg _____ Phosphorus (All Tot - dissolved) FF/TP _____				LABORATORY USE ONLY CUSTODY SEAL: Y / N COOLER TEMPERATURES: 7, 8, 8 COOLING MEDIA PRESENT: Y / N						
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM														
Sample Identification		Lab identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (INCLUDING NO <sub>3</sub> , NO <sub>2</sub> , TOX/ALN)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus (All Tot - dissolved) FF/TP	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	COMMENTS
1	MW15-08S	NB6862	15/09/02	19:00	water	X	X	X	X	X	X	13		Dissolved metals and phosphorus were field filtered and preserved.
2	MW15D-08D	NB6862	15/09/03	17:45	water	X	X	X	X	X	X	13		Total metals were field preserved.
3														Project number on bottles incorrect.
4														Please change to project number
5														above
6														
7														
8														
9														
10														
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #						
				name REDACTED		20.15/09/05	11:50	B577626						



Your Project #: ENVMIN03071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08411566

name REDACTED  
 TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/12/16**  
 Report #: R2097914  
 Version: 2 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B577997**

**Received: 2015/09/08, 13:35**

Sample Matrix: Water  
 # Samples Received: 11

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Analytical Method</b>
Acidity pH 4.5 & pH 8.3 (as CaCO3)	11	N/A	2015/09/09	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	11	2015/09/09	2015/09/09	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	11	N/A	2015/09/09	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	11	N/A	2015/09/09	BBY6SOP-00026	SM 22 2510 B m
Fluoride	11	N/A	2015/09/09	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	11	N/A	2015/09/11	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	9	N/A	2015/09/14	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/09/15	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/09/17	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	11	N/A	2015/09/11	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	5	2015/09/10	2015/09/11	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	6	2015/09/11	2015/09/11	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	10	N/A	2015/09/14	BBY WI-00033	SM 22 1030E
Ion Balance	1	N/A	2015/09/16	BBY WI-00033	SM 22 1030E
Sum of cations, anions	11	N/A	2015/09/14	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	9	N/A	2015/09/14	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/09/15	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/09/17	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	10	N/A	2015/09/12	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	1	N/A	2015/09/15	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	6	2015/09/09	2015/09/10	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	3	2015/09/09	2015/09/11	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	11	N/A	2015/09/11	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	2	N/A	2015/09/11	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	5	2015/09/10	2015/09/10	BBY6SOP-00016	SM 22 4500-N C m
Nitrogen (Total)	5	2015/09/10	2015/09/11	BBY6SOP-00016	SM 22 4500-N C m
Nitrogen (Total)	1	2015/09/14	2015/09/14	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	10	N/A	2015/09/10	BBY6SOP-00009	SM 22 4500-NH3- G m
Ammonia-N (Preserved)	1	N/A	2015/09/15	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	11	N/A	2015/09/09	BBY6SOP-00010	SM 22 4500-NO3- I m



Your Project #: ENVMIN03071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08411566

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/12/16**  
 Report #: R2097914  
 Version: 2 - Revision

### CERTIFICATE OF ANALYSIS – REVISED REPORT

**MAXXAM JOB #: B577997**

**Received: 2015/09/08, 13:35**

Sample Matrix: Water  
 # Samples Received: 11

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Nitrite (N) (low level)	11	N/A	2015/09/09	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	11	N/A	2015/09/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	1	N/A	2015/09/11	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	9	N/A	2015/09/12	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	1	N/A	2015/09/15	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	11	N/A	2015/09/09	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	9	N/A	2015/09/09	BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2015/09/10	BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2015/09/14	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	10	N/A	2015/09/09	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate by Automated Colourimetry	1	N/A	2015/09/10	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	11	N/A	2015/09/10	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	11	N/A	2015/09/11	BBY WI-00033	Calculation
Carbon (Total Organic) (1, 3)	8	N/A	2015/09/10	CAL SOP-00077	MMCW 119 1996 m
Carbon (Total Organic) (1, 3)	3	N/A	2015/09/11	CAL SOP-00077	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	10	2015/09/10	2015/09/10	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/09/14	2015/09/14	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	11	N/A	2015/09/10	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	8	2015/09/09	2015/09/10	BBY6SOP-00034	SM 22 2540 D
Total Suspended Solids-Low Level	3	2015/09/10	2015/09/11	BBY6SOP-00034	SM 22 2540 D
Turbidity	11	N/A	2015/09/09	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Calgary Environmental

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(3) TOC present in the sample should be considered as non-purgeable TOC.

Your Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08411566

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/12/16**  
Report #: R2097914  
Version: 2 - Revision

### CERTIFICATE OF ANALYSIS – REVISED REPORT

**MAXXAM JOB #: B577997**

**Received: 2015/09/08, 13:35**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email: Email REDACTED

Phone REDACTED

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NB8922		NB8923	NB8923			NB8924		
Sampling Date		2015/09/04 16:10		2015/09/04 16:35	2015/09/04 16:35			2015/09/04 15:15		
COC Number		08411566		08411566	08411566			08411566		
	UNITS	MW15-03S	QC Batch	MW15-03D	MW15-03D Lab-Dup	RDL	QC Batch	MW15-04S	RDL	QC Batch

Misc. Inorganics										
Acidity (pH 4.5)	mg/L	<0.50	8031892	<0.50		0.50	8031892	<0.50	0.50	8031892
Acidity (pH 8.3)	mg/L	2.24	8031892	7.27		0.50	8031892	0.84	0.50	8031892

Calculated Parameters										
Anion Sum	meq/L	3.0	8037624	4.2		N/A	8037624	2.6	N/A	8037624
Cation Sum	meq/L	3.3	8037624	4.4		N/A	8037624	2.7	N/A	8037624
Filter and HNO3 Preservation	N/A	FIELD	ONSITE	FIELD		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	1.1	8031065	1.1		0.010	8031065	1.0	0.010	8031065
Nitrate (N)	mg/L	0.0454	8030353	0.0022		0.0020	8030353	0.155	0.0020	8030353

Misc. Inorganics										
Fluoride (F)	mg/L	0.120	8032440	0.170		0.010	8032440	0.100	0.010	8032440
Alkalinity (Total as CaCO3)	mg/L	114	8032015	179		0.50	8032015	117	0.50	8032015
Total Organic Carbon (C)	mg/L	3.4	8033276	2.0		0.50	8033276	0.96	0.50	8033276
Alkalinity (PP as CaCO3)	mg/L	<0.50	8032015	<0.50		0.50	8032015	<0.50	0.50	8032015
Bicarbonate (HCO3)	mg/L	139	8032015	219		0.50	8032015	142	0.50	8032015
Carbonate (CO3)	mg/L	<0.50	8032015	<0.50		0.50	8032015	<0.50	0.50	8032015
Hydroxide (OH)	mg/L	<0.50	8032015	<0.50		0.50	8032015	<0.50	0.50	8032015

Anions										
Orthophosphate (P)	mg/L	0.0020 (1)	8032582	0.0013 (1)		0.0010	8032582	0.0034 (1)	0.0010	8033398
Dissolved Sulphate (SO4)	mg/L	33.3	8032996	25.3		0.50	8032996	10.1	0.50	8032996
Dissolved Chloride (Cl)	mg/L	1.7	8032991	1.7		0.50	8032991	0.96	0.50	8032991

Nutrients										
Total Ammonia (N)	mg/L	0.042	8033679	0.30		0.0050	8033679	0.088	0.0050	8033679
Dissolved Phosphorus (P)	mg/L	0.0027	8033946	0.0036		0.0020	8033946	0.0026	0.0020	8033946
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.111	8031069	0.972		0.020	8031069	0.209	0.020	8031069
Nitrate plus Nitrite (N)	mg/L	0.0521 (1)	8032558	0.0022 (1)		0.0020	8032558	0.155 (1)	0.0020	8032558
Nitrite (N)	mg/L	0.0067 (1)	8032560	<0.0020 (1)		0.0020	8032560	<0.0020 (1)	0.0020	8032560
Total Nitrogen (N)	mg/L	0.163	8033619	0.975	1.03	0.020	8033610	0.364	0.020	8034012
Total Phosphorus (P)	mg/L	0.397	8033944	0.0072		0.0020	8033944	2.31	0.020	8033944

Physical Properties										
Conductivity	uS/cm	300	8032016	388		1.0	8032016	239	1.0	8032016
pH	pH	7.98	8032017	8.04		N/A	8032017	8.12	N/A	8032017

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
N/A = Not Applicable  
(1) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NB8922		NB8923	NB8923			NB8924		
<b>Sampling Date</b>		2015/09/04 16:10		2015/09/04 16:35	2015/09/04 16:35			2015/09/04 15:15		
<b>COC Number</b>		08411566		08411566	08411566			08411566		
	<b>UNITS</b>	<b>MW15-03S</b>	<b>QC Batch</b>	<b>MW15-03D</b>	<b>MW15-03D Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-04S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	262	8031660	8.3		1.0	8031660	2590 (1)	10	8031660
Total Dissolved Solids	mg/L	210	8031669	226		1.0	8031669	136	1.0	8031669
Turbidity	NTU	172 (2)	8031934	4.69 (2)		0.10	8031934	2070 (2)	0.10	8031934

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

(1) RDL raised due to high concentration of solids in the sample.

(2) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NB8924			NB8925			NB8926		
Sampling Date		2015/09/04 15:15			2015/09/04 13:30			2015/09/05 17:00		
COC Number		08411566			08411566			08411566		
	UNITS	MW15-04S Lab-Dup	RDL	QC Batch	MW15-04D	RDL	QC Batch	MW15-09S	RDL	QC Batch

Misc. Inorganics										
Acidity (pH 4.5)	mg/L	<0.50	0.50	8031892	<0.50	0.50	8031892	<0.50	0.50	8031892
Acidity (pH 8.3)	mg/L	<0.50	0.50	8031892	1.86	0.50	8031892	4.94	0.50	8031892

Calculated Parameters										
Anion Sum	meq/L		N/A	8037624	3.1	N/A	8037624	4.6	N/A	8037624
Cation Sum	meq/L		N/A	8037624	3.2	N/A	8037624	5.0	N/A	8037624
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	8031065	1.0	0.010	8031065	0.96	0.010	8031065
Nitrate (N)	mg/L		0.0020	8030353	<0.0020	0.0020	8030353	0.0360	0.0020	8030353

Misc. Inorganics										
Fluoride (F)	mg/L		0.010	8032440	0.230	0.010	8032440	0.250	0.010	8032440
Alkalinity (Total as CaCO3)	mg/L		0.50	8032015	132	0.50	8032015	204	0.50	8032023
Total Organic Carbon (C)	mg/L		0.50	8033276	1.4	0.50	8033276	<0.50	0.50	8033276
Alkalinity (PP as CaCO3)	mg/L		0.50	8032015	<0.50	0.50	8032015	<0.50	0.50	8032023
Bicarbonate (HCO3)	mg/L		0.50	8032015	161	0.50	8032015	249	0.50	8032023
Carbonate (CO3)	mg/L		0.50	8032015	<0.50	0.50	8032015	<0.50	0.50	8032023
Hydroxide (OH)	mg/L		0.50	8032015	<0.50	0.50	8032015	<0.50	0.50	8032023

Anions										
Orthophosphate (P)	mg/L	0.0034	0.0010	8033398	0.0023 (1)	0.0010	8032582	0.0015 (2)	0.0010	8032582
Dissolved Sulphate (SO4)	mg/L		0.50	8032996	19.9	0.50	8032996	20.9	0.50	8032999
Dissolved Chloride (Cl)	mg/L		0.50	8032991	0.97	0.50	8032991	1.1	0.50	8032998

Nutrients										
Total Ammonia (N)	mg/L		0.0050	8033679	0.11	0.0050	8033679	0.094	0.0050	8033679
Dissolved Phosphorus (P)	mg/L	0.0027	0.0020	8033946	0.0026	0.0020	8033946	0.0073	0.0020	8033946
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.020	8031069	0.180	0.020	8031069	0.110	0.020	8031069
Nitrate plus Nitrite (N)	mg/L	0.156	0.0020	8032558	0.0045 (1)	0.0020	8032558	0.0420 (2)	0.0020	8032558
Nitrite (N)	mg/L	0.0021	0.0020	8032560	0.0027 (1)	0.0020	8032560	0.0060 (2)	0.0020	8032560
Total Nitrogen (N)	mg/L		0.020	8034012	0.184	0.020	8033610	0.152	0.020	8033619
Total Phosphorus (P)	mg/L		0.020	8033944	8.24	0.20	8033944	0.0411	0.0020	8033944

Physical Properties										
Conductivity	uS/cm		1.0	8032016	291	1.0	8032016	413	1.0	8032024

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 N/A = Not Applicable  
 (1) Sample arrived to laboratory past recommended hold time.  
 (2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NB8924			NB8925			NB8926		
Sampling Date		2015/09/04 15:15			2015/09/04 13:30			2015/09/05 17:00		
COC Number		08411566			08411566			08411566		
	UNITS	MW15-04S Lab-Dup	RDL	QC Batch	MW15-04D	RDL	QC Batch	MW15-09S	RDL	QC Batch
pH	pH		N/A	8032017	7.96	N/A	8032017	8.12	N/A	8032025
<b>Physical Properties</b>										
Total Suspended Solids	mg/L		10	8031660	5030 (1)	20	8031660	102	1.0	8031660
Total Dissolved Solids	mg/L		1.0	8031669	168	1.0	8031669	238	1.0	8031669
Turbidity	NTU		0.10	8031934	3820 (2)	0.50	8031934	33.9 (3)	0.10	8031934
<p>RDL = Reportable Detection Limit            Lab-Dup = Laboratory Initiated Duplicate            N/A = Not Applicable            (1) RDL raised due to high concentration of solids in the sample.            (2) Sample arrived to laboratory past recommended hold time.            (3) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.</p>										

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NB8926			NB8927	NB8927		NB8928		
Sampling Date		2015/09/05 17:00			2015/09/05 17:55	2015/09/05 17:55		2015/09/04 19:10		
COC Number		08411566			08411566	08411566		08411566		
	UNITS	MW15-09S Lab-Dup	RDL	QC Batch	MW15-09D	MW15-09D Lab-Dup	RDL	MW15-10S	RDL	QC Batch

Misc. Inorganics										
Acidity (pH 4.5)	mg/L		0.50	8031892	<0.50		0.50	<0.50	0.50	8031892
Acidity (pH 8.3)	mg/L		0.50	8031892	299		0.50	125	0.50	8031892

Calculated Parameters										
Anion Sum	meq/L		N/A	8037624	8.8		N/A	9.4	N/A	8037624
Cation Sum	meq/L		N/A	8037624	8.9		N/A	9.0	N/A	8037624
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD		N/A	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	8031065	1.0		0.010	0.95	0.010	8031065
Nitrate (N)	mg/L		0.0020	8030353	0.0021		0.0020	0.0435	0.0020	8030353

Misc. Inorganics										
Fluoride (F)	mg/L		0.010	8032440	0.730		0.010	0.190	0.010	8032440
Alkalinity (Total as CaCO3)	mg/L		0.50	8032023	421		0.50	418	0.50	8032015
Total Organic Carbon (C)	mg/L		0.50	8033276	<0.50		0.50	3.9	0.50	8033276
Alkalinity (PP as CaCO3)	mg/L		0.50	8032023	<0.50		0.50	<0.50	0.50	8032015
Bicarbonate (HCO3)	mg/L		0.50	8032023	513		0.50	510	0.50	8032015
Carbonate (CO3)	mg/L		0.50	8032023	<0.50		0.50	<0.50	0.50	8032015
Hydroxide (OH)	mg/L		0.50	8032023	<0.50		0.50	<0.50	0.50	8032015

Anions										
Orthophosphate (P)	mg/L		0.0010	8032582	0.0030 (1)		0.0010	0.0021 (2)	0.0010	8032582
Dissolved Sulphate (SO4)	mg/L	20.5	0.50	8032999	15.3		0.50	47.8	0.50	8032996
Dissolved Chloride (Cl)	mg/L	0.96	0.50	8032998	1.1		0.50	2.5	0.50	8032991

Nutrients										
Total Ammonia (N)	mg/L		0.0050	8033679	0.10	0.11	0.0050	0.67	0.0050	8033679
Dissolved Phosphorus (P)	mg/L		0.0020	8033946	0.0054		0.0020	0.0145	0.0020	8033946
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.020	8031069	0.136		0.020	4.74	0.20	8031069
Nitrate plus Nitrite (N)	mg/L		0.0020	8032558	0.0021 (1)		0.0020	0.0511 (2)	0.0020	8032558
Nitrite (N)	mg/L		0.0020	8032560	<0.0020 (1)		0.0020	0.0076 (2)	0.0020	8032560
Total Nitrogen (N)	mg/L		0.020	8033619	0.138		0.020	4.79	0.20	8034012
Total Phosphorus (P)	mg/L		0.0020	8033944	1.16		0.020	13.4	0.40	8033944

Physical Properties										
Conductivity	uS/cm		1.0	8032024	813		1.0	853	1.0	8032016

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 N/A = Not Applicable  
 (1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.  
 (2) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NB8926			NB8927	NB8927		NB8928		
Sampling Date		2015/09/05 17:00			2015/09/05 17:55	2015/09/05 17:55		2015/09/04 19:10		
COC Number		08411566			08411566	08411566		08411566		
	UNITS	MW15-09S Lab-Dup	RDL	QC Batch	MW15-09D	MW15-09D Lab-Dup	RDL	MW15-10S	RDL	QC Batch
pH	pH		N/A	8032025	6.30		N/A	6.73	N/A	8032017
<b>Physical Properties</b>										
Total Suspended Solids	mg/L		1.0	8031660	284		1.0	12000 (1)	20	8031660
Total Dissolved Solids	mg/L		1.0	8031669	478		1.0	486	1.0	8031669
Turbidity	NTU		0.10	8031934	135 (2)		0.10	3750 (3)	1.0	8031934
<p>RDL = Reportable Detection Limit                      Lab-Dup = Laboratory Initiated Duplicate                      N/A = Not Applicable                      (1) RDL raised due to high concentration of solids in the sample.                      (2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.                      (3) Sample arrived to laboratory past recommended hold time.</p>										



Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NB8929			NB8930	NB8930		NB8931		
<b>Sampling Date</b>		2015/09/04 18:40			2015/09/04 15:15	2015/09/04 15:15		2015/09/06 17:00		
<b>COC Number</b>		08411566			08411566	08411566		08411566		
	<b>UNITS</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP03</b>	<b>DUP03 Lab-Dup</b>	<b>QC Batch</b>	<b>MW15-07S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>										
Acidity (pH 4.5)	mg/L	<0.50	0.50	8031892	<0.50		8031892	<0.50	0.50	8031892
Acidity (pH 8.3)	mg/L	359	0.50	8031892	2.35		8031892	3.66	0.50	8031892

<b>Calculated Parameters</b>										
Anion Sum	meq/L	37	N/A	8037624	2.5		8037624	4.1	N/A	8037624
Cation Sum	meq/L	47	N/A	8037624	2.5		8037624	4.3	N/A	8037624
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	1.3	0.010	8031065	0.99		8031065	1.1	0.010	8031065
Nitrate (N)	mg/L	0.0075	0.0020	8030353	0.158		8030353	<0.0020	0.0020	8030353

<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	1.30	0.010	8032440	0.100		8032440	0.300	0.010	8032440
Alkalinity (Total as CaCO3)	mg/L	1810	0.50	8032015	114		8032015	168	0.50	8032023
Total Organic Carbon (C)	mg/L	<0.50	0.50	8033276	1.2	1.3	8034550	<0.50	0.50	8034550
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8032015	<0.50		8032015	<0.50	0.50	8032023
Bicarbonate (HCO3)	mg/L	2210	0.50	8032015	139		8032015	205	0.50	8032023
Carbonate (CO3)	mg/L	<0.50	0.50	8032015	<0.50		8032015	<0.50	0.50	8032023
Hydroxide (OH)	mg/L	<0.50	0.50	8032015	<0.50		8032015	<0.50	0.50	8032023

<b>Anions</b>										
Orthophosphate (P)	mg/L	0.0092 (1)	0.0010	8037447	0.0023 (1)		8032582	0.0069	0.0010	8032582
Dissolved Sulphate (SO4)	mg/L	12.0	0.50	8034420	10.7		8032996	32.6	0.50	8032996
Dissolved Chloride (Cl)	mg/L	3.4	0.50	8032991	0.82		8032991	0.84	0.50	8032991

<b>Nutrients</b>										
Total Ammonia (N)	mg/L	0.30	0.0050	8037625	0.037		8033679	0.062	0.0050	8033679
Dissolved Phosphorus (P)	mg/L	0.0058	0.0020	8037451	0.0033		8033946	0.0020	0.0020	8033946
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.348	0.020	8031069	0.183		8031069	0.132	0.020	8031069
Nitrate plus Nitrite (N)	mg/L	0.0075 (1)	0.0020	8032558	0.163 (1)		8032558	<0.0020	0.0020	8032558
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8032560	0.0054 (1)		8032560	<0.0020	0.0020	8032560
Total Nitrogen (N)	mg/L	0.356	0.020	8037051	0.346		8034012	0.132	0.020	8034012
Total Phosphorus (P)	mg/L	0.483	0.0020	8033944	2.38		8033944	2.50	0.020	8033944

<b>Physical Properties</b>										
Conductivity	uS/cm	3000	1.0	8032016	242		8032016	385	1.0	8032024
pH	pH	6.79	N/A	8032017	7.66		8032017	7.90	N/A	8032025

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
N/A = Not Applicable  
(1) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NB8929			NB8930	NB8930		NB8931		
<b>Sampling Date</b>		2015/09/04 18:40			2015/09/04 15:15	2015/09/04 15:15		2015/09/06 17:00		
<b>COC Number</b>		08411566			08411566	08411566		08411566		
	<b>UNITS</b>	<b>MW15-10D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP03</b>	<b>DUP03 Lab-Dup</b>	<b>QC Batch</b>	<b>MW15-07S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	367 (1)	5.0	8031660	4350 (1)		8032926	3840 (1)	10	8032926
Total Dissolved Solids	mg/L	1950	1.0	8031669	152		8031669	238	1.0	8031669
Turbidity	NTU	186 (2)	0.10	8031934	2220 (2)		8031934	1430	0.10	8031934

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) RDL raised due to high concentration of solids in the sample.  
(2) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NB8932		
Sampling Date		2015/09/06 17:30		
COC Number		08411566		
	UNITS	MW15-07D	RDL	QC Batch
<b>Misc. Inorganics</b>				
Acidity (pH 4.5)	mg/L	<0.50	0.50	8031892
Acidity (pH 8.3)	mg/L	4.79	0.50	8031892
<b>Calculated Parameters</b>				
Anion Sum	meq/L	4.4	N/A	8037624
Cation Sum	meq/L	4.6	N/A	8037624
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE
Ion Balance	N/A	1.0	0.010	8031065
Nitrate (N)	mg/L	<0.0020	0.0020	8030353
<b>Misc. Inorganics</b>				
Fluoride (F)	mg/L	0.340	0.010	8032440
Alkalinity (Total as CaCO3)	mg/L	191	0.50	8032015
Total Organic Carbon (C)	mg/L	<0.50	0.50	8034550
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8032015
Bicarbonate (HCO3)	mg/L	233	0.50	8032015
Carbonate (CO3)	mg/L	<0.50	0.50	8032015
Hydroxide (OH)	mg/L	<0.50	0.50	8032015
<b>Anions</b>				
Orthophosphate (P)	mg/L	0.0029	0.0010	8032582
Dissolved Sulphate (SO4)	mg/L	27.3	0.50	8032996
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8032991
<b>Nutrients</b>				
Total Ammonia (N)	mg/L	0.043	0.0050	8033679
Dissolved Phosphorus (P)	mg/L	0.0028	0.0020	8033946
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.049	0.020	8031069
Nitrate plus Nitrite (N)	mg/L	<0.0020	0.0020	8032558
Nitrite (N)	mg/L	<0.0020	0.0020	8032560
Total Nitrogen (N)	mg/L	0.049	0.020	8033610
Total Phosphorus (P)	mg/L	0.0024	0.0020	8033944
<b>Physical Properties</b>				
Conductivity	uS/cm	415	1.0	8032016
pH	pH	8.03	N/A	8032017
<b>Physical Properties</b>				
Total Suspended Solids	mg/L	1.8	1.0	8032926
RDL = Reportable Detection Limit N/A = Not Applicable				

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NB8932		
<b>Sampling Date</b>		2015/09/06 17:30		
<b>COC Number</b>		08411566		
	<b>UNITS</b>	<b>MW15-07D</b>	<b>RDL</b>	<b>QC Batch</b>
Total Dissolved Solids	mg/L	250	1.0	8031669
Turbidity	NTU	5.32	0.10	8031934
RDL = Reportable Detection Limit				

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB8922	NB8922		NB8923		
Sampling Date		2015/09/04 16:10	2015/09/04 16:10		2015/09/04 16:35		
COC Number		08411566	08411566		08411566		
	UNITS	MW15-03S	MW15-03S Lab-Dup	QC Batch	MW15-03D	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	129		8030360	207	0.50	8030360
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	8033814	<0.0000020	0.0000020	8033814
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00324		8032618	0.00792	0.00050	8032618
Dissolved Antimony (Sb)	mg/L	0.000046		8032618	0.00346	0.000020	8032618
Dissolved Arsenic (As)	mg/L	0.000158		8032618	0.00208	0.000020	8032618
Dissolved Barium (Ba)	mg/L	0.0462		8032618	0.0491	0.000020	8032618
Dissolved Beryllium (Be)	mg/L	<0.000010		8032618	0.000022	0.000010	8032618
Dissolved Bismuth (Bi)	mg/L	<0.0000050		8032618	<0.0000050	0.0000050	8032618
Dissolved Boron (B)	mg/L	<0.010		8032618	<0.010	0.010	8032618
Dissolved Cadmium (Cd)	mg/L	0.0000220		8032618	0.0000100	0.0000050	8039137
Dissolved Chromium (Cr)	mg/L	<0.00010		8032618	<0.00010	0.00010	8032618
Dissolved Cobalt (Co)	mg/L	0.000536		8032618	0.000308	0.0000050	8032618
Dissolved Copper (Cu)	mg/L	0.000344		8032618	0.000206	0.000050	8032618
Dissolved Iron (Fe)	mg/L	0.0474		8032618	0.355	0.0010	8032618
Dissolved Lead (Pb)	mg/L	0.0000070		8032618	0.0000440	0.0000050	8039137
Dissolved Lithium (Li)	mg/L	0.00193		8032618	0.00675	0.00050	8032618
Dissolved Manganese (Mn)	mg/L	0.161		8032618	0.0717	0.000050	8032618
Dissolved Molybdenum (Mo)	mg/L	0.0104		8032618	0.00470	0.000050	8032618
Dissolved Nickel (Ni)	mg/L	0.00215		8032618	0.00102	0.000020	8032618
Dissolved Phosphorus (P)	mg/L	0.0034		8032618	0.0049	0.0020	8032618
Dissolved Selenium (Se)	mg/L	0.000209		8032618	0.000256	0.000040	8032618
Dissolved Silicon (Si)	mg/L	2.95		8032618	3.92	0.050	8032618
Dissolved Silver (Ag)	mg/L	<0.0000050		8032618	<0.0000050	0.0000050	8032618
Dissolved Strontium (Sr)	mg/L	0.145		8032618	0.252	0.000050	8032618
Dissolved Thallium (Tl)	mg/L	0.0000060		8032618	0.0000070	0.0000020	8032618
Dissolved Tin (Sn)	mg/L	<0.00020		8032618	<0.00020	0.00020	8032618
Dissolved Titanium (Ti)	mg/L	<0.00050		8032618	0.00057	0.00050	8032618
Dissolved Uranium (U)	mg/L	0.000783		8032618	0.00205	0.0000020	8032618
Dissolved Vanadium (V)	mg/L	<0.00020		8032618	<0.00020	0.00020	8032618
Dissolved Zinc (Zn)	mg/L	0.00158		8032618	0.00238	0.00010	8032618
Dissolved Zirconium (Zr)	mg/L	<0.00010		8032618	0.00023	0.00010	8032618
RDL = Reportable Detection Limit							
Lab-Dup = Laboratory Initiated Duplicate							

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB8922	NB8922		NB8923		
Sampling Date		2015/09/04 16:10	2015/09/04 16:10		2015/09/04 16:35		
COC Number		08411566	08411566		08411566		
	UNITS	MW15-03S	MW15-03S Lab-Dup	QC Batch	MW15-03D	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	42.9		8030361	56.4	0.050	8030361
Dissolved Magnesium (Mg)	mg/L	5.24		8030361	16.2	0.050	8030361
Dissolved Potassium (K)	mg/L	1.50		8030361	2.87	0.050	8030361
Dissolved Sodium (Na)	mg/L	16.1		8030361	2.89	0.050	8030361
Dissolved Sulphur (S)	mg/L	12.5		8030361	10.0	3.0	8030361

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB8924	NB8925	NB8926	NB8927		
Sampling Date		2015/09/04 15:15	2015/09/04 13:30	2015/09/05 17:00	2015/09/05 17:55		
COC Number		08411566	08411566	08411566	08411566		
	UNITS	MW15-04S	MW15-04D	MW15-09S	MW15-09D	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	127	147	221	402	0.50	8030360
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8033814
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00455	0.00348	0.00180	0.170	0.00050	8032618
Dissolved Antimony (Sb)	mg/L	0.000021	0.000023	0.000207	0.000303	0.000020	8032618
Dissolved Arsenic (As)	mg/L	0.000250	0.00184	0.000537	0.00848	0.000020	8032618
Dissolved Barium (Ba)	mg/L	0.0695	0.0646	0.181	0.0900	0.000020	8032618
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	0.000111	0.000010	8032618
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8032618
Dissolved Boron (B)	mg/L	<0.010	0.023	0.017	<0.010	0.010	8032618
Dissolved Cadmium (Cd)	mg/L	0.0000150	0.0000400	0.0000460	0.0000080	0.0000050	8032618
Dissolved Chromium (Cr)	mg/L	0.00013	<0.00010	<0.00010	0.00304	0.00010	8032618
Dissolved Cobalt (Co)	mg/L	0.000194	0.000699	0.000966	0.000389	0.0000050	8032618
Dissolved Copper (Cu)	mg/L	0.000693	0.000376	0.000106	0.000416	0.000050	8032618
Dissolved Iron (Fe)	mg/L	0.0011	0.0625	1.31	12.3	0.0010	8032618
Dissolved Lead (Pb)	mg/L	<0.0000050	0.0000350	0.0000110	0.000121	0.0000050	8032618
Dissolved Lithium (Li)	mg/L	0.00079	0.00128	0.00381	0.0339	0.00050	8032618
Dissolved Manganese (Mn)	mg/L	0.0383	0.201	0.493	0.805	0.000050	8032618
Dissolved Molybdenum (Mo)	mg/L	0.00329	0.00432	0.00811	0.00925	0.000050	8032618
Dissolved Nickel (Ni)	mg/L	0.00353	0.00204	0.000604	0.000659	0.000020	8032618
Dissolved Phosphorus (P)	mg/L	0.0042	0.0046	0.0087	0.0084	0.0020	8032618
Dissolved Selenium (Se)	mg/L	0.000741	<0.000040	0.000721	0.000062	0.000040	8032618
Dissolved Silicon (Si)	mg/L	3.08	2.73	4.02	10.3	0.050	8032618
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8032618
Dissolved Strontium (Sr)	mg/L	0.173	0.206	0.262	0.488	0.000050	8032618
Dissolved Thallium (Tl)	mg/L	0.0000020	0.0000050	<0.0000020	<0.0000020	0.0000020	8032618
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8032618
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	8032618
Dissolved Uranium (U)	mg/L	0.000739	0.00106	0.00209	0.00365	0.0000020	8032618
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	0.00045	0.00020	8032618
Dissolved Zinc (Zn)	mg/L	0.00147	0.00073	0.00138	0.00568	0.00010	8032618
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	8032618
Dissolved Calcium (Ca)	mg/L	44.6	49.2	69.6	133	0.050	8030361
RDL = Reportable Detection Limit							

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB8924	NB8925	NB8926	NB8927		
Sampling Date		2015/09/04 15:15	2015/09/04 13:30	2015/09/05 17:00	2015/09/05 17:55		
COC Number		08411566	08411566	08411566	08411566		
	UNITS	MW15-04S	MW15-04D	MW15-09S	MW15-09D	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	3.81	5.77	11.4	17.1	0.050	8030361
Dissolved Potassium (K)	mg/L	1.74	2.72	1.89	4.26	0.050	8030361
Dissolved Sodium (Na)	mg/L	1.83	3.14	6.03 (1)	5.03	0.050	8030361
Dissolved Sulphur (S)	mg/L	3.5	7.4	8.3	7.6	3.0	8030361
RDL = Reportable Detection Limit							
(1) Dissolved greater than total. Reanalysis yields similar results.							



Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB8928		NB8929	NB8930	NB8931		
Sampling Date		2015/09/04 19:10		2015/09/04 18:40	2015/09/04 15:15	2015/09/06 17:00		
COC Number		08411566		08411566	08411566	08411566		
	UNITS	MW15-10S	QC Batch	MW15-10D	DUP03	MW15-07S	RDL	QC Batch
<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	378	8039313	2180	119	205	0.50	8030360
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.0000020	8033814	<0.0000020	<0.0000020	<0.0000020	0.0000020	8033814
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00818	8032618	0.438	0.00448	0.00302	0.00050	8032618
Dissolved Antimony (Sb)	mg/L	0.000055	8032618	0.000077	<0.000020	<0.000020	0.000020	8032618
Dissolved Arsenic (As)	mg/L	0.0117	8032618	0.00167	0.000252	0.00264	0.000020	8032618
Dissolved Barium (Ba)	mg/L	0.126	8032618	0.442	0.0708	0.0355	0.000020	8032618
Dissolved Beryllium (Be)	mg/L	0.000041	8032618	0.00119	<0.000010	<0.000010	0.000010	8032618
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8032618	<0.0000050	<0.0000050	<0.0000050	0.0000050	8032618
Dissolved Boron (B)	mg/L	0.011	8032618	<0.010	<0.010	<0.010	0.010	8032618
Dissolved Cadmium (Cd)	mg/L	0.000190	8032618	0.000148	0.0000150	<0.0000050	0.0000050	8032618
Dissolved Chromium (Cr)	mg/L	0.00027	8032618	0.00539	0.00014	<0.00010	0.00010	8032618
Dissolved Cobalt (Co)	mg/L	0.00286	8032618	0.00127	0.000203	0.000128	0.0000050	8032618
Dissolved Copper (Cu)	mg/L	0.000182	8032618	0.000262	0.000669	0.000107	0.000050	8032618
Dissolved Iron (Fe)	mg/L	4.25	8032618	36.6	0.0021	0.357	0.0010	8032618
Dissolved Lead (Pb)	mg/L	0.000153	8032618	0.00136	<0.0000050	0.0000160	0.0000050	8032618
Dissolved Lithium (Li)	mg/L	0.00650	8032618	0.249	0.00081	0.00735	0.00050	8032618
Dissolved Manganese (Mn)	mg/L	0.484	8032618	5.41	0.0396	0.172	0.000050	8032618
Dissolved Molybdenum (Mo)	mg/L	0.00158	8032618	0.00132	0.00330	0.000407	0.000050	8032618
Dissolved Nickel (Ni)	mg/L	0.00310	8032618	0.00233	0.00398	0.000290	0.000020	8032618
Dissolved Phosphorus (P)	mg/L	0.0168	8032618	0.0151	0.0041	0.0058	0.0020	8032618
Dissolved Selenium (Se)	mg/L	0.00172	8032618	0.000066	0.000741	<0.000040	0.000040	8032618
Dissolved Silicon (Si)	mg/L	5.31	8032618	39.9	2.95	6.64	0.050	8032618
Dissolved Silver (Ag)	mg/L	<0.0000050	8032618	0.0000080	<0.0000050	<0.0000050	0.0000050	8032618
Dissolved Strontium (Sr)	mg/L	0.668	8032618	2.78	0.171	0.272	0.000050	8032618
Dissolved Thallium (Tl)	mg/L	0.0000020	8032618	0.0000150	0.0000020	<0.0000020	0.0000020	8032618
Dissolved Tin (Sn)	mg/L	<0.00020	8032618	<0.00020	<0.00020	<0.00020	0.00020	8032618
Dissolved Titanium (Ti)	mg/L	0.00057	8032618	0.00209	<0.00050	<0.00050	0.00050	8032618
Dissolved Uranium (U)	mg/L	0.00433	8032618	0.000649	0.000735	0.00168	0.0000020	8032618
Dissolved Vanadium (V)	mg/L	<0.00020	8032618	<0.00020	<0.00020	<0.00020	0.00020	8032618
Dissolved Zinc (Zn)	mg/L	0.00744	8032618	0.0105	0.00144	0.00438	0.00010	8032618
Dissolved Zirconium (Zr)	mg/L	0.00011	8032618	0.00158	<0.00010	<0.00010	0.00010	8032618
Dissolved Calcium (Ca)	mg/L	132	8039696	725	41.3	64.5	0.050	8030361
RDL = Reportable Detection Limit								

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NB8928		NB8929	NB8930	NB8931		
Sampling Date		2015/09/04 19:10		2015/09/04 18:40	2015/09/04 15:15	2015/09/06 17:00		
COC Number		08411566		08411566	08411566	08411566		
	UNITS	MW15-10S	QC Batch	MW15-10D	DUP03	MW15-07S	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	11.6	8039696	90.8	3.86	10.8	0.050	8030361
Dissolved Potassium (K)	mg/L	3.12	8039696	10.2	1.79	1.47	0.050	8030361
Dissolved Sodium (Na)	mg/L	25.9	8039696	25.0	1.90	4.05	0.050	8030361
Dissolved Sulphur (S)	mg/L	16.8 (1)	8039696	3.6	<3.0	13.0	3.0	8030361

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NB8932		
<b>Sampling Date</b>		2015/09/06 17:30		
<b>COC Number</b>		08411566		
	<b>UNITS</b>	<b>MW15-07D</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	215	0.50	8030360
<b>Elements</b>				
Dissolved Mercury (Hg)	mg/L	<0.0000020	0.0000020	8033814
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	mg/L	0.0124 (1)	0.00050	8032618
Dissolved Antimony (Sb)	mg/L	<0.000020	0.000020	8032618
Dissolved Arsenic (As)	mg/L	0.000245	0.000020	8032618
Dissolved Barium (Ba)	mg/L	0.0402	0.000020	8032618
Dissolved Beryllium (Be)	mg/L	<0.000010	0.000010	8032618
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000050	8032618
Dissolved Boron (B)	mg/L	<0.010	0.010	8032618
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.0000050	8032618
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00010	8032618
Dissolved Cobalt (Co)	mg/L	0.0000310 (1)	0.0000050	8032618
Dissolved Copper (Cu)	mg/L	0.000089	0.000050	8032618
Dissolved Iron (Fe)	mg/L	0.498	0.0010	8032618
Dissolved Lead (Pb)	mg/L	0.0000810 (1)	0.0000050	8032618
Dissolved Lithium (Li)	mg/L	0.0129	0.00050	8032618
Dissolved Manganese (Mn)	mg/L	0.0614	0.000050	8032618
Dissolved Molybdenum (Mo)	mg/L	0.000058	0.000050	8032618
Dissolved Nickel (Ni)	mg/L	0.000036	0.000020	8032618
Dissolved Phosphorus (P)	mg/L	0.0053	0.0020	8032618
Dissolved Selenium (Se)	mg/L	<0.000040	0.000040	8032618
Dissolved Silicon (Si)	mg/L	7.86	0.050	8032618
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000050	8032618
Dissolved Strontium (Sr)	mg/L	0.325	0.000050	8032618
Dissolved Thallium (Tl)	mg/L	<0.0000020	0.0000020	8032618
Dissolved Tin (Sn)	mg/L	<0.00020	0.00020	8032618
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00050	8032618
Dissolved Uranium (U)	mg/L	0.00116	0.0000020	8032618
Dissolved Vanadium (V)	mg/L	<0.00020	0.00020	8032618
Dissolved Zinc (Zn)	mg/L	0.00087	0.00010	8032618
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00010	8032618
RDL = Reportable Detection Limit				
(1) Dissolved greater than total. Reanalysis yields similar results.				

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NB8932		
<b>Sampling Date</b>		2015/09/06 17:30		
<b>COC Number</b>		08411566		
	<b>UNITS</b>	<b>MW15-07D</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Calcium (Ca)	mg/L	62.5	0.050	8030361
Dissolved Magnesium (Mg)	mg/L	14.4	0.050	8030361
Dissolved Potassium (K)	mg/L	1.63	0.050	8030361
Dissolved Sodium (Na)	mg/L	4.41	0.050	8030361
Dissolved Sulphur (S)	mg/L	9.9	3.0	8030361
RDL = Reportable Detection Limit				

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NB8923		NB8932		
Sampling Date		2015/09/04 16:35		2015/09/06 17:30		
COC Number		08411566		08411566		
	UNITS	MW15-03D	QC Batch	MW15-07D	RDL	QC Batch
<b>Calculated Parameters</b>						
Total Hardness (CaCO3)	mg/L	196	8030982	213	0.50	8030982
<b>Elements</b>						
Total Mercury (Hg)	mg/L	<0.0000020	8034881	<0.0000020	0.0000020	8033755
<b>Total Metals by ICPMS</b>						
Total Aluminum (Al)	mg/L	0.0349	8032170	0.00677	0.00050	8032170
Total Antimony (Sb)	mg/L	0.00325	8032170	<0.000020	0.000020	8032170
Total Arsenic (As)	mg/L	0.00195	8032170	0.000255	0.000020	8032170
Total Barium (Ba)	mg/L	0.0465	8032170	0.0370	0.000020	8032170
Total Beryllium (Be)	mg/L	<0.000010	8032170	<0.000010	0.000010	8032170
Total Bismuth (Bi)	mg/L	<0.0000050	8032170	<0.0000050	0.0000050	8032170
Total Boron (B)	mg/L	<0.010	8032170	<0.010	0.010	8032170
Total Cadmium (Cd)	mg/L	0.0000120	8032170	<0.0000050	0.0000050	8032170
Total Chromium (Cr)	mg/L	0.00015	8032170	<0.00010	0.00010	8032170
Total Cobalt (Co)	mg/L	0.000292	8032170	0.0000230	0.0000050	8032170
Total Copper (Cu)	mg/L	0.000497	8032170	<0.000050	0.000050	8032170
Total Iron (Fe)	mg/L	0.433	8032170	0.461	0.0010	8032170
Total Lead (Pb)	mg/L	0.000121	8032170	0.0000210	0.0000050	8032170
Total Lithium (Li)	mg/L	0.00623	8032170	0.0120	0.00050	8032170
Total Manganese (Mn)	mg/L	0.0697	8032170	0.0580	0.000050	8032170
Total Molybdenum (Mo)	mg/L	0.00439	8032170	0.000081	0.000050	8032170
Total Nickel (Ni)	mg/L	0.000974	8032170	0.000031	0.000020	8032170
Total Phosphorus (P)	mg/L	0.0093	8032170	0.0038	0.0020	8032170
Total Selenium (Se)	mg/L	0.000217	8032170	<0.000040	0.000040	8032170
Total Silicon (Si)	mg/L	4.04	8032170	8.36	0.050	8032170
Total Silver (Ag)	mg/L	0.0000090	8032170	<0.0000050	0.0000050	8032170
Total Strontium (Sr)	mg/L	0.239	8032170	0.321	0.000050	8032170
Total Thallium (Tl)	mg/L	0.0000030	8032170	<0.0000020	0.0000020	8032170
Total Tin (Sn)	mg/L	<0.00020	8032170	<0.00020	0.00020	8032170
Total Titanium (Ti)	mg/L	0.00191	8032170	<0.00050	0.00050	8032170
Total Uranium (U)	mg/L	0.00184	8032170	0.00108	0.0000020	8032170
Total Vanadium (V)	mg/L	<0.00020	8032170	<0.00020	0.00020	8032170
Total Zinc (Zn)	mg/L	0.00221	8032170	0.00098	0.00010	8032170
Total Zirconium (Zr)	mg/L	0.00053	8032170	<0.00010	0.00010	8032170
Total Calcium (Ca)	mg/L	54.2	8030938	62.9	0.050	8030938
RDL = Reportable Detection Limit						

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NB8923		NB8932		
<b>Sampling Date</b>		2015/09/04 16:35		2015/09/06 17:30		
<b>COC Number</b>		08411566		08411566		
	<b>UNITS</b>	<b>MW15-03D</b>	<b>QC Batch</b>	<b>MW15-07D</b>	<b>RDL</b>	<b>QC Batch</b>
Total Magnesium (Mg)	mg/L	14.6	8030938	13.5	0.050	8030938
Total Potassium (K)	mg/L	2.68	8030938	1.53	0.050	8030938
Total Sodium (Na)	mg/L	2.66	8030938	4.20	0.050	8030938
Total Sulphur (S)	mg/L	10.2	8030938	9.9	3.0	8030938
RDL = Reportable Detection Limit						

Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NB8922		NB8924	NB8925		
Sampling Date		2015/09/04 16:10		2015/09/04 15:15	2015/09/04 13:30		
COC Number		08411566		08411566	08411566		
	UNITS	MW15-03S	RDL	MW15-04S	MW15-04D	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	152	0.50	313	646	0.50	8030982
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	<0.0000020	<0.0000020	0.0000020	8034881
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	3.15	0.0030	38.0	54.0	0.015	8032303
Total Antimony (Sb)	mg/L	0.000156	0.000050	0.00026	<0.00025	0.00025	8032303
Total Arsenic (As)	mg/L	0.00425	0.000020	0.0402	0.120	0.00010	8032303
Total Barium (Ba)	mg/L	0.0902	0.00010	0.674	5.28	0.00050	8032303
Total Beryllium (Be)	mg/L	0.000186	0.000010	0.00109	0.00141	0.000050	8032303
Total Bismuth (Bi)	mg/L	0.000074	0.000020	0.00111	0.00079	0.00010	8032303
Total Boron (B)	mg/L	<0.050	0.050	<0.25	<0.25	0.25	8032303
Total Cadmium (Cd)	mg/L	0.000145	0.0000050	0.00162	0.00346	0.000025	8032303
Total Chromium (Cr)	mg/L	0.0143	0.00050	0.105	0.313	0.0025	8032303
Total Cobalt (Co)	mg/L	0.00394	0.000010	0.0547	0.295	0.000050	8032303
Total Copper (Cu)	mg/L	0.0192	0.00020	0.182	0.419	0.0010	8032303
Total Iron (Fe)	mg/L	10.4	0.0050	81.8	190	0.025	8032303
Total Lead (Pb)	mg/L	0.00647	0.000050	0.0867	0.0938	0.00025	8032303
Total Lithium (Li)	mg/L	0.00464	0.00050	0.0259	0.0410	0.0025	8032303
Total Manganese (Mn)	mg/L	0.281	0.00010	2.01	3.73	0.00050	8032303
Total Molybdenum (Mo)	mg/L	0.0115	0.000050	0.00524	0.00591	0.00025	8032303
Total Nickel (Ni)	mg/L	0.0214	0.00010	0.121	0.573	0.00050	8032303
Total Phosphorus (P)	mg/L	0.231	0.010	1.75	3.39	0.050	8032303
Total Selenium (Se)	mg/L	0.000366	0.000040	0.00070	0.00586	0.00020	8032303
Total Silicon (Si)	mg/L	8.82	0.10	42.1	49.2	0.50	8032303
Total Silver (Ag)	mg/L	0.000176	0.0000050	0.00664	0.00680	0.000025	8032303
Total Strontium (Sr)	mg/L	0.144	0.000050	0.354	0.932	0.00025	8032303
Total Thallium (Tl)	mg/L	0.0000710	0.0000020	0.000834	0.000976	0.000010	8032303
Total Tin (Sn)	mg/L	0.00035	0.00020	0.0016	0.0015	0.0010	8032303
Total Titanium (Ti)	mg/L	0.114	0.0050	1.47	0.323	0.025	8032303
Total Uranium (U)	mg/L	0.00107	0.0000050	0.00329	0.00946	0.000025	8032303
Total Vanadium (V)	mg/L	0.00865	0.00050	0.121	0.0780	0.0025	8032303
Total Zinc (Zn)	mg/L	0.0312	0.0010	0.320	0.514	0.0050	8032303
Total Zirconium (Zr)	mg/L	0.00096	0.00010	0.00841	0.0164	0.00050	8032303
Total Calcium (Ca)	mg/L	50.7	0.25	78.3	198	1.3	8030938
RDL = Reportable Detection Limit							

Maxxam Job #: B577997  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NB8922		NB8924	NB8925		
Sampling Date		2015/09/04 16:10		2015/09/04 15:15	2015/09/04 13:30		
COC Number		08411566		08411566	08411566		
	UNITS	MW15-03S	RDL	MW15-04S	MW15-04D	RDL	QC Batch
Total Magnesium (Mg)	mg/L	6.14	0.25	28.6	36.8	1.3	8030938
Total Potassium (K)	mg/L	2.28	0.25	11.6	11.2	1.3	8030938
Total Sodium (Na)	mg/L	14.3	0.25	2.0	2.8	1.3	8030938
Total Sulphur (S)	mg/L	<15	15	<75	<75	75	8030938
RDL = Reportable Detection Limit							



Maxxam Job #: B577997  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NB8926	NB8927			NB8928		
Sampling Date		2015/09/05 17:00	2015/09/05 17:55			2015/09/04 19:10		
COC Number		08411566	08411566			08411566		
	UNITS	MW15-09S	MW15-09D	RDL	QC Batch	MW15-10S	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	202	396	0.50	8030982	757	0.50	8030982
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	8034881	<0.0000020	0.0000020	8033755
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	0.862	6.83	0.0030	8032303	80.4	0.015	8032303
Total Antimony (Sb)	mg/L	0.000258	0.000356	0.000050	8032303	0.00038	0.00025	8032303
Total Arsenic (As)	mg/L	0.00173	0.00988	0.000020	8032303	0.0508	0.00010	8032303
Total Barium (Ba)	mg/L	0.186	0.228	0.00010	8032303	1.80	0.00050	8032303
Total Beryllium (Be)	mg/L	0.000064	0.000247	0.000010	8032303	0.00640	0.000050	8032303
Total Bismuth (Bi)	mg/L	0.000027	<0.000020	0.000020	8032303	0.00305	0.00010	8032303
Total Boron (B)	mg/L	<0.050	<0.050	0.050	8032303	<0.25	0.25	8032303
Total Cadmium (Cd)	mg/L	0.000129	0.000357	0.0000050	8032303	0.00615	0.000025	8032303
Total Chromium (Cr)	mg/L	0.00470	0.0316	0.00050	8032303	0.215	0.0025	8032303
Total Cobalt (Co)	mg/L	0.00179	0.00528	0.000010	8032303	0.115	0.000050	8032303
Total Copper (Cu)	mg/L	0.00543	0.0169	0.00020	8032303	0.415	0.0010	8032303
Total Iron (Fe)	mg/L	2.92	27.9	0.0050	8032303	170	0.025	8032303
Total Lead (Pb)	mg/L	0.00260	0.00452	0.000050	8032303	0.270	0.00025	8032303
Total Lithium (Li)	mg/L	0.00431	0.0426	0.00050	8032303	0.0773	0.0025	8032303
Total Manganese (Mn)	mg/L	0.421	0.981	0.00010	8032303	5.04	0.00050	8032303
Total Molybdenum (Mo)	mg/L	0.00718	0.0171	0.000050	8032303	0.00436	0.00025	8032303
Total Nickel (Ni)	mg/L	0.00286	0.00378	0.00010	8032303	0.254	0.00050	8032303
Total Phosphorus (P)	mg/L	0.068	0.719	0.010	8032303	5.91	0.050	8032303
Total Selenium (Se)	mg/L	0.000721	0.000986	0.000040	8032303	0.00297	0.00020	8032303
Total Silicon (Si)	mg/L	5.19	17.9	0.10	8032303	68.9	0.50	8032303
Total Silver (Ag)	mg/L	0.000292	0.00204	0.0000050	8032303	0.00764	0.000025	8032303
Total Strontium (Sr)	mg/L	0.237	0.501	0.000050	8032303	0.960	0.00025	8032303
Total Thallium (Tl)	mg/L	0.0000160	0.0000490	0.0000020	8032303	0.00152	0.000010	8032303
Total Tin (Sn)	mg/L	<0.00020	0.00082	0.00020	8032303	0.0014	0.0010	8032303
Total Titanium (Ti)	mg/L	0.0360	0.309	0.0050	8032303	0.646	0.025	8032303
Total Uranium (U)	mg/L	0.00243	0.00495	0.0000050	8032303	0.0219	0.000025	8032303
Total Vanadium (V)	mg/L	0.00323	0.0281	0.00050	8032303	0.262	0.0025	8032303
Total Zinc (Zn)	mg/L	0.0096	0.0458	0.0010	8032303	0.917	0.0050	8032303
Total Zirconium (Zr)	mg/L	0.00069	0.00146	0.00010	8032303	0.00518	0.00050	8032303
Total Calcium (Ca)	mg/L	63.7	126	0.25	8030938	204	1.3	8030938
RDL = Reportable Detection Limit								

Maxxam Job #: B577997  
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Client Project #: ENVMIN03071-01  
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**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NB8926	NB8927			NB8928		
Sampling Date		2015/09/05 17:00	2015/09/05 17:55			2015/09/04 19:10		
COC Number		08411566	08411566			08411566		
	UNITS	MW15-09S	MW15-09D	RDL	QC Batch	MW15-10S	RDL	QC Batch
Total Magnesium (Mg)	mg/L	10.4	19.9	0.25	8030938	60.3	1.3	8030938
Total Potassium (K)	mg/L	1.92	5.51	0.25	8030938	16.0	1.3	8030938
Total Sodium (Na)	mg/L	4.73	4.97	0.25	8030938	22.5	1.3	8030938
Total Sulphur (S)	mg/L	<15	<15	15	8030938	<75	75	8030938
RDL = Reportable Detection Limit								

Maxxam Job #: B577997  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01  
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Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NB8929	NB8930	NB8931		
Sampling Date		2015/09/04 18:40	2015/09/04 15:15	2015/09/06 17:00		
COC Number		08411566	08411566	08411566		
	<b>UNITS</b>	<b>MW15-10D</b>	<b>DUP03</b>	<b>MW15-07S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>						
Total Hardness (CaCO3)	mg/L	1810	285	480	0.50	8030982
<b>Elements</b>						
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	0.0000020	8033755
<b>Total Metals by ICPMS</b>						
Total Aluminum (Al)	mg/L	6.97	32.9	26.8	0.0030	8032303
Total Antimony (Sb)	mg/L	0.000163	0.000266	0.000102	0.000050	8032303
Total Arsenic (As)	mg/L	0.00451	0.0394	0.0294	0.000020	8032303
Total Barium (Ba)	mg/L	0.458	0.569	0.416	0.00010	8032303
Total Beryllium (Be)	mg/L	0.00109	0.00101	0.00165	0.000010	8032303
Total Bismuth (Bi)	mg/L	0.00121	0.000944	0.000483	0.000020	8032303
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	0.050	8032303
Total Cadmium (Cd)	mg/L	0.00257	0.00142	0.000624	0.0000050	8032303
Total Chromium (Cr)	mg/L	0.0215	0.0918	0.118	0.00050	8032303
Total Cobalt (Co)	mg/L	0.00745	0.0474	0.0446	0.000010	8032303
Total Copper (Cu)	mg/L	0.0260	0.153	0.239	0.00020	8032303
Total Iron (Fe)	mg/L	38.5	68.7	71.5	0.0050	8032303
Total Lead (Pb)	mg/L	0.0657	0.0797	0.0298	0.000050	8032303
Total Lithium (Li)	mg/L	0.207	0.0250	0.0265	0.00050	8032303
Total Manganese (Mn)	mg/L	4.68	1.75	1.79	0.00010	8032303
Total Molybdenum (Mo)	mg/L	0.00393	0.00575	0.00210	0.000050	8032303
Total Nickel (Ni)	mg/L	0.0120	0.106	0.119	0.00010	8032303
Total Phosphorus (P)	mg/L	0.429	1.58	2.36	0.010	8032303
Total Selenium (Se)	mg/L	0.000970	0.000849	0.00213	0.000040	8032303
Total Silicon (Si)	mg/L	41.8	39.9	37.2	0.10	8032303
Total Silver (Ag)	mg/L	0.00173	0.00476	0.00319	0.0000050	8032303
Total Strontium (Sr)	mg/L	2.36	0.340	0.452	0.000050	8032303
Total Thallium (Tl)	mg/L	0.000107	0.000716	0.000306	0.0000020	8032303
Total Tin (Sn)	mg/L	0.00036	0.00143	0.00086	0.00020	8032303
Total Titanium (Ti)	mg/L	0.277	1.30	0.193	0.0050	8032303
Total Uranium (U)	mg/L	0.000813	0.00302	0.00695	0.0000050	8032303
Total Vanadium (V)	mg/L	0.0207	0.107	0.101	0.00050	8032303
Total Zinc (Zn)	mg/L	0.0426	0.256	0.223	0.0010	8032303
Total Zirconium (Zr)	mg/L	0.00390	0.0104	0.0103	0.00010	8032303
Total Calcium (Ca)	mg/L	599	75.7	144	0.25	8030938
RDL = Reportable Detection Limit						

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TETRATECH EBA  
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Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NB8929	NB8930	NB8931		
Sampling Date		2015/09/04 18:40	2015/09/04 15:15	2015/09/06 17:00		
COC Number		08411566	08411566	08411566		
	UNITS	MW15-10D	DUP03	MW15-07S	RDL	QC Batch
Total Magnesium (Mg)	mg/L	75.1	23.3	29.3	0.25	8030938
Total Potassium (K)	mg/L	9.78	10.3	5.08	0.25	8030938
Total Sodium (Na)	mg/L	21.6	1.97	3.86	0.25	8030938
Total Sulphur (S)	mg/L	<15	<15	<15	15	8030938
RDL = Reportable Detection Limit						

Maxxam Job #: B577997  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01  
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Sampler Initials: KR

### GENERAL COMMENTS

Revised report V2: Updated Client sample IDs for NB8923, NB8925 and NB8929 per client request (MM4).

Sample NB8922-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NB8924-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NB8925-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NB8926-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NB8927-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NB8928-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NB8929-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn. Ionic imbalance out of optimal range due to high level of iron which may precipitate out over time and affect the results for alkalinity.

Sample NB8930-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NB8931-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

#### LL TOTAL METALS (DIGESTED) WITH CV HG Comments

Sample NB8924-06 Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample NB8925-06 Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample NB8928-06 Elements by ICPMS Digested LL (total): RDL raised due to sample matrix interference.

Sample NB8923, Elements by ICPMS Low Level (dissolved): Test repeated.

**Results relate only to the items tested.**

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**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
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Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8031660	Total Suspended Solids	2015/09/10			100	80 - 120	<1.0	mg/L		
8031669	Total Dissolved Solids	2015/09/10	101	80 - 120	92	80 - 120	1.2, RDL=1.0	mg/L	14	20
8031892	Acidity (pH 4.5)	2015/09/09					<0.50	mg/L	NC	20
8031892	Acidity (pH 8.3)	2015/09/09			99	80 - 120	<0.50	mg/L	NC	20
8031934	Turbidity	2015/09/09			103	80 - 120	<0.10	NTU	5.5	20
8032015	Alkalinity (PP as CaCO3)	2015/09/09					<0.50	mg/L	NC	20
8032015	Alkalinity (Total as CaCO3)	2015/09/09	NC	80 - 120	99	80 - 120	0.64, RDL=0.50	mg/L	0.25	20
8032015	Bicarbonate (HCO3)	2015/09/09					0.78, RDL=0.50	mg/L	0.25	20
8032015	Carbonate (CO3)	2015/09/09					<0.50	mg/L	NC	20
8032015	Hydroxide (OH)	2015/09/09					<0.50	mg/L	NC	20
8032016	Conductivity	2015/09/09			99	80 - 120	<1.0	uS/cm	0.26	20
8032017	pH	2015/09/09			102	97 - 103			0	N/A
8032023	Alkalinity (PP as CaCO3)	2015/09/09					<0.50	mg/L	NC	20
8032023	Alkalinity (Total as CaCO3)	2015/09/09	NC	80 - 120	97	80 - 120	<0.50	mg/L	0.35	20
8032023	Bicarbonate (HCO3)	2015/09/09					<0.50	mg/L	0.35	20
8032023	Carbonate (CO3)	2015/09/09					<0.50	mg/L	NC	20
8032023	Hydroxide (OH)	2015/09/09					<0.50	mg/L	NC	20
8032024	Conductivity	2015/09/09			102	80 - 120	1.2, RDL=1.0	uS/cm	1.9	20
8032025	pH	2015/09/09			102	97 - 103			0.78	N/A
8032170	Total Aluminum (Al)	2015/09/11	NC	80 - 120	104	80 - 120	<0.00050	mg/L		
8032170	Total Antimony (Sb)	2015/09/11	102	80 - 120	102	80 - 120	<0.000020	mg/L		
8032170	Total Arsenic (As)	2015/09/11	103	80 - 120	99	80 - 120	<0.000020	mg/L		
8032170	Total Barium (Ba)	2015/09/11	NC	80 - 120	96	80 - 120	<0.000020	mg/L		
8032170	Total Beryllium (Be)	2015/09/11	102	80 - 120	94	80 - 120	<0.000010	mg/L		
8032170	Total Bismuth (Bi)	2015/09/11	95	80 - 120	101	80 - 120	<0.0000050	mg/L		
8032170	Total Boron (B)	2015/09/11					<0.010	mg/L		
8032170	Total Cadmium (Cd)	2015/09/11	93	80 - 120	97	80 - 120	<0.0000050	mg/L		
8032170	Total Chromium (Cr)	2015/09/11	90	80 - 120	95	80 - 120	<0.00010	mg/L		
8032170	Total Cobalt (Co)	2015/09/11	91	80 - 120	96	80 - 120	<0.0000050	mg/L		
8032170	Total Copper (Cu)	2015/09/11	84	80 - 120	95	80 - 120	<0.000050	mg/L		
8032170	Total Iron (Fe)	2015/09/11	NC	80 - 120	103	80 - 120	<0.0010	mg/L		

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**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8032170	Total Lead (Pb)	2015/09/11	95	80 - 120	98	80 - 120	<0.0000050	mg/L		
8032170	Total Lithium (Li)	2015/09/11	101	80 - 120	87	80 - 120	<0.00050	mg/L		
8032170	Total Manganese (Mn)	2015/09/11	NC	80 - 120	98	80 - 120	<0.000050	mg/L		
8032170	Total Molybdenum (Mo)	2015/09/11	NC	80 - 120	104	80 - 120	<0.000050	mg/L		
8032170	Total Nickel (Ni)	2015/09/11	87	80 - 120	96	80 - 120	<0.000020	mg/L		
8032170	Total Phosphorus (P)	2015/09/11					<0.0020	mg/L		
8032170	Total Selenium (Se)	2015/09/11	95	80 - 120	97	80 - 120	<0.000040	mg/L		
8032170	Total Silicon (Si)	2015/09/11					<0.050	mg/L		
8032170	Total Silver (Ag)	2015/09/11	93	80 - 120	95	80 - 120	<0.0000050	mg/L		
8032170	Total Strontium (Sr)	2015/09/11	NC	80 - 120	96	80 - 120	<0.000050	mg/L		
8032170	Total Thallium (Tl)	2015/09/11	95	80 - 120	98	80 - 120	<0.0000020	mg/L		
8032170	Total Tin (Sn)	2015/09/11	101	80 - 120	100	80 - 120	<0.00020	mg/L		
8032170	Total Titanium (Ti)	2015/09/11	NC	80 - 120	94	80 - 120	<0.00050	mg/L		
8032170	Total Uranium (U)	2015/09/11	99	80 - 120	95	80 - 120	<0.0000020	mg/L		
8032170	Total Vanadium (V)	2015/09/11	93	80 - 120	96	80 - 120	<0.00020	mg/L		
8032170	Total Zinc (Zn)	2015/09/11	82	80 - 120	99	80 - 120	<0.00010	mg/L		
8032170	Total Zirconium (Zr)	2015/09/11					<0.00010	mg/L		
8032303	Total Aluminum (Al)	2015/09/10	NC	80 - 120	131 (1)	80 - 120	<0.0030	mg/L	6.2	20
8032303	Total Antimony (Sb)	2015/09/10	104	80 - 120	102	80 - 120	<0.000050	mg/L	NC	20
8032303	Total Arsenic (As)	2015/09/10	102	80 - 120	102	80 - 120	<0.000020	mg/L	2.8	20
8032303	Total Barium (Ba)	2015/09/10	NC	80 - 120	107	80 - 120	<0.00010	mg/L	0.67	20
8032303	Total Beryllium (Be)	2015/09/10	111	80 - 120	107	80 - 120	<0.000010	mg/L	NC	20
8032303	Total Bismuth (Bi)	2015/09/10	102	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8032303	Total Boron (B)	2015/09/10					<0.050	mg/L	NC	20
8032303	Total Cadmium (Cd)	2015/09/10	97	80 - 120	96	80 - 120	<0.0000050	mg/L	NC	20
8032303	Total Chromium (Cr)	2015/09/10	98	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8032303	Total Cobalt (Co)	2015/09/10	96	80 - 120	98	80 - 120	<0.000010	mg/L	3.7	20
8032303	Total Copper (Cu)	2015/09/10	91	80 - 120	96	80 - 120	0.00035, RDL=0.00020	mg/L		
8032303	Total Iron (Fe)	2015/09/10	NC	80 - 120	112	80 - 120	<0.0050	mg/L	2.4	20
8032303	Total Lead (Pb)	2015/09/10	98	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20

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**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8032303	Total Lithium (Li)	2015/09/10	NC	80 - 120	113	80 - 120	<0.00050	mg/L	2.4	20
8032303	Total Manganese (Mn)	2015/09/10	NC	80 - 120	100	80 - 120	<0.00010	mg/L	2.6	20
8032303	Total Molybdenum (Mo)	2015/09/10	NC	80 - 120	101	80 - 120	<0.000050	mg/L	0.27	20
8032303	Total Nickel (Ni)	2015/09/10	93	80 - 120	97	80 - 120	<0.00010	mg/L	0.78	20
8032303	Total Phosphorus (P)	2015/09/10					<0.010	mg/L		
8032303	Total Selenium (Se)	2015/09/10	96	80 - 120	92	80 - 120	<0.000040	mg/L	NC	20
8032303	Total Silicon (Si)	2015/09/10					<0.10	mg/L	1.4	20
8032303	Total Silver (Ag)	2015/09/10	98	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8032303	Total Strontium (Sr)	2015/09/10	NC	80 - 120	104	80 - 120	<0.000050	mg/L	0.26	20
8032303	Total Thallium (Tl)	2015/09/10	102	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8032303	Total Tin (Sn)	2015/09/10	102	80 - 120	105	80 - 120	<0.00020	mg/L	NC	20
8032303	Total Titanium (Ti)	2015/09/10	112	80 - 120	90	80 - 120	<0.0050	mg/L	NC	20
8032303	Total Uranium (U)	2015/09/10	101	80 - 120	95	80 - 120	<0.0000050	mg/L	2.6	20
8032303	Total Vanadium (V)	2015/09/10	98	80 - 120	98	80 - 120	<0.00050	mg/L	NC	20
8032303	Total Zinc (Zn)	2015/09/10	NC	80 - 120	96	80 - 120	<0.0010	mg/L	8.5	20
8032303	Total Zirconium (Zr)	2015/09/10					<0.00010	mg/L	1.4	20
8032440	Fluoride (F)	2015/09/09	110	80 - 120	102	80 - 120	<0.010	mg/L	0	20
8032558	Nitrate plus Nitrite (N)	2015/09/09	103	80 - 120	101	80 - 120	<0.0020	mg/L	0.45	25
8032560	Nitrite (N)	2015/09/09	100	80 - 120	100	80 - 120	<0.0020	mg/L	NC	25
8032582	Orthophosphate (P)	2015/09/09			88	80 - 120	<0.0010	mg/L		
8032618	Dissolved Aluminum (Al)	2015/09/12	NC	80 - 120	111	80 - 120	<0.00050	mg/L	0.30	20
8032618	Dissolved Antimony (Sb)	2015/09/12	104	80 - 120	107	80 - 120	<0.000020	mg/L	NC	20
8032618	Dissolved Arsenic (As)	2015/09/12	107	80 - 120	109	80 - 120	<0.000020	mg/L	8.1	20
8032618	Dissolved Barium (Ba)	2015/09/12	NC	80 - 120	107	80 - 120	<0.000020	mg/L	0.25	20
8032618	Dissolved Beryllium (Be)	2015/09/12	NC	80 - 120	104	80 - 120	<0.000010	mg/L	4.9	20
8032618	Dissolved Bismuth (Bi)	2015/09/12	101	80 - 120	107	80 - 120	<0.0000050	mg/L	NC	20
8032618	Dissolved Boron (B)	2015/09/12					<0.010	mg/L	NC	20
8032618	Dissolved Cadmium (Cd)	2015/09/12	NC	80 - 120	106	80 - 120	<0.0000050	mg/L	0.99	20
8032618	Dissolved Chromium (Cr)	2015/09/12	104	80 - 120	112	80 - 120	<0.00010	mg/L	NC	20
8032618	Dissolved Cobalt (Co)	2015/09/12	NC	80 - 120	112	80 - 120	<0.0000050	mg/L	2.6	20
8032618	Dissolved Copper (Cu)	2015/09/12	98	80 - 120	112	80 - 120	<0.000050	mg/L	2.6	20



Maxxam Job #: B577997  
Report Date: 2015/12/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8032618	Dissolved Iron (Fe)	2015/09/12	NC	80 - 120	117	80 - 120	<0.0010	mg/L	6.3	20
8032618	Dissolved Lead (Pb)	2015/09/12	NC	80 - 120	105	80 - 120	<0.0000050	mg/L	0.63	20
8032618	Dissolved Lithium (Li)	2015/09/12	NC	80 - 120	106	80 - 120	<0.00050	mg/L	7.3	20
8032618	Dissolved Manganese (Mn)	2015/09/12	NC	80 - 120	112	80 - 120	<0.000050	mg/L	3.7	20
8032618	Dissolved Molybdenum (Mo)	2015/09/12	102	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8032618	Dissolved Nickel (Ni)	2015/09/12	NC	80 - 120	113	80 - 120	<0.000020	mg/L	0.55	20
8032618	Dissolved Phosphorus (P)	2015/09/12					<0.0020	mg/L	NC	20
8032618	Dissolved Selenium (Se)	2015/09/12	NC	80 - 120	107	80 - 120	<0.000040	mg/L	5.2	20
8032618	Dissolved Silicon (Si)	2015/09/12					<0.050	mg/L	8.6	20
8032618	Dissolved Silver (Ag)	2015/09/12	99	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8032618	Dissolved Strontium (Sr)	2015/09/12	NC	80 - 120	104	80 - 120	<0.000050	mg/L	3.6	20
8032618	Dissolved Thallium (Tl)	2015/09/12	102	80 - 120	105	80 - 120	<0.0000020	mg/L	4.0	20
8032618	Dissolved Tin (Sn)	2015/09/12	93	80 - 120	107	80 - 120	<0.00020	mg/L	NC	20
8032618	Dissolved Titanium (Ti)	2015/09/12	99	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20
8032618	Dissolved Uranium (U)	2015/09/12	104	80 - 120	105	80 - 120	<0.0000020	mg/L	0	20
8032618	Dissolved Vanadium (V)	2015/09/12	105	80 - 120	107	80 - 120	<0.00020	mg/L	NC	20
8032618	Dissolved Zinc (Zn)	2015/09/12	NC	80 - 120	113	80 - 120	<0.00010	mg/L	0.14	20
8032618	Dissolved Zirconium (Zr)	2015/09/12					<0.00010	mg/L	NC	20
8032926	Total Suspended Solids	2015/09/10			105	80 - 120	<1.0	mg/L		
8032991	Dissolved Chloride (Cl)	2015/09/09	NC	80 - 120	95	80 - 120	<0.50	mg/L	0.45	20
8032996	Dissolved Sulphate (SO4)	2015/09/09	NC	80 - 120	92	80 - 120	<0.50	mg/L	1.7	20
8032998	Dissolved Chloride (Cl)	2015/09/09	113	80 - 120	96	80 - 120	<0.50	mg/L	NC	20
8032999	Dissolved Sulphate (SO4)	2015/09/09	NC	80 - 120	92	80 - 120	<0.50	mg/L	1.9	20
8033276	Total Organic Carbon (C)	2015/09/10	105	80 - 120	96	80 - 120	<0.50	mg/L	11	20
8033398	Orthophosphate (P)	2015/09/10	93	80 - 120	104	80 - 120	<0.0010	mg/L	NC	20
8033610	Total Nitrogen (N)	2015/09/10	NC	80 - 120	94	80 - 120	<0.020	mg/L	5.3	20
8033619	Total Nitrogen (N)	2015/09/10	82	80 - 120	93	80 - 120	<0.020	mg/L	NC	20
8033679	Total Ammonia (N)	2015/09/10	NC	80 - 120	97	80 - 120	0.0057, RDL=0.0050	mg/L	5.0	20
8033755	Total Mercury (Hg)	2015/09/11	88	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
8033814	Dissolved Mercury (Hg)	2015/09/11	104	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20

Maxxam Job #: B577997  
Report Date: 2015/12/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8033944	Total Phosphorus (P)	2015/09/10	92	80 - 120	106	80 - 120	<0.0020	mg/L	NC	20
8033946	Dissolved Phosphorus (P)	2015/09/10	99	80 - 120	110	80 - 120	<0.0020	mg/L	NC	20
8034012	Total Nitrogen (N)	2015/09/11			90	80 - 120	<0.020	mg/L		
8034420	Dissolved Sulphate (SO4)	2015/09/10	115	80 - 120	95	80 - 120	<0.50	mg/L		
8034550	Total Organic Carbon (C)	2015/09/11	103	80 - 120	106	80 - 120	<0.50	mg/L	NC	20
8034881	Total Mercury (Hg)	2015/09/11	85	80 - 120	84	80 - 120	<0.0000020	mg/L	NC	20
8037051	Total Nitrogen (N)	2015/09/14			93	80 - 120	<0.020	mg/L		
8037447	Orthophosphate (P)	2015/09/14	99	80 - 120	92	80 - 120	<0.0010	mg/L	NC	20
8037451	Dissolved Phosphorus (P)	2015/09/14	93	80 - 120	104	80 - 120	<0.0020	mg/L	NC	20
8037625	Total Ammonia (N)	2015/09/15	NC	80 - 120	96	80 - 120	0.0064, RDL=0.0050	mg/L	6.2	20
8039137	Dissolved Cadmium (Cd)	2015/09/16			97	80 - 120	<0.0000050	mg/L		
8039137	Dissolved Lead (Pb)	2015/09/16			102	80 - 120	<0.0000050	mg/L		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).


(1) Blank Spike for (Aluminum) outside acceptance criteria (10% of analytes failure allowed).


Maxxam Job #: B577997  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

  
Name REDACTED Data Validation Coordinator

  
Name REDACTED c., B.Ed., P.Chem, Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Invoice Information		Report Information (if differs from invoice)				Project Info				Turnaround Time (TAT) Required			
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)			
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS			
Address: 530-1130 West Pender Street, Vancouver		Address: 61 Wasson Place				Project #: ENVMINO3071-01				Rush TAT (Surcharges will be applied)			
BC PC: V6E 4A4		Whitehorse, YT PC: V1A 0H7				Site Location: Kudz Ze Kayah				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days			
Phone: Email REDACTED		Phone: 867-668-6225				Site #:				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days			
Email: Email REDACTED		Email: Email REDACTED				Sampled By: Name REDACTED				Date Required:			
Regulatory Criteria		Special Instructions		Analysis Requested				Rush Confirmation #:					
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		ROUTINE (incl. TDS) _____ MAJOR IONS _____ NUTRIENTS (INCLUDING NO3, NO2, TOTAL P) _____ Low Level Dissolved Metals with CV Hg _____ Low Level Total Metals with CV Hg _____ Phosphorus (LL Tot, dissolved) HF/FP _____				LABORATORY USE ONLY CUSTODY SEAL Y (N) _____ COOLER TEMPERATURES Present Intact NA NA 654 NA NA 645 NA NA 655 COOLING MEDIA PRESENT Y / N					
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM													
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (INCLUDING NO3, NO2, TOTAL P)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus (LL Tot, dissolved) HF/FP	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	COMMENTS
1	MW15-03S	NB8922	15/09/04	16:10	water	x	x	x	x	x	13		Dissolved metals and phosphorus were field filtered and preserved.
2	MW15D-03D	NB8923	15/09/04	16:35	water	x	x	x	x	x	13		Total metals were field preserved.
3	MW15-04S	NB8924	15/09/04	15:15	water	x	x	x	x	x	13		Project number on bottles incorrect.
4	MW15D-04D	NB8925	15/09/04	13:30	water	x	x	x	x	x	13		Please change to project number
5	MW15-09S	NB8926	15/09/05	17:00	water	x	x	x	x	x	13		above
6	MW15D-09D	NB8927	15/09/05	17:55	water	x	x	x	x	x	13		
7	MW15-10S	NB8928	15/09/04	19:10	water	x	x	x	x	x	13		
8	MW15D-10D	NB8929	15/09/04	18:40	water	x	x	x	x	x	13		
9	Dup03	NB8930	15/09/04	15:15	water	x	x	x	x	x	13		
10	MW15-07S	NB8931	15/09/06	17:00	water	x	x	x	x	x	13		
11	MW15-07D	NB8932	15/09/06	17:30	water	x	x	x	x	x	13		
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #					
				Name REDACTED		2015/09/08	13:35	B577997					

Your Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08411698

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/12/16**  
Report #: R2097916  
Version: 2 - Revision

### CERTIFICATE OF ANALYSIS – REVISED REPORT

**MAXXAM JOB #: B579341**

**Received: 2015/09/11, 14:05**

Sample Matrix: Water  
# Samples Received: 3

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted		
Acidity pH 4.5 & pH 8.3 (as CaCO <sub>3</sub> )	3	N/A	2015/09/14 BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	3	2015/09/12	2015/09/13 BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	3	N/A	2015/09/14 BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	3	N/A	2015/09/13 BBY6SOP-00026	SM 22 2510 B m
Fluoride	3	N/A	2015/09/15 BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> )	1	N/A	2015/09/16 BBY7SOP-00002	EPA 6020a R1 m
Hardness Total (calculated as CaCO <sub>3</sub> )	2	N/A	2015/09/17 BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO <sub>3</sub> )	3	N/A	2015/09/16 BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	3	N/A	2015/09/16 BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	3	2015/09/15	2015/09/15 BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	3	N/A	2015/09/17 BBY WI-00033	SM 22 1030E
Sum of cations, anions	1	N/A	2015/09/16 Calc	
Sum of cations, anions	2	N/A	2015/09/17 Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	3	N/A	2015/09/16 BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	3	N/A	2015/09/16 BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2015/09/14	2015/09/16 BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	2	2015/09/16	2015/09/16 BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2015/09/16 BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	2	N/A	2015/09/17 BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	3	2015/09/16	2015/09/16 BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	3	N/A	2015/09/16 BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	3	N/A	2015/09/12 BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	3	N/A	2015/09/12 BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	3	N/A	2015/09/15 BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO <sub>3</sub> Preserve for Metals	3	N/A	2015/09/14 BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	3	N/A	2015/09/13 BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	3	N/A	2015/09/12 BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	3	N/A	2015/09/14 BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	3	N/A	2015/09/15 BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	3	N/A	2015/09/16 BBY WI-00033	Calculation

Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08411698

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/12/16**  
 Report #: R2097916  
 Version: 2 - Revision

### CERTIFICATE OF ANALYSIS – REVISED REPORT

**MAXXAM JOB #: B579341**

**Received: 2015/09/11, 14:05**

Sample Matrix: Water  
 # Samples Received: 3

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Carbon (Total Organic) (1, 3)	3	N/A	2015/09/17	CAL SOP-00077	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	3	2015/09/14	2015/09/14	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	3	N/A	2015/09/14	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	3	2015/09/12	2015/09/14	BBY6SOP-00034	SM 22 2540 D
Turbidity	3	N/A	2015/09/12	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) This test was performed by Maxxam Calgary Environmental

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(3) TOC present in the sample should be considered as non-purgeable TOC.

#### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email REDACTED

Phone REDACTED

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B579341  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NC5341	NC5341			NC5342	NC5342	NC5343		
Sampling Date		2015/09/07 06:00	2015/09/07 06:00			2015/09/07 03:30	2015/09/07 03:30	2015/09/07 04:00		
COC Number		08411698	08411698			08411698	08411698	08411698		
	UNITS	MW15-05D	MW15-05D Lab-Dup	RDL	QC Batch	MW15-06	MW15-06 Lab-Dup	BH95G-30	RDL	QC Batch
<b>Misc. Inorganics</b>										
Acidity (pH 4.5)	mg/L	<0.50		0.50	8037113	<0.50		<0.50	0.50	8037116
Acidity (pH 8.3)	mg/L	<0.50		0.50	8037113	<0.50		<0.50	0.50	8037116
<b>Calculated Parameters</b>										
Anion Sum	meq/L	4.6		N/A	8037624	3.9		4.1	N/A	8037624
Cation Sum	meq/L	4.7		N/A	8037624	4.3		4.2	N/A	8037624
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE	FIELD		FIELD	N/A	ONSITE
Ion Balance	N/A	1.0		0.010	8035420	1.1		1.0	0.010	8035420
Nitrate (N)	mg/L	0.122		0.0020	8034352	0.313		0.279	0.0020	8034352
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.180		0.010	8038564	0.110		0.140	0.010	8038564
Alkalinity (Total as CaCO3)	mg/L	183		0.50	8035826	171		180	0.50	8035826
Total Organic Carbon (C)	mg/L	3.3		0.50	8040514	0.64		0.85	0.50	8040514
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8035826	<0.50		<0.50	0.50	8035826
Bicarbonate (HCO3)	mg/L	223		0.50	8035826	209		220	0.50	8035826
Carbonate (CO3)	mg/L	<0.50		0.50	8035826	<0.50		<0.50	0.50	8035826
Hydroxide (OH)	mg/L	<0.50		0.50	8035826	<0.50		<0.50	0.50	8035826
<b>Anions</b>										
Orthophosphate (P)	mg/L	0.0014 (1)		0.0010	8035937	0.0035 (1)		0.0034 (1)	0.0010	8035937
Dissolved Sulphate (SO4)	mg/L	42.2		0.50	8037542	21.8		22.4	0.50	8037542
Dissolved Chloride (Cl)	mg/L	1.8		0.50	8037541	0.80		0.87	0.50	8037541
<b>Nutrients</b>										
Total Ammonia (N)	mg/L	0.036	0.037	0.0050	8040285	0.031		0.047	0.0050	8040285
Dissolved Phosphorus (P)	mg/L	<0.0020		0.0020	8037451	0.0029	0.0027	0.0048	0.0020	8037451
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.173		0.020	8034862	0.071		0.244	0.020	8034862
Nitrate plus Nitrite (N)	mg/L	0.138 (1)		0.0020	8035977	0.320 (1)		0.292 (1)	0.0020	8035977
Nitrite (N)	mg/L	0.0161 (1)		0.0020	8035978	0.0072 (1)		0.0130 (1)	0.0020	8035978
Total Nitrogen (N)	mg/L	0.311		0.020	8040336	0.391		0.535	0.020	8040336
Total Phosphorus (P)	mg/L	0.274		0.0020	8037452	0.0672		0.228	0.0020	8037452
<b>Physical Properties</b>										
Conductivity	uS/cm	437		1.0	8035827	366		386	1.0	8035827
pH	pH	8.19		N/A	8035828	8.07		8.17	N/A	8035828
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.										

Maxxam Job #: B579341  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NC5341	NC5341			NC5342	NC5342	NC5343		
<b>Sampling Date</b>		2015/09/07 06:00	2015/09/07 06:00			2015/09/07 03:30	2015/09/07 03:30	2015/09/07 04:00		
<b>COC Number</b>		08411698	08411698			08411698	08411698	08411698		
	<b>UNITS</b>	<b>MW15-05D</b>	<b>MW15-05D Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-06</b>	<b>MW15-06 Lab-Dup</b>	<b>BH95G-30</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	1970 (1)		5.0	8035716	134		970	1.0	8035716
Total Dissolved Solids	mg/L	250		1.0	8036700	220		216	1.0	8036700
Turbidity	NTU	904 (2)		1.0	8035717	42.6 (3)		38.4 (3)	0.10	8035717

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) RDL raised due to high concentration of solids in the sample.  
(2) Sample arrived to laboratory past recommended hold time.  
RDL raised due to sample dilution.  
(3) Sample arrived to laboratory past recommended hold time.



Maxxam Job #: B579341  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NC5341		NC5342	NC5343		
Sampling Date		2015/09/07 06:00		2015/09/07 03:30	2015/09/07 04:00		
COC Number		08411698		08411698	08411698		
	UNITS	MW15-05D	QC Batch	MW15-06	BH95G-30	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	154	8034175	212	203	0.50	8034175
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.0000020	8039665	<0.0000020	0.0000054	0.0000020	8039665
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00546	8036907	0.00195	0.0129	0.00050	8036907
Dissolved Antimony (Sb)	mg/L	0.000023	8036907	<0.000020	0.000020	0.000020	8036907
Dissolved Arsenic (As)	mg/L	0.000190	8036907	0.000060	0.000062	0.000020	8036907
Dissolved Barium (Ba)	mg/L	0.0224	8036907	0.0686	0.0745	0.000020	8036907
Dissolved Beryllium (Be)	mg/L	<0.000010	8036907	<0.000010	<0.000010	0.000010	8036907
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8036907	<0.0000050	<0.0000050	0.0000050	8036907
Dissolved Boron (B)	mg/L	<0.010	8036907	<0.010	<0.010	0.010	8036907
Dissolved Cadmium (Cd)	mg/L	0.0000270	8036907	0.000175	0.0000950	0.0000050	8036907
Dissolved Chromium (Cr)	mg/L	<0.00010	8036907	<0.00010	0.00010	0.00010	8036907
Dissolved Cobalt (Co)	mg/L	0.000148	8036907	0.0000340	0.0000560	0.0000050	8036907
Dissolved Copper (Cu)	mg/L	0.000611	8036907	0.000386	0.000623	0.000050	8036907
Dissolved Iron (Fe)	mg/L	0.0054	8036907	0.0023	0.0149	0.0010	8036907
Dissolved Lead (Pb)	mg/L	0.0000840	8036907	0.0000110	0.0000440	0.0000050	8036907
Dissolved Lithium (Li)	mg/L	0.00446	8036907	0.00152	0.00193	0.00050	8036907
Dissolved Manganese (Mn)	mg/L	0.0163	8036907	0.00122	0.00836	0.000050	8036907
Dissolved Molybdenum (Mo)	mg/L	0.00181 (1)	8036907	0.00329	0.00216	0.000050	8036907
Dissolved Nickel (Ni)	mg/L	0.000494	8036907	0.00124	0.000471	0.000020	8036907
Dissolved Phosphorus (P)	mg/L	0.0055	8036907	0.0056	0.0084	0.0020	8036907
Dissolved Selenium (Se)	mg/L	0.00162	8036907	0.00249	0.00211	0.000040	8042609
Dissolved Silicon (Si)	mg/L	2.68	8036907	3.22	3.33	0.050	8036907
Dissolved Silver (Ag)	mg/L	<0.0000050	8036907	<0.0000050	<0.0000050	0.0000050	8036907
Dissolved Strontium (Sr)	mg/L	0.300	8036907	0.216	0.238	0.000050	8036907
Dissolved Thallium (Tl)	mg/L	0.0000030	8036907	0.0000030	<0.0000020	0.0000020	8036907
Dissolved Tin (Sn)	mg/L	<0.00020	8036907	<0.00020	<0.00020	0.00020	8036907
Dissolved Titanium (Ti)	mg/L	0.00068	8036907	<0.00050	0.00054	0.00050	8036907
Dissolved Uranium (U)	mg/L	0.00415	8036907	0.00284	0.00259	0.0000020	8036907
Dissolved Vanadium (V)	mg/L	<0.00020	8036907	<0.00020	<0.00020	0.00020	8036907
Dissolved Zinc (Zn)	mg/L	0.00258	8036907	0.00403	0.00759	0.00010	8036907
Dissolved Zirconium (Zr)	mg/L	<0.00010	8036907	<0.00010	<0.00010	0.00010	8036907
RDL = Reportable Detection Limit							
(1) Dissolved greater than total. Reanalysis yields similar results.							

Maxxam Job #: B579341  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NC5341		NC5342	NC5343		
Sampling Date		2015/09/07 06:00		2015/09/07 03:30	2015/09/07 04:00		
COC Number		08411698		08411698	08411698		
	UNITS	MW15-05D	QC Batch	MW15-06	BH95G-30	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	52.4	8034214	74.6	69.7	0.050	8034214
Dissolved Magnesium (Mg)	mg/L	5.51	8034214	6.23	6.94	0.050	8034214
Dissolved Potassium (K)	mg/L	2.24	8034214	1.87	1.91	0.050	8034214
Dissolved Sodium (Na)	mg/L	36.2	8034214	1.34	1.44	0.050	8034214
Dissolved Sulphur (S)	mg/L	14.8	8034214	7.9	8.1	3.0	8034214
RDL = Reportable Detection Limit							

Maxxam Job #: B579341  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NC5341		NC5342	NC5343		
Sampling Date		2015/09/07 06:00		2015/09/07 03:30	2015/09/07 04:00		
COC Number		08411698		08411698	08411698		
	UNITS	MW15-05D	QC Batch	MW15-06	BH95G-30	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	338	8034174	196	196	0.50	8034174
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	8038601	<0.0000020	<0.0000020	0.0000020	8038601
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	31.3	8037016	0.835	0.984	0.0030	8039686
Total Antimony (Sb)	mg/L	0.000082	8037016	<0.000050	0.000081	0.000050	8039686
Total Arsenic (As)	mg/L	0.00749	8037016	0.000546	0.000647	0.000020	8039686
Total Barium (Ba)	mg/L	0.231	8037016	0.0868	0.0911	0.00010	8039686
Total Beryllium (Be)	mg/L	0.00796	8037016	0.000034	0.000093	0.000010	8039686
Total Bismuth (Bi)	mg/L	0.00192	8037016	0.000021	0.000034	0.000020	8039686
Total Boron (B)	mg/L	<0.050	8037016	<0.050	<0.050	0.050	8039686
Total Cadmium (Cd)	mg/L	0.000532	8037016	0.000292	0.000230	0.000050	8039686
Total Chromium (Cr)	mg/L	0.00976	8037016	0.00229	0.00143	0.00050	8039686
Total Cobalt (Co)	mg/L	0.00876	8037016	0.00102	0.00171	0.000010	8039686
Total Copper (Cu)	mg/L	0.0564	8037016	0.00629	0.00783	0.00020	8039686
Total Iron (Fe)	mg/L	16.5	8037016	1.63	1.32	0.0050	8039686
Total Lead (Pb)	mg/L	0.0986	8037016	0.00222	0.00393	0.000050	8039686
Total Lithium (Li)	mg/L	0.0167	8037016	0.00238	0.00230	0.00050	8039686
Total Manganese (Mn)	mg/L	0.427	8037016	0.0214	0.0564	0.00010	8039686
Total Molybdenum (Mo)	mg/L	0.00146	8037016	0.00314	0.00216	0.000050	8039686
Total Nickel (Ni)	mg/L	0.0134	8037016	0.00430	0.00313	0.00010	8039686
Total Phosphorus (P)	mg/L	0.288	8037016	0.047	0.137	0.010	8039686
Total Selenium (Se)	mg/L	0.00294	8037016	0.00214	0.00180	0.000040	8039686
Total Silicon (Si)	mg/L	69.5	8037016	4.39	5.86	0.10	8039686
Total Silver (Ag)	mg/L	0.000552	8037016	0.0000320	0.000306	0.000050	8039686
Total Strontium (Sr)	mg/L	0.690	8037016	0.217	0.287	0.000050	8039686
Total Thallium (Tl)	mg/L	0.000523	8037016	0.0000200	0.0000110	0.0000020	8039686
Total Tin (Sn)	mg/L	0.00081	8037016	<0.00020	0.00031	0.00020	8039686
Total Titanium (Ti)	mg/L	0.0287	8037016	0.0440	0.0377	0.0050	8039686
Total Uranium (U)	mg/L	0.0165	8037016	0.00284	0.00295	0.0000050	8039686
Total Vanadium (V)	mg/L	0.0180	8037016	0.00341	0.00251	0.00050	8039686
Total Zinc (Zn)	mg/L	0.116	8037016	0.0185	0.0297	0.0010	8039686
Total Zirconium (Zr)	mg/L	0.00029	8037016	0.00015	0.00121	0.00010	8039686
Total Calcium (Ca)	mg/L	109	8034785	68.0	64.3	0.25	8034785
RDL = Reportable Detection Limit							

Maxxam Job #: B579341  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NC5341		NC5342	NC5343		
Sampling Date		2015/09/07 06:00		2015/09/07 03:30	2015/09/07 04:00		
COC Number		08411698		08411698	08411698		
	<b>UNITS</b>	<b>MW15-05D</b>	<b>QC Batch</b>	<b>MW15-06</b>	<b>BH95G-30</b>	<b>RDL</b>	<b>QC Batch</b>
Total Magnesium (Mg)	mg/L	16.2	8034785	6.48	8.66	0.25	8034785
Total Potassium (K)	mg/L	6.83	8034785	2.00	2.49	0.25	8034785
Total Sodium (Na)	mg/L	39.5	8034785	1.26	1.70	0.25	8034785
Total Sulphur (S)	mg/L	<15	8034785	<15	<15	15	8034785
RDL = Reportable Detection Limit							

Maxxam Job #: B579341  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	6.3°C
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Revised report V2: Updated Client sample ID for NC5342, per client request (MM4).

Sample NC5341-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NC5342-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NC5343-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NC5342, Elements by ICPMS Low Level (dissolved): Test repeated.

Sample NC5343, Elements by ICPMS Low Level (dissolved): Test repeated.

**Results relate only to the items tested.**

Maxxam Job #: B579341  
Report Date: 2015/12/16

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8035716	Total Suspended Solids	2015/09/14			101	80 - 120	<1.0	mg/L		
8035717	Turbidity	2015/09/12			101	80 - 120	<0.10	NTU	NC	20
8035826	Alkalinity (PP as CaCO3)	2015/09/13					<0.50	mg/L	NC	20
8035826	Alkalinity (Total as CaCO3)	2015/09/13	NC	80 - 120	97	80 - 120	<0.50	mg/L	0.80	20
8035826	Bicarbonate (HCO3)	2015/09/13					<0.50	mg/L	0.80	20
8035826	Carbonate (CO3)	2015/09/13					<0.50	mg/L	NC	20
8035826	Hydroxide (OH)	2015/09/13					<0.50	mg/L	NC	20
8035827	Conductivity	2015/09/13			100	80 - 120	<1.0	uS/cm	0.41	20
8035828	pH	2015/09/13			102	97 - 103			0	N/A
8035937	Orthophosphate (P)	2015/09/12	107	80 - 120	91	80 - 120	<0.0010	mg/L	NC	20
8035977	Nitrate plus Nitrite (N)	2015/09/12			108	80 - 120	<0.0020	mg/L		
8035978	Nitrite (N)	2015/09/12			104	80 - 120	<0.0020	mg/L		
8036700	Total Dissolved Solids	2015/09/15	102	80 - 120	96	80 - 120	<1.0	mg/L	6.0	20
8036907	Dissolved Aluminum (Al)	2015/09/16	NC	80 - 120	100	80 - 120	<0.00050	mg/L	2.6	20
8036907	Dissolved Antimony (Sb)	2015/09/16	97	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8036907	Dissolved Arsenic (As)	2015/09/16	97	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8036907	Dissolved Barium (Ba)	2015/09/16	NC	80 - 120	103	80 - 120	<0.000020	mg/L	1.6	20
8036907	Dissolved Beryllium (Be)	2015/09/16	98	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8036907	Dissolved Bismuth (Bi)	2015/09/16	97	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8036907	Dissolved Boron (B)	2015/09/16					<0.010	mg/L	NC	20
8036907	Dissolved Cadmium (Cd)	2015/09/16	95	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8036907	Dissolved Chromium (Cr)	2015/09/16	102	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8036907	Dissolved Cobalt (Co)	2015/09/16	102	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8036907	Dissolved Copper (Cu)	2015/09/16	98	80 - 120	102	80 - 120	<0.000050	mg/L	0	20
8036907	Dissolved Iron (Fe)	2015/09/16	100	80 - 120	107	80 - 120	<0.0010	mg/L	1.3	20
8036907	Dissolved Lead (Pb)	2015/09/16	99	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8036907	Dissolved Lithium (Li)	2015/09/16	95	80 - 120	103	80 - 120	<0.00050	mg/L	NC	20
8036907	Dissolved Manganese (Mn)	2015/09/16	98	80 - 120	100	80 - 120	<0.000050	mg/L	2.0	20
8036907	Dissolved Molybdenum (Mo)	2015/09/16	NC	80 - 120	98	80 - 120	<0.000050	mg/L	2.6	20
8036907	Dissolved Nickel (Ni)	2015/09/16	98	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8036907	Dissolved Phosphorus (P)	2015/09/16					<0.0020	mg/L	NC	20

Maxxam Job #: B579341  
Report Date: 2015/12/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8036907	Dissolved Selenium (Se)	2015/09/16	92	80 - 120	96	80 - 120	<0.000040	mg/L	2.7	20
8036907	Dissolved Silicon (Si)	2015/09/16					<0.050	mg/L	3.4	20
8036907	Dissolved Silver (Ag)	2015/09/16	101	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20
8036907	Dissolved Strontium (Sr)	2015/09/16	NC	80 - 120	100	80 - 120	<0.000050	mg/L	0.35	20
8036907	Dissolved Thallium (Tl)	2015/09/16	99	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8036907	Dissolved Tin (Sn)	2015/09/16	NC	80 - 120	102	80 - 120	<0.00020	mg/L	2.2	20
8036907	Dissolved Titanium (Ti)	2015/09/16	97	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8036907	Dissolved Uranium (U)	2015/09/16	101	80 - 120	102	80 - 120	<0.0000020	mg/L	2.9	20
8036907	Dissolved Vanadium (V)	2015/09/16	103	80 - 120	108	80 - 120	<0.00020	mg/L	4.5	20
8036907	Dissolved Zinc (Zn)	2015/09/16	98	80 - 120	101	80 - 120	<0.00010	mg/L	4.1	20
8036907	Dissolved Zirconium (Zr)	2015/09/16					<0.00010	mg/L	NC	20
8037016	Total Aluminum (Al)	2015/09/16	99	80 - 120	108	80 - 120	<0.0030	mg/L	NC	20
8037016	Total Antimony (Sb)	2015/09/16	107	80 - 120	100	80 - 120	<0.000050	mg/L	NC	20
8037016	Total Arsenic (As)	2015/09/16	103	80 - 120	100	80 - 120	<0.000020	mg/L	1.1	20
8037016	Total Barium (Ba)	2015/09/16	NC	80 - 120	103	80 - 120	<0.00010	mg/L	1.8	20
8037016	Total Beryllium (Be)	2015/09/16	100	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8037016	Total Bismuth (Bi)	2015/09/16	103	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8037016	Total Boron (B)	2015/09/16					<0.050	mg/L	NC	20
8037016	Total Cadmium (Cd)	2015/09/16	102	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8037016	Total Chromium (Cr)	2015/09/16	107	80 - 120	106	80 - 120	<0.00050	mg/L	NC	20
8037016	Total Cobalt (Co)	2015/09/16	106	80 - 120	107	80 - 120	<0.000010	mg/L	0	20
8037016	Total Copper (Cu)	2015/09/16	100	80 - 120	110	80 - 120	0.00025, RDL=0.00020	mg/L	NC	20
8037016	Total Iron (Fe)	2015/09/16	NC	80 - 120	108	80 - 120	<0.0050	mg/L	1.5	20
8037016	Total Lead (Pb)	2015/09/16	107	80 - 120	108	80 - 120	<0.000050	mg/L	NC	20
8037016	Total Lithium (Li)	2015/09/16	98	80 - 120	100	80 - 120	<0.00050	mg/L	5.8	20
8037016	Total Manganese (Mn)	2015/09/16	NC	80 - 120	105	80 - 120	<0.00010	mg/L	0.0055	20
8037016	Total Molybdenum (Mo)	2015/09/16	110	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8037016	Total Nickel (Ni)	2015/09/16	102	80 - 120	104	80 - 120	<0.00010	mg/L	NC	20
8037016	Total Phosphorus (P)	2015/09/16					<0.010	mg/L		
8037016	Total Selenium (Se)	2015/09/16	93	80 - 120	91	80 - 120	<0.000040	mg/L	NC	20

Maxxam Job #: B579341  
Report Date: 2015/12/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8037016	Total Silicon (Si)	2015/09/16					<0.10	mg/L	0.98	20
8037016	Total Silver (Ag)	2015/09/16	109	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8037016	Total Strontium (Sr)	2015/09/16	NC	80 - 120	104	80 - 120	<0.000050	mg/L	2.2	20
8037016	Total Thallium (Tl)	2015/09/16	105	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
8037016	Total Tin (Sn)	2015/09/16	107	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8037016	Total Titanium (Ti)	2015/09/16	109	80 - 120	101	80 - 120	<0.0050	mg/L	NC	20
8037016	Total Uranium (U)	2015/09/16	110	80 - 120	108	80 - 120	<0.0000050	mg/L	2.4	20
8037016	Total Vanadium (V)	2015/09/16	114	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8037016	Total Zinc (Zn)	2015/09/16	96	80 - 120	107	80 - 120	<0.0010	mg/L	NC	20
8037016	Total Zirconium (Zr)	2015/09/16					<0.00010	mg/L	NC	20
8037113	Acidity (pH 4.5)	2015/09/14					<0.50	mg/L	NC	20
8037113	Acidity (pH 8.3)	2015/09/14			99	80 - 120	<0.50	mg/L	NC	20
8037116	Acidity (pH 4.5)	2015/09/14					<0.50	mg/L	NC	20
8037116	Acidity (pH 8.3)	2015/09/14			98	80 - 120	<0.50	mg/L	NC	20
8037451	Dissolved Phosphorus (P)	2015/09/14	93	80 - 120	104	80 - 120	<0.0020	mg/L	NC	20
8037452	Total Phosphorus (P)	2015/09/14	NC	80 - 120	100	80 - 120	<0.0020	mg/L	NC	20
8037541	Dissolved Chloride (Cl)	2015/09/14	NC	80 - 120	96	80 - 120	<0.50	mg/L	0.86	20
8037542	Dissolved Sulphate (SO4)	2015/09/14	NC	80 - 120	102	80 - 120	<0.50	mg/L	0.0026	20
8038564	Fluoride (F)	2015/09/15	103	80 - 120	98	80 - 120	<0.010	mg/L	NC	20
8038601	Total Mercury (Hg)	2015/09/15	110	80 - 120	108	80 - 120	<0.0000020	mg/L	NC	20
8039665	Dissolved Mercury (Hg)	2015/09/16	83	80 - 120	87	80 - 120	<0.0000020	mg/L	NC	20
8039686	Total Aluminum (Al)	2015/09/16	93	80 - 120	105	80 - 120	<0.0030	mg/L	6.8	20
8039686	Total Antimony (Sb)	2015/09/16	107	80 - 120	98	80 - 120	<0.000050	mg/L	NC	20
8039686	Total Arsenic (As)	2015/09/16	99	80 - 120	108	80 - 120	<0.000020	mg/L	6.7	20
8039686	Total Barium (Ba)	2015/09/16	NC	80 - 120	103	80 - 120	<0.00010	mg/L	0.58	20
8039686	Total Beryllium (Be)	2015/09/16	97	80 - 120	98	80 - 120	<0.000010	mg/L	NC	20
8039686	Total Bismuth (Bi)	2015/09/16	96	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8039686	Total Boron (B)	2015/09/16					<0.050	mg/L	NC	20
8039686	Total Cadmium (Cd)	2015/09/16	97	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8039686	Total Chromium (Cr)	2015/09/16	105	80 - 120	117	80 - 120	<0.00050	mg/L	NC	20
8039686	Total Cobalt (Co)	2015/09/16	102	80 - 120	118	80 - 120	<0.000010	mg/L	0	20



Maxxam Job #: B579341  
Report Date: 2015/12/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8039686	Total Copper (Cu)	2015/09/16	97	80 - 120	109	80 - 120	<0.00020	mg/L	NC	20
8039686	Total Iron (Fe)	2015/09/16	NC	80 - 120	94	80 - 120	<0.0050	mg/L	0.50	20
8039686	Total Lead (Pb)	2015/09/16	102	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8039686	Total Lithium (Li)	2015/09/16	NC	80 - 120	105	80 - 120	<0.00050	mg/L	5.8	20
8039686	Total Manganese (Mn)	2015/09/16	100	80 - 120	115	80 - 120	<0.00010	mg/L	2.9	20
8039686	Total Molybdenum (Mo)	2015/09/16	NC	80 - 120	99	80 - 120	<0.000050	mg/L	7.4	20
8039686	Total Nickel (Ni)	2015/09/16	96	80 - 120	113	80 - 120	<0.00010	mg/L	NC	20
8039686	Total Phosphorus (P)	2015/09/16					<0.010	mg/L		
8039686	Total Selenium (Se)	2015/09/16	91	80 - 120	98	80 - 120	<0.000040	mg/L	NC	20
8039686	Total Silicon (Si)	2015/09/16					<0.10	mg/L	0.48	20
8039686	Total Silver (Ag)	2015/09/16	105	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8039686	Total Strontium (Sr)	2015/09/16	NC	80 - 120	113	80 - 120	<0.000050	mg/L	2.5	20
8039686	Total Thallium (Tl)	2015/09/16	100	80 - 120	100	80 - 120	<0.0000020	mg/L	NC	20
8039686	Total Tin (Sn)	2015/09/16	113	80 - 120	108	80 - 120	<0.00020	mg/L	NC	20
8039686	Total Titanium (Ti)	2015/09/16	130 (1)	80 - 120	108	80 - 120	<0.0050	mg/L	NC	20
8039686	Total Uranium (U)	2015/09/16	105	80 - 120	104	80 - 120	<0.0000050	mg/L	0.87	20
8039686	Total Vanadium (V)	2015/09/16	109	80 - 120	117	80 - 120	<0.00050	mg/L	NC	20
8039686	Total Zinc (Zn)	2015/09/16	NC	80 - 120	110	80 - 120	<0.0010	mg/L	3.2	20
8039686	Total Zirconium (Zr)	2015/09/16					<0.00010	mg/L	NC	20
8040285	Total Ammonia (N)	2015/09/16	98	80 - 120	101	80 - 120	<0.0050	mg/L	4.2	20
8040336	Total Nitrogen (N)	2015/09/16			110	80 - 120	<0.020	mg/L		
8040514	Total Organic Carbon (C)	2015/09/17	NC	80 - 120	99	80 - 120	<0.50	mg/L	0.20	20

Maxxam Job #: B579341  
Report Date: 2015/12/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8042609	Dissolved Selenium (Se)	2015/09/18	94	80 - 120	91	80 - 120	<0.000040	mg/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).


(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

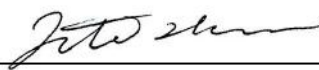
Maxxam Job #: B579341  
Report Date: 2015/12/16

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: KR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

  
Name REDACTED Data Validation Coordinator

  
Name REDACTED analyst, Inorganic department.

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



08411698

Invoice Information		Report Information (If differs from Invoice)				Project Inform		Turnaround Time (TAT) Required						
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743		<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)						
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS						
Address: 530-1130 West Pender Street, Vancouver BC PC: V6E 4A4		Address: 51 Wasson Place Whitewater, YT PC: V1A 0H7				Project #: ENVMINO3071-01		Rush TAT (Surcharges will be applied)						
Phone:		Phone: 867-668-6225				Site Location: Kudz Ze Kayah		<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days						
Email: Email REDACTED		Email: Email REDACTED				Site #: Name REDACTED		<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days						
Regulatory Criteria		Special Instructions		Analysis Requested				Date Required:						
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		MAJOR IONS NUTRIENTS (INCLUDING NO3, NO2, TOTAL P) Low Level Dissolved Metals with CV/Hg Low Level Total Metals with CV/Hg Phosphorus (LL Tot, Dissolved) FF/FP				Rush Confirmation #:						
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM														
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH-MM)	Matrix	ROUTINE (Ind: TDS)	MAJOR IONS	NUTRIENTS (INCLUDING NO3, NO2, TOTAL P)	Low Level Dissolved Metals with CV/Hg	Low Level Total Metals with CV/Hg	Phosphorus (LL Tot, Dissolved) FF/FP	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	LABORATORY USE ONLY	
													CUSTODY SEAL Y/N Present Intact NA NA COOLING MEDIA PRESENT Y/N COMMENTS	
1	MW15-05D	15/09/07	6:00	water	x	x	x	x	x	x	13		Dissolved metals and phosphorus were field filtered and preserved.	
2	MW15D-06	15/09/07	3:30	water	x	x	x	x	x	x	13		Total metals were field preserved.	
3	BH95G-30	15/09/07	4:00	water	x	x	x	x	x	x	13		Project number on bottles incorrect.	
4													Please change to project number	
5													above	
6														
7														
8														
9														
10														
11														
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #						
				Name REDACTED		2015/09/11	14:05	B579341						

Your P.O. #: B50743  
Your Project #: ENVMIN03071-01  
Your C.O.C. #: f92345

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2016/01/19**  
Report #: R2119175  
Version: 3 - Revision

### CERTIFICATE OF ANALYSIS – REVISED REPORT

**MAXXAM JOB #: B584163**

**Received: 2015/09/25, 13:20**

Sample Matrix: Water  
# Samples Received: 9

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	9	N/A	2015/09/29	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	8	2015/09/29	2015/09/29	BBY6SOP-00026	SM 22 2320 B m
Alkalinity - Water	1	2015/10/02	2015/10/02	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	9	N/A	2015/09/28	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	9	N/A	2015/09/29	BBY6SOP-00026	SM 22 2510 B m
Fluoride	9	N/A	2015/09/28	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	9	N/A	2015/09/29	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	9	N/A	2015/09/28	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAF	9	N/A	2015/09/29	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAF	9	2015/09/28	2015/09/29	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	9	N/A	2015/09/30	BBY WI-00033	SM 22 1030E
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	9	N/A	2015/09/28	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	9	N/A	2015/09/28	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	4	2015/09/28	2015/09/29	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	9	N/A	2015/09/29	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	5	N/A	2015/09/28	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	9	2015/09/28	2015/09/28	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Unpreserved)	1	N/A	2015/09/28	BBY6SOP-00009	SM 22 4500-NH3- G m
Ammonia-N (Preserved)	8	N/A	2015/09/29	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	9	N/A	2015/09/26	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	9	N/A	2015/09/26	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	9	N/A	2015/09/26	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	8	N/A	2015/09/26	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	9	N/A	2015/09/29	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	8	N/A	2015/09/26	BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2015/09/29	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	8	N/A	2015/09/28	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate by Automated Colourimetry	1	N/A	2015/09/29	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	9	N/A	2015/09/30	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	9	N/A	2015/09/29	BBY WI-00033	Calculation

Your P.O. #: B50743  
Your Project #: ENVMIN03071-01  
Your C.O.C. #: f92345

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2016/01/19**  
Report #: R2119175  
Version: 3 - Revision

**CERTIFICATE OF ANALYSIS – REVISED REPORT**

**MAXXAM JOB #: B584163**

**Received: 2015/09/25, 13:20**

Sample Matrix: Water  
# Samples Received: 9

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Carbon (Total Organic) (1, 3)	9	N/A	2015/09/29	CAL SOP-00077	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	5	2015/09/26	2015/09/26	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/09/29	2015/09/29	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - FF/FP	2	2015/10/01	2015/10/01	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - UF/UP	1	2015/09/26	2015/09/26	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	8	N/A	2015/09/26	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - unpreserved	1	N/A	2015/09/26	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	9	2015/09/28	2015/09/29	BBY6SOP-00034	SM 22 2540 D
Turbidity	6	N/A	2015/09/26	BBY6SOP-00027	SM 22 2130 B m
Turbidity	3	N/A	2015/09/29	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Maxxam Calgary Environmental
- (2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.
- (3) TOC present in the sample should be considered as non-purgeable TOC.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
Morgan Melnychuk, Burnaby Project Manager  
Email: MMelnychuk@maxxam.ca  
Phone# (604)638-8034 Ext:8034

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NF4894	NF4894		NF4895	NF4895		
Sampling Date		2015/09/21 13:20	2015/09/21 13:20		2015/09/21 10:05	2015/09/21 10:05		
COC Number		f92345	f92345		f92345	f92345		
	UNITS	WW15-02	WW15-02 Lab-Dup	QC Batch	ART - 3 (3)	ART - 3 (3) Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>								
Filter and HNO3 Preservation	N/A	FIELD		ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	1.0		8050868	1.1		0.010	8050868
Nitrate (N)	mg/L	<0.0020		8050214	0.0052		0.0020	8050214
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.120		8053830	0.160		0.010	8053830
Acidity (pH 4.5)	mg/L	<0.50		8055436	<0.50		0.50	8055436
Alkalinity (Total as CaCO3)	mg/L	174		8055795	98.4		0.50	8055795
Total Organic Carbon (C)	mg/L	0.81	0.80	8054670	0.61		0.50	8054670
Acidity (pH 8.3)	mg/L	<0.50		8055436	1.95		0.50	8055436
Alkalinity (PP as CaCO3)	mg/L	<0.50		8055795	<0.50		0.50	8055795
Bicarbonate (HCO3)	mg/L	212		8055795	120		0.50	8055795
Carbonate (CO3)	mg/L	<0.50		8055795	<0.50		0.50	8055795
Hydroxide (OH)	mg/L	<0.50		8055795	<0.50		0.50	8055795
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0021 (1)		8052082	0.0019 (1)		0.0010	8052082
Dissolved Sulphate (SO4)	mg/L	59.4		8053859	88.0		0.50	8053859
Dissolved Chloride (Cl)	mg/L	0.71		8053858	0.72		0.50	8053858
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.027		8055210	0.038		0.0050	8055210
Dissolved Phosphorus (P)	mg/L	0.0020		8052111	0.0176	0.0177	0.0020	8058340
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.087		8050875	0.065		0.020	8050875
Nitrate plus Nitrite (N)	mg/L	<0.0020 (1)		8052193	0.0052 (1)		0.0020	8052193
Nitrite (N)	mg/L	<0.0020 (1)		8052194	<0.0020 (1)		0.0020	8052194
Total Nitrogen (N)	mg/L	0.087		8053081	0.070		0.020	8053081
Total Phosphorus (P)	mg/L	0.0457	0.0463	8052108	0.0290		0.0020	8052108
<b>Physical Properties</b>								
Conductivity	uS/cm	442		8055799	378		1.0	8055799
pH	pH	8.22		8055800	7.91		N/A	8055800
<b>Physical Properties</b>								
Total Suspended Solids	mg/L	53.3		8051628	4.6		1.0	8051628
Total Dissolved Solids	mg/L	282		8051653	256		1.0	8051653
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Sample arrived to laboratory past recommended hold time.								

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NF4894	NF4894		NF4895	NF4895		
<b>Sampling Date</b>		2015/09/21 13:20	2015/09/21 13:20		2015/09/21 10:05	2015/09/21 10:05		
<b>COC Number</b>		f92345	f92345		f92345	f92345		
	<b>UNITS</b>	<b>WW15-02</b>	<b>WW15-02 Lab-Dup</b>	<b>QC Batch</b>	<b>ART - 3 (3)</b>	<b>ART - 3 (3) Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
Turbidity	NTU	26.9 (1)		8054917	17.1 (1)		0.10	8054917

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

(1) Sample arrived to laboratory past recommended hold time.



Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NF4896	NF4896			NF4897		
Sampling Date		2015/09/23 17:00	2015/09/23 17:00			2015/09/22 14:30		
COC Number		f92345	f92345			f92345		
	UNITS	ART - 3 (1)	ART - 3 (1) Lab-Dup	RDL	QC Batch	BH95G-31	RDL	QC Batch
<b>Calculated Parameters</b>								
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	1.1		0.010	8050868	1.0	0.010	8050868
Nitrate (N)	mg/L	<0.0020		0.0020	8050214	0.192	0.0020	8050214
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.170		0.010	8053830	0.100	0.010	8053830
Acidity (pH 4.5)	mg/L	<0.50		0.50	8055436	<0.50	0.50	8055436
Alkalinity (Total as CaCO3)	mg/L	106		0.50	8055795	126	0.50	8055795
Total Organic Carbon (C)	mg/L	2.7		0.50	8054670	2.4	0.50	8054670
Acidity (pH 8.3)	mg/L	2.04		0.50	8055436	<0.50	0.50	8055436
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8055795	<0.50	0.50	8055795
Bicarbonate (HCO3)	mg/L	130		0.50	8055795	154	0.50	8055795
Carbonate (CO3)	mg/L	<0.50		0.50	8055795	<0.50	0.50	8055795
Hydroxide (OH)	mg/L	<0.50		0.50	8055795	<0.50	0.50	8055795
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0017		0.0010	8052082	0.0045 (1)	0.0010	8055491
Dissolved Sulphate (SO4)	mg/L	87.7		0.50	8053859	20.0	0.50	8055217
Dissolved Chloride (Cl)	mg/L	<0.50		0.50	8053858	0.54	0.50	8053858
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.039		0.0050	8055210	0.22	0.0050	8055210
Dissolved Phosphorus (P)	mg/L	0.0177		0.0020	8058340	0.0028	0.0020	8055506
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.096		0.020	8050875	0.431	0.020	8050875
Nitrate plus Nitrite (N)	mg/L	<0.0020		0.0020	8052193	0.199 (1)	0.0020	8052193
Nitrite (N)	mg/L	<0.0020		0.0020	8052194	0.0075 (1)	0.0020	8052194
Total Nitrogen (N)	mg/L	0.096		0.020	8053081	0.630	0.020	8053081
Total Phosphorus (P)	mg/L	0.0235		0.0020	8052108	4.67	0.020	8052108
<b>Physical Properties</b>								
Conductivity	uS/cm	389		1.0	8055799	286	1.0	8055799
pH	pH	7.90		N/A	8055800	8.17	N/A	8055800
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.								

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NF4896	NF4896			NF4897		
<b>Sampling Date</b>		2015/09/23 17:00	2015/09/23 17:00			2015/09/22 14:30		
<b>COC Number</b>		f92345	f92345			f92345		
	<b>UNITS</b>	<b>ART - 3 (1)</b>	<b>ART - 3 (1) Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-31</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>								
Total Suspended Solids	mg/L	5.7		1.0	8052950	5060	1.0	8052950
Total Dissolved Solids	mg/L	258		1.0	8051653	174	1.0	8051653
Turbidity	NTU	15.0	17.0	0.10	8052129	2450 (1)	0.10	8052129
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.								

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NF4898		NF4899			NF4900	NF4900		
<b>Sampling Date</b>		2015/09/23 17:00		2015/09/25 13:20			2015/09/22 13:40	2015/09/22 13:40		
<b>COC Number</b>		f92345		f92345			f92345	f92345		
	<b>UNITS</b>	<b>DUP04</b>	<b>QC Batch</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-32</b>	<b>BH95G-32 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>										
Filter and HNO3 Preservation	N/A	FIELD	ONSITE		N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	1.1	8050868	0.086	0.010	8050868	1.1		0.010	8050868
Nitrate (N)	mg/L	0.0027	8050214	<0.0020	0.0020	8050214	0.0443		0.0020	8050214

<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.170	8053830	<0.010	0.010	8053837	0.041		0.010	8053830
Acidity (pH 4.5)	mg/L	<0.50	8055436	<0.50	0.50	8055436	<0.50		0.50	8055436
Alkalinity (Total as CaCO3)	mg/L	107	8055795	0.93	0.50	8059876	159		0.50	8055795
Total Organic Carbon (C)	mg/L	0.89	8054670	<0.50	0.50	8054670	0.93		0.50	8054670
Acidity (pH 8.3)	mg/L	2.76	8055436	<0.50	0.50	8055436	<0.50		0.50	8055436
Alkalinity (PP as CaCO3)	mg/L	<0.50	8055795	<0.50	0.50	8059876	<0.50		0.50	8055795
Bicarbonate (HCO3)	mg/L	130	8055795	1.13	0.50	8059876	193		0.50	8055795
Carbonate (CO3)	mg/L	<0.50	8055795	<0.50	0.50	8059876	<0.50		0.50	8055795
Hydroxide (OH)	mg/L	<0.50	8055795	<0.50	0.50	8059876	<0.50		0.50	8055795

<b>Anions</b>										
Orthophosphate (P)	mg/L	0.0050	8052082	0.0010	0.0010	8052082	0.0056 (1)		0.0010	8052082
Dissolved Sulphate (SO4)	mg/L	86.8	8053859	<0.50	0.50	8053868	33.3		0.50	8053859
Dissolved Chloride (Cl)	mg/L	0.65	8053858	<0.50	0.50	8053867	0.55		0.50	8053858

<b>Nutrients</b>										
Total Ammonia (N)	mg/L	0.064	8055210		0.0050		0.14		0.0050	8055210
Dissolved Phosphorus (P)	mg/L	0.0197	8052111	<0.0020	0.0020	8052114	0.0027	0.0026	0.0020	8052111
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.039	8050875	<0.020	0.020	8050875	0.146		0.020	8050875
Total Ammonia (N)	mg/L			0.0106	0.0050	8052206			0.0050	
Nitrate plus Nitrite (N)	mg/L	0.0027	8052193	<0.0020	0.0020	8052193	0.0443 (1)		0.0020	8052193
Nitrite (N)	mg/L	<0.0020	8052194	<0.0020	0.0020	8052194	<0.0020 (1)		0.0020	8052194
Total Nitrogen (N)	mg/L	0.041	8053081	<0.020	0.020	8053081	0.191		0.020	8053081
Total Phosphorus (P)	mg/L	0.0280	8052108	<0.0020	0.0020	8052116	2.13		0.020	8052108

<b>Physical Properties</b>										
Conductivity	uS/cm	389	8055799	1.2	1.0	8055799	375		1.0	8055799
pH	pH	7.96	8055800	6.08	N/A	8055800	8.12		N/A	8055800

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

N/A = Not Applicable

(1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NF4898		NF4899			NF4900	NF4900		
<b>Sampling Date</b>		2015/09/23 17:00		2015/09/25 13:20			2015/09/22 13:40	2015/09/22 13:40		
<b>COC Number</b>		f92345		f92345			f92345	f92345		
	<b>UNITS</b>	<b>DUP04</b>	<b>QC Batch</b>	<b>TRIP BLANK</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-32</b>	<b>BH95G-32 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	5.5	8052950	<1.0	1.0	8052950	3050 (1)		10	8052950
Total Dissolved Solids	mg/L	262	8051653	1.2	1.0	8051653	246		1.0	8051653
Turbidity	NTU	29.6	8052129	<0.10	0.10	8052129	1950 (2)		0.10	8052129

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) RDL raised due to high concentration of solids in the sample.  
(2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NF4901			NF4902	NF4902		
Sampling Date		2015/09/22 12:30			2015/09/22 11:15	2015/09/22 11:15		
COC Number		f92345			f92345	f92345		
	UNITS	BH95G-33D	RDL	QC Batch	BH95G-2	BH95G-2 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>								
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	1.1	0.010	8050868	1.0		0.010	8050868
Nitrate (N)	mg/L	0.191	0.0020	8050214	0.387		0.0020	8050214
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.053	0.010	8053830	0.059		0.010	8053830
Acidity (pH 4.5)	mg/L	<0.50	0.50	8055436	<0.50	<0.50	0.50	8055436
Alkalinity (Total as CaCO3)	mg/L	165	0.50	8055795	247		0.50	8055795
Total Organic Carbon (C)	mg/L	1.4	0.50	8054670	0.60		0.50	8054670
Acidity (pH 8.3)	mg/L	<0.50	0.50	8055436	<0.50	<0.50	0.50	8055436
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8055795	2.54		0.50	8055795
Bicarbonate (HCO3)	mg/L	201	0.50	8055795	295		0.50	8055795
Carbonate (CO3)	mg/L	<0.50	0.50	8055795	3.05		0.50	8055795
Hydroxide (OH)	mg/L	<0.50	0.50	8055795	<0.50		0.50	8055795
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0038 (1)	0.0010	8052082	0.0073 (1)	0.0066	0.0010	8052089
Dissolved Sulphate (SO4)	mg/L	64.7	0.50	8053859	45.2		0.50	8053859
Dissolved Chloride (Cl)	mg/L	0.83	0.50	8053858	0.96		0.50	8053858
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.032	0.0050	8055210	0.0097		0.0050	8055210
Dissolved Phosphorus (P)	mg/L	0.0029	0.0020	8052111	0.0060		0.0020	8052111
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.080	0.020	8050875	<0.020		0.020	8050875
Nitrate plus Nitrite (N)	mg/L	0.191 (1)	0.0020	8052193	0.387 (1)		0.0020	8052193
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8052194	<0.0020 (1)		0.0020	8052194
Total Nitrogen (N)	mg/L	0.271	0.020	8053081	0.327		0.020	8053081
Total Phosphorus (P)	mg/L	0.832	0.020	8052108	0.0314		0.0020	8052108
<b>Physical Properties</b>								
Conductivity	uS/cm	441	1.0	8055799	518		1.0	8055799
pH	pH	8.16	N/A	8055800	8.32		N/A	8055800
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.								

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NF4901			NF4902	NF4902		
Sampling Date		2015/09/22 12:30			2015/09/22 11:15	2015/09/22 11:15		
COC Number		f92345			f92345	f92345		
	UNITS	BH95G-33D	RDL	QC Batch	BH95G-2	BH95G-2 Lab-Dup	RDL	QC Batch
<b>Physical Properties</b>								
Total Suspended Solids	mg/L	900 (1)	20	8052950	54.3		1.0	8052950
Total Dissolved Solids	mg/L	286	1.0	8051653	316		1.0	8051653
Turbidity	NTU	561 (2)	0.10	8052129	2.27 (2)		0.10	8054917
RDL = Reportable Detection Limit								
Lab-Dup = Laboratory Initiated Duplicate								
(1) RDL raised due to high concentration of solids in the sample.								
(2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.								

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NF4894	NF4895	NF4896	NF4896	NF4897		
Sampling Date		2015/09/21 13:20	2015/09/21 10:05	2015/09/23 17:00	2015/09/23 17:00	2015/09/22 14:30		
COC Number		f92345	f92345	f92345	f92345	f92345		
	UNITS	WW15-02	ART - 3 (3)	ART - 3 (1)	ART - 3 (1) Lab-Dup	BH95G-31	RDL	QC Batch
<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	232	184	191		142	0.50	8051282
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020		<0.000020	0.000020	8055002
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00145	0.00408	0.00741 (1)	0.00733	0.00375	0.00050	8053063
Dissolved Antimony (Sb)	mg/L	0.000348	0.0401	0.0318	0.0311	0.000059	0.000020	8053063
Dissolved Arsenic (As)	mg/L	0.00247	0.153	0.125	0.125	0.000124	0.000020	8053063
Dissolved Barium (Ba)	mg/L	0.0528	0.0173	0.0184	0.0178	0.127	0.000020	8053063
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8053063
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8053063
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8053063
Dissolved Cadmium (Cd)	mg/L	0.0000050	0.000273	0.000317	0.000321	0.0000200	0.0000050	8053063
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	8053063
Dissolved Cobalt (Co)	mg/L	0.000127	0.00145	0.00155	0.00155	0.0000270	0.0000050	8053063
Dissolved Copper (Cu)	mg/L	<0.000050	<0.000050	0.000539	0.000543	0.000453	0.000050	8053063
Dissolved Iron (Fe)	mg/L	0.159	5.88	5.43	5.21	<0.0010	0.0010	8053063
Dissolved Lead (Pb)	mg/L	0.0000240	0.000463	0.000674	0.000666	0.0000160	0.0000050	8053063
Dissolved Lithium (Li)	mg/L	0.00797	0.00403	0.00438	0.00436	0.00100	0.00050	8053063
Dissolved Manganese (Mn)	mg/L	0.0818	0.441	0.424	0.429	0.000728	0.000050	8053063
Dissolved Molybdenum (Mo)	mg/L	0.000513	0.000744	0.000637	0.000638	0.00178	0.000050	8053063
Dissolved Nickel (Ni)	mg/L	0.000410	0.00208	0.00230	0.00231	0.000403	0.000020	8053063
Dissolved Phosphorus (P)	mg/L	0.0025	0.0031	0.0045	0.0059	0.0028	0.0020	8053063
Dissolved Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	0.00136	0.000040	8053063
Dissolved Silicon (Si)	mg/L	4.14	5.43	5.55	5.50	2.79	0.050	8053063
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	0.0000060	<0.0000050	<0.0000050	0.0000050	8053063
Dissolved Strontium (Sr)	mg/L	0.240	0.205	0.211	0.202	0.176	0.000050	8053063
Dissolved Thallium (Tl)	mg/L	0.0000150	0.000303	0.000417	0.000429	0.0000060	0.0000020	8053063
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8053063
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00056	<0.00050	<0.00050	<0.00050	0.00050	8053063
Dissolved Uranium (U)	mg/L	0.00708	0.00441	0.00530	0.00527	0.00105	0.0000020	8053063
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8053063
Dissolved Zinc (Zn)	mg/L	0.00148	1.71	1.58	1.59	0.00085	0.00010	8053063
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Dissolved greater than total. Reanalysis yields similar results.								

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NF4894	NF4895	NF4896	NF4896	NF4897		
Sampling Date		2015/09/21 13:20	2015/09/21 10:05	2015/09/23 17:00	2015/09/23 17:00	2015/09/22 14:30		
COC Number		f92345	f92345	f92345	f92345	f92345		
	UNITS	WW15-02	ART - 3 (3)	ART - 3 (1)	ART - 3 (1) Lab-Dup	BH95G-31	RDL	QC Batch
Dissolved Zirconium (Zr)	mg/L	0.00024	0.00027	0.00028	0.00027	<0.00010	0.00010	8053063
Dissolved Calcium (Ca)	mg/L	69.1	60.3	62.8		52.2	0.050	8050206
Dissolved Magnesium (Mg)	mg/L	14.4	8.04	8.39		2.92	0.050	8050206
Dissolved Potassium (K)	mg/L	1.98	1.94	1.85		2.88	0.050	8050206
Dissolved Sodium (Na)	mg/L	1.95	1.01	1.72		1.02	0.050	8050206
Dissolved Sulphur (S)	mg/L	20.0	29.4	29.3		6.8	3.0	8050206

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate



Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NF4898	NF4899	NF4899	NF4900	NF4901		
Sampling Date		2015/09/23 17:00	2015/09/25 13:20	2015/09/25 13:20	2015/09/22 13:40	2015/09/22 12:30		
COC Number		f92345	f92345	f92345	f92345	f92345		
	<b>UNITS</b>	<b>DUP04</b>	<b>TRIP BLANK</b>	<b>TRIP BLANK Lab-Dup</b>	<b>BH95G-32</b>	<b>BH95G-33D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	198	<0.50		196	257	0.50	8051282
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000020	8055002
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.0179 (1)	<0.00050		0.00269	0.00120	0.00050	8053063
Dissolved Antimony (Sb)	mg/L	0.0332	<0.000020		0.000118	0.000035	0.000020	8053063
Dissolved Arsenic (As)	mg/L	0.132	<0.000020		0.000376	0.000213	0.000020	8053063
Dissolved Barium (Ba)	mg/L	0.0196	<0.000020		0.171	0.0864	0.000020	8053063
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010		<0.000010	<0.000010	0.000010	8053063
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050		<0.0000050	<0.0000050	0.0000050	8053063
Dissolved Boron (B)	mg/L	<0.010	<0.010		<0.010	<0.010	0.010	8053063
Dissolved Cadmium (Cd)	mg/L	0.000362	<0.0000050		0.000118	0.0000100	0.0000050	8053063
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010		<0.00010	<0.00010	0.00010	8053063
Dissolved Cobalt (Co)	mg/L	0.00165	<0.0000050		0.000469	0.0000260	0.0000050	8053063
Dissolved Copper (Cu)	mg/L	0.000711	<0.000050		0.000147	0.000200	0.000050	8053063
Dissolved Iron (Fe)	mg/L	5.57	<0.0010		0.0919	<0.0010	0.0010	8053063
Dissolved Lead (Pb)	mg/L	0.000894	<0.0000050		0.000121	<0.0000050	0.0000050	8053063
Dissolved Lithium (Li)	mg/L	0.00454	<0.00050		0.00110	0.00108	0.00050	8053063
Dissolved Manganese (Mn)	mg/L	0.459	<0.000050		0.0712	0.00718	0.000050	8053063
Dissolved Molybdenum (Mo)	mg/L	0.000666	<0.000050		0.000736	0.00118	0.000050	8053063
Dissolved Nickel (Ni)	mg/L	0.00244	<0.000020		0.00168	0.00120	0.000020	8053063
Dissolved Phosphorus (P)	mg/L	0.0084	<0.0020		0.0022	0.0044	0.0020	8053063
Dissolved Selenium (Se)	mg/L	<0.000040	<0.000040		0.000551	0.00627	0.000040	8053063
Dissolved Silicon (Si)	mg/L	5.51	<0.050		2.40	3.53	0.050	8053063
Dissolved Silver (Ag)	mg/L	0.0000060	<0.0000050		<0.0000050	<0.0000050	0.0000050	8053063
Dissolved Strontium (Sr)	mg/L	0.205	<0.000050		0.275	0.238	0.000050	8053063
Dissolved Thallium (Tl)	mg/L	0.000454	<0.0000020		0.0000090	0.0000020	0.0000020	8053063
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020		<0.00020	<0.00020	0.00020	8053063
Dissolved Titanium (Ti)	mg/L	0.00075	<0.00050		<0.00050	<0.00050	0.00050	8053063
Dissolved Uranium (U)	mg/L	0.00573	<0.0000020		0.00117	0.00442	0.0000020	8053063
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020		<0.00020	<0.00020	0.00020	8053063
Dissolved Zinc (Zn)	mg/L	1.68	<0.00010		0.00142	0.00117	0.00010	8053063

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NF4898	NF4899	NF4899	NF4900	NF4901		
Sampling Date		2015/09/23 17:00	2015/09/25 13:20	2015/09/25 13:20	2015/09/22 13:40	2015/09/22 12:30		
COC Number		f92345	f92345	f92345	f92345	f92345		
	UNITS	DUP04	TRIP BLANK	TRIP BLANK Lab-Dup	BH95G-32	BH95G-33D	RDL	QC Batch
Dissolved Zirconium (Zr)	mg/L	0.00030	<0.00010		0.00010	<0.00010	0.00010	8053063
Dissolved Calcium (Ca)	mg/L	65.1	<0.050		71.4	87.1	0.050	8050206
Dissolved Magnesium (Mg)	mg/L	8.60	<0.050		4.34	9.49	0.050	8050206
Dissolved Potassium (K)	mg/L	1.94	<0.050		4.56	0.987	0.050	8050206
Dissolved Sodium (Na)	mg/L	1.24	<0.050		0.724	0.802	0.050	8050206
Dissolved Sulphur (S)	mg/L	29.9	<3.0		11.8	21.7	3.0	8050206
RDL = Reportable Detection Limit								
Lab-Dup = Laboratory Initiated Duplicate								

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NF4902		
<b>Sampling Date</b>		2015/09/22 11:15		
<b>COC Number</b>		f92345		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	305	0.50	8051282
<b>Elements</b>				
Dissolved Mercury (Hg)	mg/L	<0.0000020	0.0000020	8055002
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	mg/L	0.00161	0.00050	8053063
Dissolved Antimony (Sb)	mg/L	0.000021	0.000020	8053063
Dissolved Arsenic (As)	mg/L	0.000155	0.000020	8053063
Dissolved Barium (Ba)	mg/L	0.0258	0.000020	8053063
Dissolved Beryllium (Be)	mg/L	<0.000010	0.000010	8053063
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000050	8053063
Dissolved Boron (B)	mg/L	<0.010	0.010	8053063
Dissolved Cadmium (Cd)	mg/L	0.00145	0.0000050	8053063
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00010	8053063
Dissolved Cobalt (Co)	mg/L	0.0000090	0.0000050	8053063
Dissolved Copper (Cu)	mg/L	0.000236	0.000050	8053063
Dissolved Iron (Fe)	mg/L	0.0022	0.0010	8053063
Dissolved Lead (Pb)	mg/L	0.0000180	0.0000050	8053063
Dissolved Lithium (Li)	mg/L	0.00145	0.00050	8053063
Dissolved Manganese (Mn)	mg/L	0.000258	0.000050	8053063
Dissolved Molybdenum (Mo)	mg/L	0.00214	0.000050	8053063
Dissolved Nickel (Ni)	mg/L	0.000409	0.000020	8053063
Dissolved Phosphorus (P)	mg/L	0.0074	0.0020	8053063
Dissolved Selenium (Se)	mg/L	0.00505	0.000040	8053063
Dissolved Silicon (Si)	mg/L	2.23	0.050	8053063
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000050	8053063
Dissolved Strontium (Sr)	mg/L	0.227	0.000050	8053063
Dissolved Thallium (Tl)	mg/L	0.0000040	0.0000020	8053063
Dissolved Tin (Sn)	mg/L	<0.00020	0.00020	8053063
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00050	8053063
Dissolved Uranium (U)	mg/L	0.00322	0.0000020	8053063
Dissolved Vanadium (V)	mg/L	0.00020	0.00020	8053063
Dissolved Zinc (Zn)	mg/L	0.0229	0.00010	8053063
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00010	8053063
Dissolved Calcium (Ca)	mg/L	71.4	0.050	8050206
RDL = Reportable Detection Limit				

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NF4902		
<b>Sampling Date</b>		2015/09/22 11:15		
<b>COC Number</b>		f92345		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Magnesium (Mg)	mg/L	30.7	0.050	8050206
Dissolved Potassium (K)	mg/L	0.428	0.050	8050206
Dissolved Sodium (Na)	mg/L	0.696	0.050	8050206
Dissolved Sulphur (S)	mg/L	15.3	3.0	8050206
RDL = Reportable Detection Limit				

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NF4895	NF4896	NF4898	NF4899	NF4899		
<b>Sampling Date</b>		2015/09/21 10:05	2015/09/23 17:00	2015/09/23 17:00	2015/09/25 13:20	2015/09/25 13:20		
<b>COC Number</b>		f92345	f92345	f92345	f92345	f92345		
	<b>UNITS</b>	<b>ART - 3 (3)</b>	<b>ART - 3 (1)</b>	<b>DUP04</b>	<b>TRIP BLANK</b>	<b>TRIP BLANK Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Total Hardness (CaCO3)	mg/L	188	185	196	<0.50		0.50	8050667
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**Elements**

Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8053797
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**Total Metals by ICPMS**

Total Aluminum (Al)	mg/L	0.00638	0.00599	0.00807	<0.00050		0.00050	8053216
Total Antimony (Sb)	mg/L	0.0403	0.0331	0.0331	<0.000020		0.000020	8053216
Total Arsenic (As)	mg/L	0.163	0.135	0.147	<0.000020		0.000020	8053216
Total Barium (Ba)	mg/L	0.0179	0.0189	0.0183	<0.000020		0.000020	8053216
Total Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010		0.000010	8053216
Total Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050		0.0000050	8053216
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010		0.010	8053216
Total Cadmium (Cd)	mg/L	0.000335	0.000335	0.000337	<0.0000050		0.0000050	8053216
Total Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010		0.00010	8053216
Total Cobalt (Co)	mg/L	0.00146	0.00151	0.00166	<0.0000050		0.0000050	8053216
Total Copper (Cu)	mg/L	0.000200	0.000538	0.000721	<0.000050		0.000050	8053216
Total Iron (Fe)	mg/L	6.04	5.38	5.75	<0.0010		0.0010	8053216
Total Lead (Pb)	mg/L	0.000861	0.000746	0.000769	<0.0000050		0.0000050	8053216
Total Lithium (Li)	mg/L	0.00444	0.00470	0.00509	0.00057		0.00050	8053216
Total Manganese (Mn)	mg/L	0.463	0.432	0.486	<0.000050		0.000050	8053216
Total Molybdenum (Mo)	mg/L	0.000749	0.000682	0.000676	<0.000050		0.000050	8053216
Total Nickel (Ni)	mg/L	0.00215	0.00225	0.00252	<0.000020		0.000020	8053216
Total Phosphorus (P)	mg/L	0.0041	<0.0020	0.0057	<0.0020		0.0020	8053216
Total Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	<0.000040		0.000040	8053216
Total Silicon (Si)	mg/L	5.40	5.47	5.55	<0.050		0.050	8053216
Total Silver (Ag)	mg/L	0.0000070	0.0000050	0.0000050	<0.0000050		0.0000050	8053216
Total Strontium (Sr)	mg/L	0.212	0.214	0.228	<0.000050		0.000050	8053216
Total Thallium (Tl)	mg/L	0.000311	0.000444	0.000447	<0.000020		0.000020	8053216
Total Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020		0.00020	8053216
Total Titanium (Ti)	mg/L	0.00062	<0.00050	<0.00050	<0.00050		0.00050	8053216
Total Uranium (U)	mg/L	0.00450	0.00538	0.00535	<0.0000020		0.0000020	8053216
Total Vanadium (V)	mg/L	0.00031	<0.00020	<0.00020	<0.00020		0.00020	8053216
Total Zinc (Zn)	mg/L	1.81	1.73	1.86	<0.00010		0.00010	8053216
Total Zirconium (Zr)	mg/L	0.00020	0.00025	0.00030	<0.00010		0.00010	8053216

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
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Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NF4895	NF4896	NF4898	NF4899	NF4899		
Sampling Date		2015/09/21 10:05	2015/09/23 17:00	2015/09/23 17:00	2015/09/25 13:20	2015/09/25 13:20		
COC Number		f92345	f92345	f92345	f92345	f92345		
	UNITS	ART - 3 (3)	ART - 3 (1)	DUP04	TRIP BLANK	TRIP BLANK Lab-Dup	RDL	QC Batch
Total Calcium (Ca)	mg/L	61.6	60.5	63.1	<0.050		0.050	8050870
Total Magnesium (Mg)	mg/L	8.29	8.29	9.25	<0.050		0.050	8050870
Total Potassium (K)	mg/L	1.95	1.86	2.07	<0.050		0.050	8050870
Total Sodium (Na)	mg/L	0.998	1.75	1.92	<0.050		0.050	8050870
Total Sulphur (S)	mg/L	30.3	30.2	32.6	<3.0		3.0	8050870
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate								

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NF4902		
<b>Sampling Date</b>		2015/09/22 11:15		
<b>COC Number</b>		f92345		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	306	0.50	8050667
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8053797
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	0.0405	0.00050	8053216
Total Antimony (Sb)	mg/L	0.000205	0.000020	8053216
Total Arsenic (As)	mg/L	0.000274	0.000020	8053216
Total Barium (Ba)	mg/L	0.0270	0.000020	8053216
Total Beryllium (Be)	mg/L	<0.000010	0.000010	8053216
Total Bismuth (Bi)	mg/L	0.0000060	0.0000050	8053216
Total Boron (B)	mg/L	<0.010	0.010	8053216
Total Cadmium (Cd)	mg/L	0.00171	0.0000050	8053216
Total Chromium (Cr)	mg/L	<0.00010	0.00010	8053216
Total Cobalt (Co)	mg/L	0.000170	0.0000050	8053216
Total Copper (Cu)	mg/L	0.00124	0.000050	8053216
Total Iron (Fe)	mg/L	0.0950	0.0010	8053216
Total Lead (Pb)	mg/L	0.000946	0.0000050	8053216
Total Lithium (Li)	mg/L	0.00126	0.00050	8053216
Total Manganese (Mn)	mg/L	0.00308	0.000050	8053216
Total Molybdenum (Mo)	mg/L	0.00225	0.000050	8053216
Total Nickel (Ni)	mg/L	0.000922	0.000020	8053216
Total Phosphorus (P)	mg/L	0.0258	0.0020	8053216
Total Selenium (Se)	mg/L	0.00548	0.000040	8053216
Total Silicon (Si)	mg/L	2.30	0.050	8053216
Total Silver (Ag)	mg/L	0.0000280	0.0000050	8053216
Total Strontium (Sr)	mg/L	0.234	0.000050	8053216
Total Thallium (Tl)	mg/L	0.0000130	0.0000020	8053216
Total Tin (Sn)	mg/L	<0.00020	0.00020	8053216
Total Titanium (Ti)	mg/L	0.00154	0.00050	8053216
Total Uranium (U)	mg/L	0.00320	0.0000020	8053216
Total Vanadium (V)	mg/L	0.00059	0.00020	8053216
Total Zinc (Zn)	mg/L	0.0366	0.00010	8053216
Total Zirconium (Zr)	mg/L	<0.00010	0.00010	8053216
Total Calcium (Ca)	mg/L	71.2	0.050	8050870
RDL = Reportable Detection Limit				

Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NF4902		
<b>Sampling Date</b>		2015/09/22 11:15		
<b>COC Number</b>		f92345		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>
Total Magnesium (Mg)	mg/L	31.1	0.050	8050870
Total Potassium (K)	mg/L	0.462	0.050	8050870
Total Sodium (Na)	mg/L	0.719	0.050	8050870
Total Sulphur (S)	mg/L	15.5	3.0	8050870
RDL = Reportable Detection Limit				



Maxxam Job #: B584163  
Report Date: 2016/01/19

TETRATECH EBA  
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Your P.O. #: B50743  
Sampler Initials: KR

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NF4894	NF4897	NF4900	NF4901		
Sampling Date		2015/09/21 13:20	2015/09/22 14:30	2015/09/22 13:40	2015/09/22 12:30		
COC Number		f92345	f92345	f92345	f92345		
	UNITS	WW15-02	BH95G-31	BH95G-32	BH95G-33D	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	255	432	433	308	0.50	8050667
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8053797
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	1.08	62.0	53.3	13.6	0.0030	8053757
Total Antimony (Sb)	mg/L	0.000346	0.000668	0.00103	0.000289	0.000050	8053757
Total Arsenic (As)	mg/L	0.00415	0.126	0.0301	0.0328	0.000020	8053757
Total Barium (Ba)	mg/L	0.0839	2.25	2.27	0.322	0.00010	8053757
Total Beryllium (Be)	mg/L	0.000042	0.00178	0.00306	0.000887	0.000010	8053757
Total Bismuth (Bi)	mg/L	0.000103	0.00289	0.00170	0.000306	0.000020	8053757
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	<0.050	0.050	8053757
Total Cadmium (Cd)	mg/L	0.000115	0.00644	0.00525	0.000263	0.0000050	8053757
Total Chromium (Cr)	mg/L	0.00237	0.197	0.169	0.0163	0.00050	8053757
Total Cobalt (Co)	mg/L	0.00133	0.244	0.0718	0.0285	0.000010	8053757
Total Copper (Cu)	mg/L	0.00963	1.42	0.194	0.0612	0.00020	8053757
Total Iron (Fe)	mg/L	3.25	228	122	42.6	0.0050	8053757
Total Lead (Pb)	mg/L	0.0143	0.561	0.178	0.0194	0.000050	8053757
Total Lithium (Li)	mg/L	0.0112	0.0453	0.0259	0.00943	0.00050	8053757
Total Manganese (Mn)	mg/L	0.130	3.25	3.60	2.68	0.00010	8053757
Total Molybdenum (Mo)	mg/L	0.000656	0.00569	0.00415	0.00420	0.000050	8053757
Total Nickel (Ni)	mg/L	0.00299	0.469	0.114	0.105	0.00010	8053757
Total Phosphorus (P)	mg/L	0.055	3.88	2.22	0.778	0.010	8053757
Total Selenium (Se)	mg/L	0.000282	0.00434	0.0108	0.00695	0.000040	8053757
Total Silicon (Si)	mg/L	6.26	72.5	67.5	21.7	0.10	8053757
Total Silver (Ag)	mg/L	0.0000660	0.0129	0.000874	0.000677	0.0000050	8053757
Total Strontium (Sr)	mg/L	0.273	0.427	0.511	0.316	0.000050	8053757
Total Thallium (Tl)	mg/L	0.0000200	0.000877	0.000671	0.000134	0.0000020	8053757
Total Tin (Sn)	mg/L	0.00033	0.00471	0.00201	0.00091	0.00020	8053757
Total Titanium (Ti)	mg/L	0.0457	3.04	5.90	0.185	0.0050	8053757
Total Uranium (U)	mg/L	0.00728	0.00602	0.00733	0.00832	0.0000050	8053757
Total Vanadium (V)	mg/L	0.00387	0.382	0.402	0.0458	0.00050	8053757
Total Zinc (Zn)	mg/L	0.0396	0.936	0.530	0.153	0.0010	8053757
Total Zirconium (Zr)	mg/L	0.0124	0.0294	0.00887	0.00567	0.00010	8053757
Total Calcium (Ca)	mg/L	75.8	103	117	96.4	0.25	8050870
Total Magnesium (Mg)	mg/L	15.9	42.6	33.9	16.4	0.25	8050870
RDL = Reportable Detection Limit							

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**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NF4894	NF4897	NF4900	NF4901		
Sampling Date		2015/09/21 13:20	2015/09/22 14:30	2015/09/22 13:40	2015/09/22 12:30		
COC Number		f92345	f92345	f92345	f92345		
	UNITS	WW15-02	BH95G-31	BH95G-32	BH95G-33D	RDL	QC Batch
Total Potassium (K)	mg/L	2.67	17.3	15.7	2.67	0.25	8050870
Total Sodium (Na)	mg/L	2.56	1.56	1.89	1.29	0.25	8050870
Total Sulphur (S)	mg/L	21	<15	<15	22	15	8050870
RDL = Reportable Detection Limit							

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### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	2.7°C
Package 2	3.0°C

Revised report V2: Updated Client sample ID for NF4901, per client request (MM4).

Revised report V3: Updated client ID for samples NF4895 and NF4896 per client request (MM4).

Sample NF4894-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NF4897-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NF4900-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NF4901-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

**Results relate only to the items tested.**

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**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Your P.O. #: B50743  
Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8051628	Total Suspended Solids	2015/09/29			98	80 - 120	<1.0	mg/L		
8051653	Total Dissolved Solids	2015/09/30	103	80 - 120	104	80 - 120	<1.0	mg/L	1.5	20
8052082	Orthophosphate (P)	2015/09/26	117	80 - 120	101	80 - 120	<0.0010	mg/L	NC	20
8052089	Orthophosphate (P)	2015/09/26	101	80 - 120	95	80 - 120	0.0010, RDL=0.0010	mg/L	11	20
8052108	Total Phosphorus (P)	2015/09/26	94	80 - 120	94	80 - 120	<0.0020	mg/L	1.2	20
8052111	Dissolved Phosphorus (P)	2015/09/26	93	80 - 120	104	80 - 120	<0.0020	mg/L	NC	20
8052114	Dissolved Phosphorus (P)	2015/09/26	91	80 - 120	108	80 - 120	<0.0020	mg/L	NC	20
8052116	Total Phosphorus (P)	2015/09/26	90	80 - 120	108	80 - 120	<0.0020	mg/L	NC	20
8052129	Turbidity	2015/09/26			98	80 - 120	<0.10	NTU	13	20
8052193	Nitrate plus Nitrite (N)	2015/09/26	101	80 - 120	104	80 - 120	<0.0020	mg/L	NC	25
8052194	Nitrite (N)	2015/09/26	97	80 - 120	103	80 - 120	<0.0020	mg/L	NC	25
8052206	Total Ammonia (N)	2015/09/28	101	80 - 120	115	80 - 120	<0.0050	mg/L	NC	20
8052950	Total Suspended Solids	2015/09/29			100	80 - 120	<1.0	mg/L		
8053063	Dissolved Aluminum (Al)	2015/09/28	106	80 - 120	104	80 - 120	<0.00050	mg/L	1.1	20
8053063	Dissolved Antimony (Sb)	2015/09/28	NC	80 - 120	105	80 - 120	<0.000020	mg/L	2.1	20
8053063	Dissolved Arsenic (As)	2015/09/28	NC	80 - 120	102	80 - 120	<0.000020	mg/L	0.16	20
8053063	Dissolved Barium (Ba)	2015/09/28	NC	80 - 120	109	80 - 120	<0.000020	mg/L	3.1	20
8053063	Dissolved Beryllium (Be)	2015/09/28	102	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
8053063	Dissolved Bismuth (Bi)	2015/09/28	101	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8053063	Dissolved Boron (B)	2015/09/28					<0.010	mg/L	NC	20
8053063	Dissolved Cadmium (Cd)	2015/09/28	96	80 - 120	106	80 - 120	<0.0000050	mg/L	1.3	20
8053063	Dissolved Chromium (Cr)	2015/09/28	104	80 - 120	108	80 - 120	<0.00010	mg/L	NC	20
8053063	Dissolved Cobalt (Co)	2015/09/28	103	80 - 120	109	80 - 120	<0.0000050	mg/L	0.064	20
8053063	Dissolved Copper (Cu)	2015/09/28	99	80 - 120	108	80 - 120	<0.000050	mg/L	0.74	20
8053063	Dissolved Iron (Fe)	2015/09/28	NC	80 - 120	108	80 - 120	<0.0010	mg/L	4.2	20
8053063	Dissolved Lead (Pb)	2015/09/28	103	80 - 120	104	80 - 120	<0.0000050	mg/L	1.2	20
8053063	Dissolved Lithium (Li)	2015/09/28	99	80 - 120	91	80 - 120	<0.00050	mg/L	0.46	20
8053063	Dissolved Manganese (Mn)	2015/09/28	NC	80 - 120	104	80 - 120	<0.000050	mg/L	1.1	20
8053063	Dissolved Molybdenum (Mo)	2015/09/28	NC	80 - 120	97	80 - 120	<0.000050	mg/L	0.16	20

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Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8053063	Dissolved Nickel (Ni)	2015/09/28	97	80 - 120	105	80 - 120	<0.000020	mg/L	0.35	20
8053063	Dissolved Phosphorus (P)	2015/09/28					<0.0020	mg/L	NC	20
8053063	Dissolved Selenium (Se)	2015/09/28	98	80 - 120	98	80 - 120	<0.000040	mg/L	NC	20
8053063	Dissolved Silicon (Si)	2015/09/28					<0.050	mg/L	1.0	20
8053063	Dissolved Silver (Ag)	2015/09/28	103	80 - 120	96	80 - 120	<0.0000050	mg/L	NC	20
8053063	Dissolved Strontium (Sr)	2015/09/28	NC	80 - 120	104	80 - 120	<0.000050	mg/L	4.6	20
8053063	Dissolved Thallium (Tl)	2015/09/28	102	80 - 120	103	80 - 120	<0.0000020	mg/L	2.8	20
8053063	Dissolved Tin (Sn)	2015/09/28	99	80 - 120	103	80 - 120	<0.00020	mg/L	NC	20
8053063	Dissolved Titanium (Ti)	2015/09/28	101	80 - 120	100	80 - 120	<0.00050	mg/L	NC	20
8053063	Dissolved Uranium (U)	2015/09/28	NC	80 - 120	107	80 - 120	<0.0000020	mg/L	0.55	20
8053063	Dissolved Vanadium (V)	2015/09/28	101	80 - 120	108	80 - 120	<0.00020	mg/L	NC	20
8053063	Dissolved Zinc (Zn)	2015/09/28	NC	80 - 120	104	80 - 120	<0.00010	mg/L	0.64	20
8053063	Dissolved Zirconium (Zr)	2015/09/28					<0.00010	mg/L	NC	20
8053081	Total Nitrogen (N)	2015/09/28	98	80 - 120	93	80 - 120	<0.020	mg/L	NC	20
8053216	Total Aluminum (Al)	2015/09/28	103	80 - 120	109	80 - 120	<0.00050	mg/L	18	20
8053216	Total Antimony (Sb)	2015/09/28	116	80 - 120	105	80 - 120	<0.000020	mg/L	NC	20
8053216	Total Arsenic (As)	2015/09/28	107	80 - 120	101	80 - 120	<0.000020	mg/L	3.0	20
8053216	Total Barium (Ba)	2015/09/28	NC	80 - 120	106	80 - 120	<0.000020	mg/L	2.7	20
8053216	Total Beryllium (Be)	2015/09/28	98	80 - 120	101	80 - 120	<0.000010	mg/L	NC	20
8053216	Total Bismuth (Bi)	2015/09/28	98	80 - 120	104	80 - 120	<0.0000050	mg/L	NC	20
8053216	Total Boron (B)	2015/09/28					<0.010	mg/L	1.4	20
8053216	Total Cadmium (Cd)	2015/09/28	100	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8053216	Total Chromium (Cr)	2015/09/28	103	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8053216	Total Cobalt (Co)	2015/09/28	101	80 - 120	103	80 - 120	<0.0000050	mg/L	1.6	20
8053216	Total Copper (Cu)	2015/09/28	99	80 - 120	106	80 - 120	<0.000050	mg/L	0.82	20
8053216	Total Iron (Fe)	2015/09/28	NC	80 - 120	105	80 - 120	<0.0010	mg/L	0.99	20
8053216	Total Lead (Pb)	2015/09/28	104	80 - 120	107	80 - 120	<0.0000050	mg/L	NC	20
8053216	Total Lithium (Li)	2015/09/28	NC	80 - 120	105	80 - 120	<0.00050	mg/L	1.4	20
8053216	Total Manganese (Mn)	2015/09/28	NC	80 - 120	101	80 - 120	<0.000050	mg/L	0.64	20
8053216	Total Molybdenum (Mo)	2015/09/28	NC	80 - 120	99	80 - 120	<0.000050	mg/L	1.8	20

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**QUALITY ASSURANCE REPORT(CONT'D)**

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 Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8053216	Total Nickel (Ni)	2015/09/28	98	80 - 120	103	80 - 120	<0.000020	mg/L	3.3	20
8053216	Total Phosphorus (P)	2015/09/28					<0.0020	mg/L		
8053216	Total Selenium (Se)	2015/09/28	99	80 - 120	99	80 - 120	<0.000040	mg/L	NC	20
8053216	Total Silicon (Si)	2015/09/28					<0.050	mg/L	0.67	20
8053216	Total Silver (Ag)	2015/09/28	96	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8053216	Total Strontium (Sr)	2015/09/28	NC	80 - 120	99	80 - 120	<0.000050	mg/L	0.96	20
8053216	Total Thallium (Tl)	2015/09/28	99	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
8053216	Total Tin (Sn)	2015/09/28	102	80 - 120	103	80 - 120	<0.00020	mg/L	NC	20
8053216	Total Titanium (Ti)	2015/09/28	108	80 - 120	98	80 - 120	<0.00050	mg/L	NC	20
8053216	Total Uranium (U)	2015/09/28	103	80 - 120	103	80 - 120	<0.0000020	mg/L	0.77	20
8053216	Total Vanadium (V)	2015/09/28	107	80 - 120	114	80 - 120	<0.00020	mg/L	NC	20
8053216	Total Zinc (Zn)	2015/09/28	119	80 - 120	102	80 - 120	<0.00010	mg/L	5.7	20
8053216	Total Zirconium (Zr)	2015/09/28					<0.00010	mg/L	NC	20
8053757	Total Aluminum (Al)	2015/09/29	NC	80 - 120	102	80 - 120	<0.0030	mg/L	4.9	20
8053757	Total Antimony (Sb)	2015/09/29	94	80 - 120	95	80 - 120	<0.000050	mg/L	18	20
8053757	Total Arsenic (As)	2015/09/29	109	80 - 120	93	80 - 120	<0.000020	mg/L	0.67	20
8053757	Total Barium (Ba)	2015/09/29	NC	80 - 120	99	80 - 120	<0.00010	mg/L	9.8	20
8053757	Total Beryllium (Be)	2015/09/29	106	80 - 120	93	80 - 120	<0.000010	mg/L	11	20
8053757	Total Bismuth (Bi)	2015/09/29	102	80 - 120	97	80 - 120	<0.000020	mg/L	NC	20
8053757	Total Boron (B)	2015/09/29					<0.050	mg/L	1.1	20
8053757	Total Cadmium (Cd)	2015/09/29	102	80 - 120	94	80 - 120	<0.0000050	mg/L	NC	20
8053757	Total Chromium (Cr)	2015/09/29	106	80 - 120	100	80 - 120	<0.00050	mg/L	0.56	20
8053757	Total Cobalt (Co)	2015/09/29	107	80 - 120	104	80 - 120	<0.000010	mg/L	0.49	20
8053757	Total Copper (Cu)	2015/09/29	96	80 - 120	107	80 - 120	<0.00020	mg/L	0.13	20
8053757	Total Iron (Fe)	2015/09/29	NC	80 - 120	100	80 - 120	<0.0050	mg/L	1.3	20
8053757	Total Lead (Pb)	2015/09/29	103	80 - 120	98	80 - 120	<0.000050	mg/L	8.1	20
8053757	Total Lithium (Li)	2015/09/29	NC	80 - 120	94	80 - 120	<0.00050	mg/L	5.9	20
8053757	Total Manganese (Mn)	2015/09/29	NC	80 - 120	98	80 - 120	<0.00010	mg/L	0.058	20
8053757	Total Molybdenum (Mo)	2015/09/29	NC	80 - 120	95	80 - 120	<0.000050	mg/L	9.1	20
8053757	Total Nickel (Ni)	2015/09/29	NC	80 - 120	96	80 - 120	<0.00010	mg/L	0.36	20

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**QUALITY ASSURANCE REPORT(CONT'D)**

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8053757	Total Phosphorus (P)	2015/09/29					<0.010	mg/L		
8053757	Total Selenium (Se)	2015/09/29	99	80 - 120	89	80 - 120	<0.000040	mg/L	0.22	20
8053757	Total Silicon (Si)	2015/09/29					<0.10	mg/L	11	20
8053757	Total Silver (Ag)	2015/09/29	108	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8053757	Total Strontium (Sr)	2015/09/29	NC	80 - 120	96	80 - 120	<0.000050	mg/L	2.8	20
8053757	Total Thallium (Tl)	2015/09/29	98	80 - 120	94	80 - 120	<0.0000020	mg/L	0	20
8053757	Total Tin (Sn)	2015/09/29	91	80 - 120	93	80 - 120	<0.00020	mg/L	NC	20
8053757	Total Titanium (Ti)	2015/09/29	NC	80 - 120	96	80 - 120	<0.0050	mg/L	NC	20
8053757	Total Uranium (U)	2015/09/29	104	80 - 120	96	80 - 120	<0.0000050	mg/L	8.0	20
8053757	Total Vanadium (V)	2015/09/29	NC	80 - 120	107	80 - 120	<0.00050	mg/L	5.5	20
8053757	Total Zinc (Zn)	2015/09/29	111	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20
8053757	Total Zirconium (Zr)	2015/09/29					<0.00010	mg/L	1.3	20
8053797	Total Mercury (Hg)	2015/09/29	87	80 - 120	89	80 - 120	<0.0000020	mg/L	NC	20
8053830	Fluoride (F)	2015/09/28	NC	80 - 120	98	80 - 120	0.010, RDL=0.010	mg/L	1.8	20
8053837	Fluoride (F)	2015/09/28	105	80 - 120	100	80 - 120	<0.010	mg/L	0	20
8053858	Dissolved Chloride (Cl)	2015/09/28	109	80 - 120	104	80 - 120	<0.50	mg/L	1.9	20
8053859	Dissolved Sulphate (SO4)	2015/09/28			99	80 - 120	0.84, RDL=0.50	mg/L		
8053867	Dissolved Chloride (Cl)	2015/09/28	117	80 - 120	102	80 - 120	<0.50	mg/L	NC	20
8053868	Dissolved Sulphate (SO4)	2015/09/28	112	80 - 120	96	80 - 120	<0.50	mg/L	0.84	20
8054670	Total Organic Carbon (C)	2015/09/29	107	80 - 120	99	80 - 120	<0.50	mg/L	NC	20
8054917	Turbidity	2015/09/29			97	80 - 120	<0.10	NTU	NC	20
8055002	Dissolved Mercury (Hg)	2015/09/29	103	80 - 120	100	80 - 120	<0.0000020	mg/L	NC	20
8055210	Total Ammonia (N)	2015/09/29	102	80 - 120	110	80 - 120	0.0092, RDL=0.0050	mg/L	NC	20
8055217	Dissolved Sulphate (SO4)	2015/09/29			99	80 - 120	<0.50	mg/L		
8055436	Acidity (pH 4.5)	2015/09/29					<0.50	mg/L	NC	20
8055436	Acidity (pH 8.3)	2015/09/29			97	80 - 120	<0.50	mg/L	NC	20
8055491	Orthophosphate (P)	2015/09/29	104	80 - 120	101	80 - 120	<0.0010	mg/L	NC	20
8055506	Dissolved Phosphorus (P)	2015/09/29	86	80 - 120	96	80 - 120	<0.0020	mg/L	NC	20

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Client Project #: ENVMIN03071-01  
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Sampler Initials: KR

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8055795	Alkalinity (PP as CaCO3)	2015/09/29					<0.50	mg/L	NC	20
8055795	Alkalinity (Total as CaCO3)	2015/09/29	102	80 - 120	95	80 - 120	0.60, RDL=0.50	mg/L	0.89	20
8055795	Bicarbonate (HCO3)	2015/09/29					0.73, RDL=0.50	mg/L	0.89	20
8055795	Carbonate (CO3)	2015/09/29					<0.50	mg/L	NC	20
8055795	Hydroxide (OH)	2015/09/29					<0.50	mg/L	NC	20
8055799	Conductivity	2015/09/29			98	80 - 120	1.2, RDL=1.0	uS/cm	0.26	20
8055800	pH	2015/09/29			101	97 - 103			0.48	N/A
8058340	Dissolved Phosphorus (P)	2015/10/01	150 (1)	80 - 120	99	80 - 120	<0.0020	mg/L	0.82	20
8059876	Alkalinity (PP as CaCO3)	2015/10/02					<0.50	mg/L		
8059876	Alkalinity (Total as CaCO3)	2015/10/02					0.90, RDL=0.50	mg/L		
8059876	Bicarbonate (HCO3)	2015/10/02					1.10, RDL=0.50	mg/L		
8059876	Carbonate (CO3)	2015/10/02					<0.50	mg/L		
8059876	Hydroxide (OH)	2015/10/02					<0.50	mg/L		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.




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
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Sampler Initials: KR

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

  
Name REDACTED Data Validation Coordinator

Signature REDACTED

  
Name REDACTED Analyst

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Your Project #: ENVMIN03071-01  
 Site Location: KUTZ ZE KAYAH  
 Your C.O.C. #: 08412539

**Attention:** Name REDACTED E

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/10/16**  
 Report #: R2059640  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B588975**

**Received: 2015/10/08, 13:30**

Sample Matrix: Water  
 # Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Alkalinity - Water	1	2015/10/10	2015/10/11	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	1	N/A	2015/10/09	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	1	N/A	2015/10/11	BBY6SOP-00026	SM 22 2510 B m
Fluoride	1	N/A	2015/10/09	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	1	N/A	2015/10/14	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/10/13	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	1	N/A	2015/10/15	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	1	2015/10/14	2015/10/14	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	1	N/A	2015/10/15	BBY WI-00033	SM 22 1030E
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/10/13	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	1	N/A	2015/10/09	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2015/10/14	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	1	N/A	2015/10/13	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	1	2015/10/09	2015/10/13	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	1	N/A	2015/10/14	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	1	N/A	2015/10/09	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	1	N/A	2015/10/09	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	1	N/A	2015/10/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	1	N/A	2015/10/09	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	1	N/A	2015/10/11	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	1	N/A	2015/10/10	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	1	N/A	2015/10/09	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	1	N/A	2015/10/13	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	1	N/A	2015/10/13	BBY WI-00033	Calculation
Carbon (Total Organic) (1, 3)	1	N/A	2015/10/14	EENVSOP-00060	MMCW 119 1996 m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/10/09	2015/10/09	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	1	N/A	2015/10/09	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	1	2015/10/09	2015/10/10	BBY6SOP-00034	SM 22 2540 D
Turbidity	1	N/A	2015/10/08	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

Your Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Your C.O.C. #: 08412539

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/10/16**  
Report #: R2059640  
Version: 1 - Final

## CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B588975**

**Received: 2015/10/08, 13:30**

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

- (1) This test was performed by Maxxam Edmonton Environmental
- (2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.
- (3) TOC present in the sample should be considered as non-purgeable TOC.

### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email: Email REDACTED

Phone# (phone REDACTED)

=====  
Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B588975  
Report Date: 2015/10/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

### RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		NI4774	NI4774		
Sampling Date		2015/10/05	2015/10/05		
COC Number		08412539	08412539		
	UNITS	WW15-01	WW15-01 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>					
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE
Ion Balance	N/A	1.0		0.010	8066661
Nitrate (N)	mg/L	<0.0020		0.0020	8067176
<b>Misc. Inorganics</b>					
Fluoride (F)	mg/L	0.066		0.010	8069963
Alkalinity (Total as CaCO3)	mg/L	44.7		0.50	8075120
Total Organic Carbon (C)	mg/L	1.7		0.50	8073018
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8075120
Bicarbonate (HCO3)	mg/L	54.5		0.50	8075120
Carbonate (CO3)	mg/L	<0.50		0.50	8075120
Hydroxide (OH)	mg/L	<0.50		0.50	8075120
<b>Anions</b>					
Orthophosphate (P)	mg/L	0.0016 (1)		0.0010	8070645
Dissolved Sulphate (SO4)	mg/L	102		0.50	8069981
Dissolved Chloride (Cl)	mg/L	1.4		0.50	8069980
<b>Nutrients</b>					
Total Ammonia (N)	mg/L	0.039		0.0050	8073885
Dissolved Phosphorus (P)	mg/L	0.0097	0.0100	0.0020	8069818
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.074		0.020	8067348
Nitrate plus Nitrite (N)	mg/L	<0.0020 (2)		0.0020	8069939
Nitrite (N)	mg/L	<0.0020 (2)		0.0020	8069941
Total Nitrogen (N)	mg/L	0.074		0.020	8069745
Total Phosphorus (P)	mg/L	0.0098	0.0093	0.0020	8069820
<b>Physical Properties</b>					
Conductivity	uS/cm	317		1.0	8075132
pH	pH	7.11		N/A	8075131
<b>Physical Properties</b>					
Total Suspended Solids	mg/L	2.7		1.0	8068843
Total Dissolved Solids	mg/L	232	230	1.0	8070336
Turbidity	NTU	4.00		0.10	8067999
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Sample arrived to laboratory past recommended hold time. (2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.					

Maxxam Job #: B588975  
Report Date: 2015/10/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NI4774	NI4774		
Sampling Date		2015/10/05	2015/10/05		
COC Number		08412539	08412539		
	UNITS	WW15-01	WW15-01 Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>					
Dissolved Hardness (CaCO3)	mg/L	132		0.50	8067792
<b>Elements</b>					
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	8075483
<b>Dissolved Metals by ICPMS</b>					
Dissolved Aluminum (Al)	mg/L	0.00144		0.00050	8068470
Dissolved Antimony (Sb)	mg/L	0.000818		0.000020	8068470
Dissolved Arsenic (As)	mg/L	0.0530		0.000020	8068470
Dissolved Barium (Ba)	mg/L	0.0400		0.000020	8068470
Dissolved Beryllium (Be)	mg/L	<0.000010		0.000010	8068470
Dissolved Bismuth (Bi)	mg/L	<0.0000050		0.0000050	8068470
Dissolved Boron (B)	mg/L	<0.010		0.010	8068470
Dissolved Cadmium (Cd)	mg/L	0.0261		0.0000050	8068470
Dissolved Chromium (Cr)	mg/L	<0.00010		0.00010	8068470
Dissolved Cobalt (Co)	mg/L	0.00440		0.0000050	8068470
Dissolved Copper (Cu)	mg/L	0.000268		0.000050	8068470
Dissolved Iron (Fe)	mg/L	8.18		0.0010	8068470
Dissolved Lead (Pb)	mg/L	0.122		0.0000050	8068470
Dissolved Lithium (Li)	mg/L	0.00359		0.00050	8068470
Dissolved Manganese (Mn)	mg/L	0.619		0.000050	8068470
Dissolved Molybdenum (Mo)	mg/L	0.000085		0.000050	8068470
Dissolved Nickel (Ni)	mg/L	0.0126		0.000020	8068470
Dissolved Phosphorus (P)	mg/L	0.0040		0.0020	8068470
Dissolved Selenium (Se)	mg/L	0.000284		0.000040	8068470
Dissolved Silicon (Si)	mg/L	7.82		0.050	8068470
Dissolved Silver (Ag)	mg/L	0.0000140		0.0000050	8068470
Dissolved Strontium (Sr)	mg/L	0.142		0.000050	8068470
Dissolved Thallium (Tl)	mg/L	0.000355		0.0000020	8068470
Dissolved Tin (Sn)	mg/L	<0.00020		0.00020	8068470
Dissolved Titanium (Ti)	mg/L	<0.00050		0.00050	8068470
Dissolved Uranium (U)	mg/L	0.000611		0.0000020	8068470
Dissolved Vanadium (V)	mg/L	<0.00020		0.00020	8068470
Dissolved Zinc (Zn)	mg/L	5.08		0.00010	8068470
Dissolved Zirconium (Zr)	mg/L	<0.00010		0.00010	8068470
Dissolved Calcium (Ca)	mg/L	42.4		0.050	8067175
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B588975  
Report Date: 2015/10/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NI4774	NI4774		
Sampling Date		2015/10/05	2015/10/05		
COC Number		08412539	08412539		
	UNITS	WW15-01	WW15-01 Lab-Dup	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	6.40		0.050	8067175
Dissolved Potassium (K)	mg/L	1.95		0.050	8067175
Dissolved Sodium (Na)	mg/L	0.935		0.050	8067175
Dissolved Sulphur (S)	mg/L	35.4		3.0	8067175
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B588975  
Report Date: 2015/10/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NI4774	NI4774		
Sampling Date		2015/10/05	2015/10/05		
COC Number		08412539	08412539		
	UNITS	WW15-01	WW15-01 Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>					
Total Hardness (CaCO3)	mg/L	130		0.50	8066659
<b>Elements</b>					
Total Mercury (Hg)	mg/L	0.0000025	<0.0000020	0.0000020	8073790
<b>Total Metals by ICPMS</b>					
Total Aluminum (Al)	mg/L	0.0112		0.00050	8072172
Total Antimony (Sb)	mg/L	0.000931		0.000020	8072172
Total Arsenic (As)	mg/L	0.0516		0.000020	8072172
Total Barium (Ba)	mg/L	0.0384		0.000020	8072172
Total Beryllium (Be)	mg/L	<0.000010		0.000010	8072172
Total Bismuth (Bi)	mg/L	<0.0000050		0.0000050	8072172
Total Boron (B)	mg/L	<0.010		0.010	8072172
Total Cadmium (Cd)	mg/L	0.0244		0.0000050	8072172
Total Chromium (Cr)	mg/L	0.00011		0.00010	8072172
Total Cobalt (Co)	mg/L	0.00423		0.0000050	8072172
Total Copper (Cu)	mg/L	0.000705		0.000050	8072172
Total Iron (Fe)	mg/L	7.95		0.0010	8072172
Total Lead (Pb)	mg/L	0.120		0.0000050	8072172
Total Lithium (Li)	mg/L	0.00332		0.00050	8072172
Total Manganese (Mn)	mg/L	0.582		0.000050	8072172
Total Molybdenum (Mo)	mg/L	0.000095		0.000050	8072172
Total Nickel (Ni)	mg/L	0.0123		0.000020	8072172
Total Phosphorus (P)	mg/L	0.0049		0.0020	8072172
Total Selenium (Se)	mg/L	0.000322		0.000040	8072172
Total Silicon (Si)	mg/L	7.24		0.050	8072172
Total Silver (Ag)	mg/L	0.0000120		0.0000050	8072172
Total Strontium (Sr)	mg/L	0.135		0.000050	8072172
Total Thallium (Tl)	mg/L	0.000386		0.0000020	8072172
Total Tin (Sn)	mg/L	<0.00020		0.00020	8072172
Total Titanium (Ti)	mg/L	<0.00050		0.00050	8072172
Total Uranium (U)	mg/L	0.000572		0.0000020	8072172
Total Vanadium (V)	mg/L	<0.00020		0.00020	8072172
Total Zinc (Zn)	mg/L	4.97		0.00010	8072172
Total Zirconium (Zr)	mg/L	<0.00010		0.00010	8072172
Total Calcium (Ca)	mg/L	41.7		0.050	8066664
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					



Maxxam Job #: B588975  
Report Date: 2015/10/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NI4774	NI4774		
Sampling Date		2015/10/05	2015/10/05		
COC Number		08412539	08412539		
	UNITS	WW15-01	WW15-01 Lab-Dup	RDL	QC Batch
Total Magnesium (Mg)	mg/L	6.35		0.050	8066664
Total Potassium (K)	mg/L	1.96		0.050	8066664
Total Sodium (Na)	mg/L	0.971		0.050	8066664
Total Sulphur (S)	mg/L	32.1		3.0	8066664
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B588975  
Report Date: 2015/10/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.3°C
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**Results relate only to the items tested.**

Maxxam Job #: B588975  
Report Date: 2015/10/16

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8067999	Turbidity	2015/10/08			103	80 - 120	<0.10	NTU	NC	20
8068470	Dissolved Aluminum (Al)	2015/10/09	103	80 - 120	101	80 - 120	<0.00050	mg/L	8.6	20
8068470	Dissolved Antimony (Sb)	2015/10/09	106	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8068470	Dissolved Arsenic (As)	2015/10/09	106	80 - 120	99	80 - 120	<0.000020	mg/L	1.1	20
8068470	Dissolved Barium (Ba)	2015/10/09	NC	80 - 120	105	80 - 120	<0.000020	mg/L	1.1	20
8068470	Dissolved Beryllium (Be)	2015/10/09	105	80 - 120	97	80 - 120	<0.000010	mg/L	NC	20
8068470	Dissolved Bismuth (Bi)	2015/10/09	106	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8068470	Dissolved Boron (B)	2015/10/09					<0.010	mg/L	NC	20
8068470	Dissolved Cadmium (Cd)	2015/10/09	110	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8068470	Dissolved Chromium (Cr)	2015/10/09	105	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8068470	Dissolved Cobalt (Co)	2015/10/09	109	80 - 120	104	80 - 120	<0.0000050	mg/L	8.6	20
8068470	Dissolved Copper (Cu)	2015/10/09	110	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8068470	Dissolved Iron (Fe)	2015/10/09	NC	80 - 120	104	80 - 120	<0.0010	mg/L	1.3	20
8068470	Dissolved Lead (Pb)	2015/10/09	109	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8068470	Dissolved Lithium (Li)	2015/10/09	NC	80 - 120	98	80 - 120	<0.00050	mg/L	3.8	20
8068470	Dissolved Manganese (Mn)	2015/10/09	NC	80 - 120	100	80 - 120	<0.000050	mg/L	5.8	20
8068470	Dissolved Molybdenum (Mo)	2015/10/09	101	80 - 120	95	80 - 120	<0.000050	mg/L	NC	20
8068470	Dissolved Nickel (Ni)	2015/10/09	104	80 - 120	100	80 - 120	<0.000020	mg/L	4.6	20
8068470	Dissolved Phosphorus (P)	2015/10/09					<0.0020	mg/L		
8068470	Dissolved Selenium (Se)	2015/10/09	112	80 - 120	96	80 - 120	<0.000040	mg/L	NC	20
8068470	Dissolved Silicon (Si)	2015/10/09					<0.050	mg/L	7.4	20
8068470	Dissolved Silver (Ag)	2015/10/09	112	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8068470	Dissolved Strontium (Sr)	2015/10/09	NC	80 - 120	98	80 - 120	<0.000050	mg/L	1.4	20
8068470	Dissolved Thallium (Tl)	2015/10/09	100	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8068470	Dissolved Tin (Sn)	2015/10/09	94	80 - 120	97	80 - 120	<0.00020	mg/L	NC	20
8068470	Dissolved Titanium (Ti)	2015/10/09	100	80 - 120	97	80 - 120	<0.00050	mg/L	NC	20
8068470	Dissolved Uranium (U)	2015/10/09	109	80 - 120	102	80 - 120	<0.0000020	mg/L	3.9	20
8068470	Dissolved Vanadium (V)	2015/10/09	107	80 - 120	108	80 - 120	<0.00020	mg/L	NC	20
8068470	Dissolved Zinc (Zn)	2015/10/09	107	80 - 120	100	80 - 120	<0.00010	mg/L	0.35	20
8068470	Dissolved Zirconium (Zr)	2015/10/09					<0.00010	mg/L	NC	20
8068843	Total Suspended Solids	2015/10/10			102	80 - 120	<1.0	mg/L		

Maxxam Job #: B588975  
Report Date: 2015/10/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8069745	Total Nitrogen (N)	2015/10/13	99	80 - 120	95	80 - 120	<0.020	mg/L	1.8	20
8069818	Dissolved Phosphorus (P)	2015/10/09	104	80 - 120	94	80 - 120	<0.0020	mg/L	NC	20
8069820	Total Phosphorus (P)	2015/10/09	109	80 - 120	94	80 - 120	<0.0020	mg/L	NC	20
8069939	Nitrate plus Nitrite (N)	2015/10/09	103	80 - 120	98	80 - 120	<0.0020	mg/L	NC	25
8069941	Nitrite (N)	2015/10/09	100	80 - 120	95	80 - 120	<0.0020	mg/L	NC	25
8069963	Fluoride (F)	2015/10/09			102	80 - 120	<0.010	mg/L		
8069980	Dissolved Chloride (Cl)	2015/10/09	NC	80 - 120	106	80 - 120	0.56, RDL=0.50	mg/L	0.95	20
8069981	Dissolved Sulphate (SO4)	2015/10/09			101	80 - 120	<0.50	mg/L		
8070336	Total Dissolved Solids	2015/10/13	103	80 - 120	96	80 - 120	<1.0	mg/L	0.87	20
8070645	Orthophosphate (P)	2015/10/10	113	80 - 120	97	80 - 120	<0.0010	mg/L	NC	20
8072172	Total Aluminum (Al)	2015/10/13	108	80 - 120	105	80 - 120	<0.00050	mg/L	NC	20
8072172	Total Antimony (Sb)	2015/10/13	95	80 - 120	98	80 - 120	<0.000020	mg/L	NC	20
8072172	Total Arsenic (As)	2015/10/13	100	80 - 120	96	80 - 120	<0.000020	mg/L	NC	20
8072172	Total Barium (Ba)	2015/10/13	102	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8072172	Total Beryllium (Be)	2015/10/13	95	80 - 120	93	80 - 120	<0.000010	mg/L	NC	20
8072172	Total Bismuth (Bi)	2015/10/13	100	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8072172	Total Boron (B)	2015/10/13					<0.010	mg/L	NC	20
8072172	Total Cadmium (Cd)	2015/10/13	98	80 - 120	93	80 - 120	<0.0000050	mg/L	NC	20
8072172	Total Chromium (Cr)	2015/10/13	102	80 - 120	99	80 - 120	<0.00010	mg/L	NC	20
8072172	Total Cobalt (Co)	2015/10/13	105	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8072172	Total Copper (Cu)	2015/10/13	103	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8072172	Total Iron (Fe)	2015/10/13	97	80 - 120	104	80 - 120	<0.0010	mg/L	NC	20
8072172	Total Lead (Pb)	2015/10/13	105	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8072172	Total Lithium (Li)	2015/10/13	97	80 - 120	87	80 - 120	<0.00050	mg/L	NC	20
8072172	Total Manganese (Mn)	2015/10/13	102	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8072172	Total Molybdenum (Mo)	2015/10/13	93	80 - 120	93	80 - 120	<0.000050	mg/L	NC	20
8072172	Total Nickel (Ni)	2015/10/13	103	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8072172	Total Phosphorus (P)	2015/10/13					<0.0020	mg/L		
8072172	Total Selenium (Se)	2015/10/13	90	80 - 120	94	80 - 120	<0.000040	mg/L	NC	20
8072172	Total Silicon (Si)	2015/10/13					<0.050	mg/L	NC	20
8072172	Total Silver (Ag)	2015/10/13	89	80 - 120	95	80 - 120	<0.0000050	mg/L	NC	20

Maxxam Job #: B588975  
Report Date: 2015/10/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8072172	Total Strontium (Sr)	2015/10/13	98	80 - 120	92	80 - 120	<0.000050	mg/L	NC	20
8072172	Total Thallium (Tl)	2015/10/13	99	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
8072172	Total Tin (Sn)	2015/10/13	93	80 - 120	115	80 - 120	<0.00020	mg/L	NC	20
8072172	Total Titanium (Ti)	2015/10/13	99	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8072172	Total Uranium (U)	2015/10/13	105	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
8072172	Total Vanadium (V)	2015/10/13	110	80 - 120	108	80 - 120	<0.00020	mg/L	NC	20
8072172	Total Zinc (Zn)	2015/10/13	103	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8072172	Total Zirconium (Zr)	2015/10/13					<0.00010	mg/L	NC	20
8073018	Total Organic Carbon (C)	2015/10/14	98	80 - 120	108	80 - 120	<0.50	mg/L	3.2	20
8073790	Total Mercury (Hg)	2015/10/14	92	80 - 120	97	80 - 120	<0.0000020	mg/L	NC	20
8073885	Total Ammonia (N)	2015/10/14			103	80 - 120	<0.0050	mg/L		
8075120	Alkalinity (PP as CaCO3)	2015/10/11					<0.50	mg/L	NC	20
8075120	Alkalinity (Total as CaCO3)	2015/10/11	104	80 - 120	97	80 - 120	<0.50	mg/L	8.9	20
8075120	Bicarbonate (HCO3)	2015/10/11					<0.50	mg/L	8.9	20
8075120	Carbonate (CO3)	2015/10/11					<0.50	mg/L	NC	20
8075120	Hydroxide (OH)	2015/10/11					<0.50	mg/L	NC	20
8075131	pH	2015/10/11			101	97 - 103			1.4	N/A
8075132	Conductivity	2015/10/11			99	80 - 120	1.3, RDL=1.0	uS/cm	9.2	20
8075483	Dissolved Mercury (Hg)	2015/10/15	102	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).


NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B588975  
Report Date: 2015/10/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUTZ ZE KAYAH  
Sampler Initials: AJS

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

\_\_\_\_\_  
Name REDACTED   
Data Validation Coordinator

\_\_\_\_\_  
Name REDACTED   
c., Scientific Specialist

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Turnaround Time (TAT) Required		
Company Name: <b>BMC MINERALS LTD.</b>		Company Name: <b>TETRATECH EBA</b>				Quotation #: <b>B50743</b>				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)		
Contact Name: <b>ACCOUNTS PAYABLE</b>		Contact Name: <b>Name REDACTED</b>				P.O. #/ AFE#:				<b>PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS</b>		
Address: <b>530-1130 WEST PENDER ST</b>		Address: <b>61 WASSON PLACE</b>				Project #: <b>ENVMIN03071-01</b>				Rush TAT (Surcharges will be applied)		
Vancouver, BC PC: V6E 4A4		Whitehorse, YK PC: V1A 0H7				Site Location: <b>Kudz Ze Kayah</b>				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days		
Phone:		Phone: <b>(867) 668-9220</b>				Site #:				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days		
Email:		Email: <b>Email REDACTED</b>				Sampled By: <b>AJS</b>				Date Required:		
Regulatory Criteria		Special Instructions		Analysis Requested				Rush Confirmation #:				
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify) USE SCENARIO # <b>12485</b>		ROUTINE (incl. TDS, Alk, EC, pH, TOC, TSS (LL, Turb, Ion Bal)) MAJOR IONS (Chloride, Fluoride, Sulphate) NUTRIENTS (Total Nitrogen, NH4, NO2, NO3, PO4, TP, TAN) LOW LEVEL DISSOLVED METALS (Incl. CV Hg) LOW LEVEL TOTAL METALS (Incl. CV Hg) Phosphorous (LL Tot, dissolved)				LABORATORY USE ONLY CUSTODY SEAL Y/N Present Intact COOLING MEDIA PRESENT Y N COMMENTS				
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM												
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE	MAJOR IONS	NUTRIENTS	LOW LEVEL DISSOLVED METALS	LOW LEVEL TOTAL METALS	Phosphorous	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1	WW15-01	NS474	10/5/2015	Water	X	X	X	X	X	X	13	
2												
3												
4												
5												
6												
7												
8												
9												
10												
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #				
				Name REDACTED		2015/10/08	13:30	B588975				



Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: G032789

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/10/20**  
 Report #: R2061631  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B590273**

**Received: 2015/10/13, 10:00**

Sample Matrix: Water  
 # Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	1	N/A	2015/10/15	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	1	2015/10/19	2015/10/19	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	1	N/A	2015/10/15	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	1	N/A	2015/10/19	BBY6SOP-00026	SM 22 2510 B m
Fluoride	1	N/A	2015/10/15	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	1	N/A	2015/10/19	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/10/19	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	1	N/A	2015/10/20	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	1	2015/10/20	2015/10/20	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	1	N/A	2015/10/20	BBY WI-00033	SM 22 1030E
Sum of cations, anions	1	N/A	2015/10/19	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/10/19	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	1	N/A	2015/10/17	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2015/10/19	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	1	N/A	2015/10/17	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	1	2015/10/15	2015/10/15	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	1	N/A	2015/10/19	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	1	N/A	2015/10/15	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	1	N/A	2015/10/15	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	1	N/A	2015/10/16	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	1	N/A	2015/10/17	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (1)	1	N/A	2015/10/19	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	1	N/A	2015/10/16	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	1	N/A	2015/10/15	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	1	N/A	2015/10/17	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	1	N/A	2015/10/16	BBY WI-00033	Calculation
Carbon (Total Organic) (2)	1	N/A	2015/10/15	BBY6SOP-00003	SM 22 5310 C m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/10/15	2015/10/15	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	1	N/A	2015/10/15	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	1	2015/10/15	2015/10/16	BBY6SOP-00034	SM 22 2540 D



Your Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: G032789

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/10/20**  
Report #: R2061631  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B590273**

**Received: 2015/10/13, 10:00**

Sample Matrix: Water  
# Samples Received: 1

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Analytical Method</b>
Turbidity	1	N/A	2015/10/16	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(2) TOC present in the sample should be considered as non-purgeable TOC.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email Email REDACTED

Phone# Phone REDACTED

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B590273  
Report Date: 2015/10/20

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NJ3446	NJ3446		
Sampling Date		2015/10/11 06:30	2015/10/11 06:30		
COC Number		G032789	G032789		
	UNITS	WW15-02	WW15-02 Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>					
Acidity (pH 4.5)	mg/L	<0.50	<0.50	0.50	8075811
Acidity (pH 8.3)	mg/L	3.38	2.82	0.50	8075811
<b>Calculated Parameters</b>					
Anion Sum	meq/L	4.3		N/A	8079391
Cation Sum	meq/L	4.5		N/A	8079391
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE
Ion Balance	N/A	1.0		0.010	8074314
Nitrate (N)	mg/L	0.0620		0.0020	8073530
<b>Misc. Inorganics</b>					
Fluoride (F)	mg/L	0.086		0.010	8075676
Alkalinity (Total as CaCO3)	mg/L	160		0.50	8079664
Total Organic Carbon (C)	mg/L	2.22		0.50	8075665
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8079664
Bicarbonate (HCO3)	mg/L	195		0.50	8079664
Carbonate (CO3)	mg/L	<0.50		0.50	8079664
Hydroxide (OH)	mg/L	<0.50		0.50	8079664
<b>Anions</b>					
Orthophosphate (P)	mg/L	<0.0010 (1)		0.0010	8077476
Dissolved Sulphate (SO4)	mg/L	51.8		0.50	8075963
Dissolved Chloride (Cl)	mg/L	0.75		0.50	8075962
<b>Nutrients</b>					
Total Ammonia (N)	mg/L	0.035		0.0050	8080100
Dissolved Phosphorus (P)	mg/L	0.0034	0.0029	0.0020	8077349
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.076		0.020	8073695
Nitrate plus Nitrite (N)	mg/L	0.0620 (1)		0.0020	8075970
Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8075972
Total Nitrogen (N)	mg/L	0.138		0.020	8075849
Total Phosphorus (P)	mg/L	0.0027		0.0020	8075961
<b>Physical Properties</b>					
Conductivity	uS/cm	407		1.0	8079668
pH	pH	8.10		N/A	8079667
<b>Physical Properties</b>					
Total Suspended Solids	mg/L	1.1		1.0	8075018
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					
(1) Sample analysed past recommended hold time.					

Maxxam Job #: B590273  
Report Date: 2015/10/20

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NJ3446	NJ3446		
Sampling Date		2015/10/11 06:30	2015/10/11 06:30		
COC Number		G032789	G032789		
	UNITS	WW15-02	WW15-02 Lab-Dup	RDL	QC Batch
Total Dissolved Solids	mg/L	274	278	1.0	8076833
Turbidity	NTU	3.22		0.10	8076811
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B590273  
Report Date: 2015/10/20

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NJ3446		
<b>Sampling Date</b>		2015/10/11 06:30		
<b>COC Number</b>		G032789		
	<b>UNITS</b>	<b>WW15-02</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	218	0.50	8073129
<b>Elements</b>				
Dissolved Mercury (Hg)	mg/L	<0.0000020	0.0000020	8080723
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	mg/L	0.00466	0.00050	8076694
Dissolved Antimony (Sb)	mg/L	0.000094	0.000020	8076694
Dissolved Arsenic (As)	mg/L	0.00177	0.000020	8076694
Dissolved Barium (Ba)	mg/L	0.0547	0.000020	8076694
Dissolved Beryllium (Be)	mg/L	<0.000010	0.000010	8076694
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000050	8076694
Dissolved Boron (B)	mg/L	<0.010	0.010	8076694
Dissolved Cadmium (Cd)	mg/L	0.0000150	0.0000050	8076694
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00010	8076694
Dissolved Cobalt (Co)	mg/L	0.000157	0.0000050	8076694
Dissolved Copper (Cu)	mg/L	0.000136	0.000050	8076694
Dissolved Iron (Fe)	mg/L	0.468	0.0010	8076694
Dissolved Lead (Pb)	mg/L	0.0000710	0.0000050	8076694
Dissolved Lithium (Li)	mg/L	0.00684	0.00050	8076694
Dissolved Manganese (Mn)	mg/L	0.0867	0.000050	8076694
Dissolved Molybdenum (Mo)	mg/L	0.000446	0.000050	8076694
Dissolved Nickel (Ni)	mg/L	0.000506	0.000020	8076694
Dissolved Phosphorus (P)	mg/L	0.0033	0.0020	8076694
Dissolved Selenium (Se)	mg/L	0.000167	0.000040	8076694
Dissolved Silicon (Si)	mg/L	3.84	0.050	8076694
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000050	8076694
Dissolved Strontium (Sr)	mg/L	0.221	0.000050	8076694
Dissolved Thallium (Tl)	mg/L	0.0000020	0.0000020	8076694
Dissolved Tin (Sn)	mg/L	<0.00020	0.00020	8076694
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00050	8076694
Dissolved Uranium (U)	mg/L	0.00515	0.0000020	8076694
Dissolved Vanadium (V)	mg/L	<0.00020	0.00020	8076694
Dissolved Zinc (Zn)	mg/L	0.00576	0.00010	8076694
Dissolved Zirconium (Zr)	mg/L	0.00034	0.00010	8076694
Dissolved Calcium (Ca)	mg/L	67.1	0.050	8073526
Dissolved Magnesium (Mg)	mg/L	12.4	0.050	8073526
RDL = Reportable Detection Limit				

Maxxam Job #: B590273  
Report Date: 2015/10/20

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NJ3446		
<b>Sampling Date</b>		2015/10/11 06:30		
<b>COC Number</b>		G032789		
	<b>UNITS</b>	<b>WW15-02</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Potassium (K)	mg/L	1.66	0.050	8073526
Dissolved Sodium (Na)	mg/L	1.05	0.050	8073526
Dissolved Sulphur (S)	mg/L	16.9	3.0	8073526
RDL = Reportable Detection Limit				

Maxxam Job #: B590273  
Report Date: 2015/10/20

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NJ3446		
<b>Sampling Date</b>		2015/10/11 06:30		
<b>COC Number</b>		G032789		
	<b>UNITS</b>	<b>WW15-02</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	214	0.50	8073033
<b>Elements</b>				
Total Mercury (Hg)	mg/L	<0.0000020	0.0000020	8080814
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	0.00575	0.00050	8076712
Total Antimony (Sb)	mg/L	0.000093	0.000020	8076712
Total Arsenic (As)	mg/L	0.00173	0.000020	8076712
Total Barium (Ba)	mg/L	0.0524	0.000020	8076712
Total Beryllium (Be)	mg/L	<0.000010	0.000010	8076712
Total Bismuth (Bi)	mg/L	<0.0000050	0.0000050	8076712
Total Boron (B)	mg/L	<0.010	0.010	8076712
Total Cadmium (Cd)	mg/L	0.0000250	0.0000050	8076712
Total Chromium (Cr)	mg/L	0.00015	0.00010	8076712
Total Cobalt (Co)	mg/L	0.000154	0.0000050	8076712
Total Copper (Cu)	mg/L	0.000228	0.000050	8076712
Total Iron (Fe)	mg/L	0.470	0.0010	8076712
Total Lead (Pb)	mg/L	0.0000970	0.0000050	8076712
Total Lithium (Li)	mg/L	0.00708	0.00050	8076712
Total Manganese (Mn)	mg/L	0.0841	0.000050	8076712
Total Molybdenum (Mo)	mg/L	0.000446	0.000050	8076712
Total Nickel (Ni)	mg/L	0.000474	0.000020	8076712
Total Phosphorus (P)	mg/L	0.0028	0.0020	8076712
Total Selenium (Se)	mg/L	0.000141	0.000040	8076712
Total Silicon (Si)	mg/L	3.75	0.050	8076712
Total Silver (Ag)	mg/L	<0.0000050	0.0000050	8076712
Total Strontium (Sr)	mg/L	0.211	0.000050	8076712
Total Thallium (Tl)	mg/L	0.0000020	0.0000020	8076712
Total Tin (Sn)	mg/L	<0.00020	0.00020	8076712
Total Titanium (Ti)	mg/L	0.00054	0.00050	8076712
Total Uranium (U)	mg/L	0.00507	0.0000020	8076712
Total Vanadium (V)	mg/L	<0.00020	0.00020	8076712
Total Zinc (Zn)	mg/L	0.00596	0.00010	8076712
Total Zirconium (Zr)	mg/L	0.00032	0.00010	8076712
Total Calcium (Ca)	mg/L	64.9	0.050	8073527
Total Magnesium (Mg)	mg/L	12.6	0.050	8073527
RDL = Reportable Detection Limit				

Maxxam Job #: B590273  
Report Date: 2015/10/20

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NJ3446		
<b>Sampling Date</b>		2015/10/11 06:30		
<b>COC Number</b>		G032789		
	<b>UNITS</b>	<b>WW15-02</b>	<b>RDL</b>	<b>QC Batch</b>
Total Potassium (K)	mg/L	1.62	0.050	8073527
Total Sodium (Na)	mg/L	1.03	0.050	8073527
Total Sulphur (S)	mg/L	17.0	3.0	8073527
RDL = Reportable Detection Limit				

Maxxam Job #: B590273  
Report Date: 2015/10/20

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	3.7°C
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Sample NJ3446-01 : Turbidity analyzed past recommended hold time.

**Results relate only to the items tested.**



Maxxam Job #: B590273  
Report Date: 2015/10/20

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8075018	Total Suspended Solids	2015/10/16			101	80 - 120	<1.0	mg/L		
8075665	Total Organic Carbon (C)	2015/10/15	100	80 - 120	109	80 - 120	<0.50	mg/L	4.6	20
8075676	Fluoride (F)	2015/10/15			96	80 - 120	<0.010	mg/L		
8075811	Acidity (pH 4.5)	2015/10/15					<0.50	mg/L	NC	20
8075811	Acidity (pH 8.3)	2015/10/15			99	80 - 120	<0.50	mg/L	18	20
8075849	Total Nitrogen (N)	2015/10/15	NC	80 - 120	95	80 - 120	<0.020	mg/L	4.7	20
8075961	Total Phosphorus (P)	2015/10/15			110	80 - 120	<0.0020	mg/L		
8075962	Dissolved Chloride (Cl)	2015/10/15			102	80 - 120	<0.50	mg/L		
8075963	Dissolved Sulphate (SO4)	2015/10/15			94	80 - 120	<0.50	mg/L		
8075970	Nitrate plus Nitrite (N)	2015/10/15	108	80 - 120	102	80 - 120	<0.0020	mg/L	NC	25
8075972	Nitrite (N)	2015/10/15	100	80 - 120	92	80 - 120	<0.0020	mg/L	NC	25
8076694	Dissolved Aluminum (Al)	2015/10/17	108	80 - 120	105	80 - 120	<0.00050	mg/L	NC	20
8076694	Dissolved Antimony (Sb)	2015/10/17	105	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8076694	Dissolved Arsenic (As)	2015/10/17	101	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8076694	Dissolved Barium (Ba)	2015/10/17	108	80 - 120	107	80 - 120	<0.000020	mg/L	NC	20
8076694	Dissolved Beryllium (Be)	2015/10/17	101	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8076694	Dissolved Bismuth (Bi)	2015/10/17	101	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8076694	Dissolved Boron (B)	2015/10/17					<0.010	mg/L	NC	20
8076694	Dissolved Cadmium (Cd)	2015/10/17	100	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8076694	Dissolved Chromium (Cr)	2015/10/17	102	80 - 120	101	80 - 120	<0.00010	mg/L	NC	20
8076694	Dissolved Cobalt (Co)	2015/10/17	106	80 - 120	106	80 - 120	<0.0000050	mg/L	NC	20
8076694	Dissolved Copper (Cu)	2015/10/17	103	80 - 120	102	80 - 120	<0.000050	mg/L	NC	20
8076694	Dissolved Iron (Fe)	2015/10/17	107	80 - 120	106	80 - 120	<0.0010	mg/L	NC	20
8076694	Dissolved Lead (Pb)	2015/10/17	105	80 - 120	104	80 - 120	<0.0000050	mg/L	NC	20
8076694	Dissolved Lithium (Li)	2015/10/17	99	80 - 120	103	80 - 120	<0.00050	mg/L	NC	20
8076694	Dissolved Manganese (Mn)	2015/10/17	101	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8076694	Dissolved Molybdenum (Mo)	2015/10/17	97	80 - 120	95	80 - 120	<0.000050	mg/L	NC	20
8076694	Dissolved Nickel (Ni)	2015/10/17	101	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8076694	Dissolved Phosphorus (P)	2015/10/17					<0.0020	mg/L	NC	20
8076694	Dissolved Selenium (Se)	2015/10/17	99	80 - 120	99	80 - 120	<0.000040	mg/L	NC	20
8076694	Dissolved Silicon (Si)	2015/10/17					<0.050	mg/L	NC	20

Maxxam Job #: B590273  
Report Date: 2015/10/20

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8076694	Dissolved Silver (Ag)	2015/10/17	104	80 - 120	92	80 - 120	<0.0000050	mg/L	NC	20
8076694	Dissolved Strontium (Sr)	2015/10/17	99	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8076694	Dissolved Thallium (Tl)	2015/10/17	99	80 - 120	96	80 - 120	<0.0000020	mg/L	NC	20
8076694	Dissolved Tin (Sn)	2015/10/17	104	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8076694	Dissolved Titanium (Ti)	2015/10/17	94	80 - 120	101	80 - 120	<0.00050	mg/L	NC	20
8076694	Dissolved Uranium (U)	2015/10/17	105	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
8076694	Dissolved Vanadium (V)	2015/10/17	111	80 - 120	105	80 - 120	<0.00020	mg/L	NC	20
8076694	Dissolved Zinc (Zn)	2015/10/17	106	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8076694	Dissolved Zirconium (Zr)	2015/10/17					<0.00010	mg/L	NC	20
8076712	Total Aluminum (Al)	2015/10/17	98	80 - 120	108	80 - 120	<0.00050	mg/L	NC	20
8076712	Total Antimony (Sb)	2015/10/17	97	80 - 120	106	80 - 120	<0.000020	mg/L	NC	20
8076712	Total Arsenic (As)	2015/10/17	96	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8076712	Total Barium (Ba)	2015/10/17	102	80 - 120	109	80 - 120	<0.000020	mg/L	NC	20
8076712	Total Beryllium (Be)	2015/10/17	96	80 - 120	103	80 - 120	<0.000010	mg/L	NC	20
8076712	Total Bismuth (Bi)	2015/10/17	93	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8076712	Total Boron (B)	2015/10/17					<0.010	mg/L	NC	20
8076712	Total Cadmium (Cd)	2015/10/17	97	80 - 120	104	80 - 120	<0.0000050	mg/L	NC	20
8076712	Total Chromium (Cr)	2015/10/17	95	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20
8076712	Total Cobalt (Co)	2015/10/17	98	80 - 120	106	80 - 120	<0.0000050	mg/L	NC	20
8076712	Total Copper (Cu)	2015/10/17	96	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8076712	Total Iron (Fe)	2015/10/17	98	80 - 120	105	80 - 120	<0.0010	mg/L	NC	20
8076712	Total Lead (Pb)	2015/10/17	99	80 - 120	109	80 - 120	<0.0000050	mg/L	1.7	20
8076712	Total Lithium (Li)	2015/10/17	94	80 - 120	104	80 - 120	<0.00050	mg/L	NC	20
8076712	Total Manganese (Mn)	2015/10/17	95	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8076712	Total Molybdenum (Mo)	2015/10/17	95	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8076712	Total Nickel (Ni)	2015/10/17	94	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8076712	Total Phosphorus (P)	2015/10/17					<0.0020	mg/L	NC	20
8076712	Total Selenium (Se)	2015/10/17	97	80 - 120	97	80 - 120	<0.000040	mg/L	NC	20
8076712	Total Silicon (Si)	2015/10/17					<0.050	mg/L	NC	20
8076712	Total Silver (Ag)	2015/10/17	101	80 - 120	94	80 - 120	<0.0000050	mg/L	NC	20
8076712	Total Strontium (Sr)	2015/10/17	93	80 - 120	102	80 - 120	<0.000050	mg/L	NC	20

Maxxam Job #: B590273  
Report Date: 2015/10/20

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8076712	Total Thallium (Tl)	2015/10/17	92	80 - 120	102	80 - 120	<0.0000020	mg/L	NC	20
8076712	Total Tin (Sn)	2015/10/17	93	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8076712	Total Titanium (Ti)	2015/10/17	92	80 - 120	101	80 - 120	<0.00050	mg/L	NC	20
8076712	Total Uranium (U)	2015/10/17	95	80 - 120	104	80 - 120	<0.0000020	mg/L	NC	20
8076712	Total Vanadium (V)	2015/10/17	117	80 - 120	112	80 - 120	0.00030, RDL=0.00020	mg/L	NC	20
8076712	Total Zinc (Zn)	2015/10/17	97	80 - 120	101	80 - 120	<0.00010	mg/L	3.1	20
8076712	Total Zirconium (Zr)	2015/10/17					<0.00010	mg/L	NC	20
8076811	Turbidity	2015/10/16			100	80 - 120	<0.10	NTU	NC	20
8076833	Total Dissolved Solids	2015/10/17	100	80 - 120	102	80 - 120	<1.0	mg/L	1.4	20
8077349	Dissolved Phosphorus (P)	2015/10/15	89	80 - 120	107	80 - 120	<0.0020	mg/L	NC	20
8077476	Orthophosphate (P)	2015/10/16	99	80 - 120	91	80 - 120	<0.0010	mg/L	NC	20
8079664	Alkalinity (PP as CaCO3)	2015/10/19					<0.50	mg/L		
8079664	Alkalinity (Total as CaCO3)	2015/10/19			91	80 - 120	0.69, RDL=0.50	mg/L		
8079664	Bicarbonate (HCO3)	2015/10/19					0.84, RDL=0.50	mg/L		
8079664	Carbonate (CO3)	2015/10/19					<0.50	mg/L		
8079664	Hydroxide (OH)	2015/10/19					<0.50	mg/L		
8079667	pH	2015/10/19			101	97 - 103			0.28	N/A
8079668	Conductivity	2015/10/19			98	80 - 120	1.1, RDL=1.0	uS/cm		
8080100	Total Ammonia (N)	2015/10/19	NC	80 - 120	104	80 - 120	0.0065, RDL=0.0050	mg/L	1.1	20
8080723	Dissolved Mercury (Hg)	2015/10/20	90	80 - 120	106	80 - 120	<0.0000020	mg/L	NC	20
8080814	Total Mercury (Hg)	2015/10/20	101	80 - 120	106	80 - 120	<0.0000020	mg/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).


NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B590273  
Report Date: 2015/10/20

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

\_\_\_\_\_  
Name REDACTE  Data Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.





**CHAIN OF CUSTODY RECORD**

Burnaby: 4606 Canada Way, Burnaby, BC V5G 1K5. Toll Free (800) 665-8566

COC #:

BBY FCD-00077/05

Page 1 of 1

Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Turnaround Time (TAT) Required		
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)		
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS		
Address: 530-1130 West Pender Street, Vancouver BC V6E 4A4		Address: 61 Wasson Place Whitehorse, YT PC: V1A 0H7				Project #: ENVMIN03071-01				Rush TAT (Surcharges will be applied)		
Phone:		Phone: 867-668-9220				Site Location: Kudz Ze Kayah				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days		
Email: Email REDACTED		Email: Email REDACTED				Site #:				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days		
Sampled By: Adam Seeley		Date Required:										
Regulatory Criteria		Special Instructions		Analysis Requested				Rush Confirmation #:				
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input type="checkbox"/> CCME (Specify) <input type="checkbox"/> Other (Specify) <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		# OF CONTAINERS SUBMITTED HOLD - DO NOT ANALYZE				LABORATORY USE ONLY CUSTODY SEAL Y / N Present Intact COOLER TEMPERATURES COOLING MEDIA PRESENT Y / N COMMENTS				
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM												
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (INCLUDING NO <sub>3</sub> , NO <sub>2</sub> , TOTAL P)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus (LI Tot. dissolved) /FF/FP		
1	WW15-02	NJ3446	11/10/2015	6:30	water	x	x	x	x	x		
2												
3												
4												
5												
6												
7												
8												
9												
10												
11												
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #				
Name REDACTED		11/10/15	4:30pm									



Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08413339, G022395

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/11/19**  
 Report #: R2082050  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B598984**

**Received: 2015/11/05, 09:35**

Sample Matrix: Water  
 # Samples Received: 13

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO <sub>3</sub> )	13	N/A	2015/11/05	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	11	2015/11/06	2015/11/06	BBY6SOP-00026	SM 22 2320 B m
Alkalinity - Water	2	2015/11/16	2015/11/16	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	8	N/A	2015/11/06	BBY6SOP-00011	SM 22 4500-Cl- G m
Chloride by Automated Colourimetry	3	N/A	2015/11/09	BBY6SOP-00011	SM 22 4500-Cl- G m
Chloride by Automated Colourimetry	2	N/A	2015/11/16	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	13	N/A	2015/11/06	BBY6SOP-00026	SM 22 2510 B m
Fluoride	13	N/A	2015/11/06	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> )	11	N/A	2015/11/09	BBY7SOP-00002	EPA 6020a R1 m
Hardness Total (calculated as CaCO <sub>3</sub> )	2	N/A	2015/11/19	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO <sub>3</sub> )	13	N/A	2015/11/10	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	13	N/A	2015/11/12	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	5	2015/11/12	2015/11/12	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	8	2015/11/13	2015/11/13	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	13	N/A	2015/11/12	BBY WI-00033	SM 22 1030E
Sum of cations, anions	11	N/A	2015/11/09	Calc	
Sum of cations, anions	1	N/A	2015/11/10	Calc	
Sum of cations, anions	1	N/A	2015/11/12	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	11	N/A	2015/11/10	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	2	N/A	2015/11/16	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	13	N/A	2015/11/09	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	8	2015/11/06	2015/11/08	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2015/11/06	2015/11/09	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2015/11/10	2015/11/10	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2015/11/18	2015/11/19	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	11	N/A	2015/11/09	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	2	N/A	2015/11/19	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	2	N/A	2015/11/06	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	13	2015/11/06	2015/11/09	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	13	N/A	2015/11/09	BBY6SOP-00009	SM 22 4500-NH3- G m



Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08413339, G022395

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/11/19**  
 Report #: R2082050  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B598984**

**Received: 2015/11/05, 09:35**

Sample Matrix: Water  
 # Samples Received: 13

Analyses	Date		Laboratory Method	Analytical Method
	Quantity	Extracted		
Nitrate+Nitrite (N) (low level)	13	N/A	2015/11/05 BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	13	N/A	2015/11/05 BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	13	N/A	2015/11/06 BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	13	N/A	2015/11/06 BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (1)	13	N/A	2015/11/06 BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	12	N/A	2015/11/06 BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2015/11/17 BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	11	N/A	2015/11/06 BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate by Automated Colourimetry	2	N/A	2015/11/16 BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	13	N/A	2015/11/09 BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	13	N/A	2015/11/10 BBY WI-00033	Calculation
Carbon (Total Organic) (2)	13	N/A	2015/11/06 BBY6SOP-00003	SM 22 5310 C m
Phosphorus-P (LL Tot, dissolved) - FF/FP	13	2015/11/06	2015/11/06 BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	13	N/A	2015/11/06 BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	13	2015/11/06	2015/11/09 BBY6SOP-00034	SM 22 2540 D
Turbidity	13	N/A	2015/11/05 BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(2) TOC present in the sample should be considered as non-purgeable TOC.

#### Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email: Email REDACTED

Phone# Phone REDACTED

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.



Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NO7325	NO7325			NO7326	NO7326		
Sampling Date		2015/11/01 11:30	2015/11/01 11:30			2015/10/31 14:45	2015/10/31 14:45		
COC Number		08413339	08413339			08413339	08413339		
	UNITS	MW15-01	MW15-01 Lab-Dup	RDL	QC Batch	MW15-04S	MW15-04S Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>									
Acidity (pH 4.5)	mg/L	<0.50		0.50	8103513	<0.50		0.50	8103513
Acidity (pH 8.3)	mg/L	3.19		0.50	8103513	0.88		0.50	8103513
<b>Calculated Parameters</b>									
Anion Sum	meq/L	5.0		N/A	8103427	2.6		N/A	8103427
Cation Sum	meq/L	5.1		N/A	8103427	2.5		N/A	8103427
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	1.0		0.010	8102665	0.98		0.010	8102665
Nitrate (N)	mg/L	0.392		0.0020	8102944	0.204		0.0020	8102944
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.086		0.010	8105108	0.082		0.010	8105108
Alkalinity (Total as CaCO3)	mg/L	147		0.50	8104328	116		0.50	8104328
Total Organic Carbon (C)	mg/L	2.30		0.50	8105389	0.82		0.50	8105389
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8104328	<0.50		0.50	8104328
Bicarbonate (HCO3)	mg/L	179		0.50	8104328	142		0.50	8104328
Carbonate (CO3)	mg/L	<0.50		0.50	8104328	<0.50		0.50	8104328
Hydroxide (OH)	mg/L	<0.50		0.50	8104328	<0.50		0.50	8104328
<b>Anions</b>									
Orthophosphate (P)	mg/L	0.0011 (1)		0.0010	8116059	0.0035 (1)		0.0010	8105363
Dissolved Sulphate (SO4)	mg/L	94.3		0.50	8104659	10.3		0.50	8104659
Dissolved Chloride (Cl)	mg/L	1.4		0.50	8104652	0.68	0.83	0.50	8104662
<b>Nutrients</b>									
Total Ammonia (N)	mg/L	0.086	0.089	0.0050	8107759	0.047		0.0050	8107759
Dissolved Phosphorus (P)	mg/L	0.0021		0.0020	8105367	0.0023	<0.0020	0.0020	8105367
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.103		0.020	8102798	0.075		0.020	8102798
Nitrate plus Nitrite (N)	mg/L	0.392 (1)		0.0020	8103818	0.204 (1)		0.0020	8103818
Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8103819	<0.0020 (1)		0.0020	8103819
Total Nitrogen (N)	mg/L	0.495		0.020	8105024	0.279		0.020	8105024
Total Phosphorus (P)	mg/L	7.34		0.10	8105368	2.50		0.020	8105368
<b>Physical Properties</b>									
Conductivity	uS/cm	459		1.0	8104332	242		1.0	8104332
pH	pH	8.19		N/A	8104333	8.22		N/A	8104333
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Sample arrived to laboratory past recommended hold time.									

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NO7325	NO7325			NO7326	NO7326		
<b>Sampling Date</b>		2015/11/01 11:30	2015/11/01 11:30			2015/10/31 14:45	2015/10/31 14:45		
<b>COC Number</b>		08413339	08413339			08413339	08413339		
	<b>UNITS</b>	<b>MW15-01</b>	<b>MW15-01 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-04S</b>	<b>MW15-04S Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>									
Total Suspended Solids	mg/L	1910 (1)		20	8104447	1620 (1)		20	8104447
Total Dissolved Solids	mg/L	344		1.0	8102716	170		1.0	8102716
Turbidity	NTU	4000 (2)		0.10	8103557	1310 (2)		0.10	8103557

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) RDL raised due to high concentration of solids in the sample.  
 (2) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NO7327			NO7328	NO7328		
Sampling Date		2015/10/31 15:30			2015/11/01 15:00	2015/11/01 15:00		
COC Number		08413339			08413339	08413339		
	UNITS	MW15-04D	RDL	QC Batch	MW15-05D	MW15-05D Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>								
Acidity (pH 4.5)	mg/L	<0.50	0.50	8103513	<0.50		0.50	8103513
Acidity (pH 8.3)	mg/L	1.83	0.50	8103513	3.25		0.50	8103513
<b>Calculated Parameters</b>								
Anion Sum	meq/L	3.6	N/A	8103427	3.9		N/A	8103427
Cation Sum	meq/L	4.0	N/A	8103427	4.3		N/A	8103427
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	1.1	0.010	8102665	1.1		0.010	8102665
Nitrate (N)	mg/L	0.0036	0.0020	8102944	0.207		0.0020	8102944
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.240	0.010	8105108	0.120		0.010	8105108
Alkalinity (Total as CaCO3)	mg/L	140	0.50	8104328	160		0.50	8113055
Total Organic Carbon (C)	mg/L	1.91	0.50	8105389	<0.50		0.50	8105389
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8104328	<0.50		0.50	8113055
Bicarbonate (HCO3)	mg/L	171	0.50	8104328	195		0.50	8113055
Carbonate (CO3)	mg/L	<0.50	0.50	8104328	<0.50		0.50	8113055
Hydroxide (OH)	mg/L	<0.50	0.50	8104328	<0.50		0.50	8113055
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0029 (1)	0.0010	8105363	0.0023 (1)		0.0010	8105363
Dissolved Sulphate (SO4)	mg/L	34.8	0.50	8104659	32.8		0.50	8114703
Dissolved Chloride (Cl)	mg/L	2.6	0.50	8104652	<0.50		0.50	8114700
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.047	0.0050	8107759	<0.0050		0.0050	8107753
Dissolved Phosphorus (P)	mg/L	0.0033	0.0020	8105367	<0.0020		0.0020	8105367
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.142	0.020	8102798	0.023		0.020	8102798
Nitrate plus Nitrite (N)	mg/L	0.0058 (1)	0.0020	8103818	0.210 (1)		0.0020	8103818
Nitrite (N)	mg/L	0.0022 (1)	0.0020	8103819	0.0030 (1)		0.0020	8103819
Total Nitrogen (N)	mg/L	0.148	0.020	8105024	0.233		0.020	8105024
Total Phosphorus (P)	mg/L	9.09	0.10	8105368	0.0431	0.0437	0.0020	8105368
<b>Physical Properties</b>								
Conductivity	uS/cm	344	1.0	8104332	397		1.0	8104332
pH	pH	8.23	N/A	8104333	8.14		N/A	8104333
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NO7327			NO7328	NO7328		
<b>Sampling Date</b>		2015/10/31 15:30			2015/11/01 15:00	2015/11/01 15:00		
<b>COC Number</b>		08413339			08413339	08413339		
	<b>UNITS</b>	<b>MW15-04D</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-05D</b>	<b>MW15-05D Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Total Suspended Solids	mg/L	5570 (1)	20	8104447	156		1.0	8104447
Total Dissolved Solids	mg/L	266	1.0	8102716	262		1.0	8102716
Turbidity	NTU	2890 (2)	0.50	8103557	72.2		0.10	8103557

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) RDL raised due to high concentration of solids in the sample.  
(2) Sample arrived to laboratory past recommended hold time; RDL raised due to sample dilution.

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NO7329	NO7329		NO7330	NO7330		
Sampling Date		2015/10/30 18:15	2015/10/30 18:15		2015/11/01 16:45	2015/11/01 16:45		
COC Number		08413339	08413339		08413339	08413339		
	UNITS	BH95G-21	BH95G-21 Lab-Dup	RDL	BH95G-22	BH95G-22 Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>								
Acidity (pH 4.5)	mg/L	<0.50		0.50	<0.50		0.50	8103513
Acidity (pH 8.3)	mg/L	3.76		0.50	8.00		0.50	8103513
<b>Calculated Parameters</b>								
Anion Sum	meq/L	4.3		N/A	3.5		N/A	8103427
Cation Sum	meq/L	4.5		N/A	3.6		N/A	8103427
Filter and HNO3 Preservation	N/A	FIELD		N/A	FIELD		N/A	ONSITE
Ion Balance	N/A	1.0		0.010	1.0		0.010	8102665
Nitrate (N)	mg/L	0.0039		0.0020	0.198		0.0020	8102944
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.083		0.010	0.048		0.010	8105108
Alkalinity (Total as CaCO3)	mg/L	165		0.50	129		0.50	8104328
Total Organic Carbon (C)	mg/L	2.20	2.35	0.50	2.79		0.50	8105389
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	<0.50		0.50	8104328
Bicarbonate (HCO3)	mg/L	202		0.50	158		0.50	8104328
Carbonate (CO3)	mg/L	<0.50		0.50	<0.50		0.50	8104328
Hydroxide (OH)	mg/L	<0.50		0.50	<0.50		0.50	8104328
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0021 (1)		0.0010	0.0035 (1)		0.0010	8105363
Dissolved Sulphate (SO4)	mg/L	47.1		0.50	41.9		0.50	8104659
Dissolved Chloride (Cl)	mg/L	0.99		0.50	1.2	1.0	0.50	8104652
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.052		0.0050	0.042		0.0050	8107759
Dissolved Phosphorus (P)	mg/L	0.0024		0.0020	0.0155		0.0020	8105367
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.256		0.020	0.270		0.020	8102798
Nitrate plus Nitrite (N)	mg/L	0.0039 (1)		0.0020	0.198 (1)		0.0020	8103818
Nitrite (N)	mg/L	<0.0020 (1)		0.0020	<0.0020 (1)		0.0020	8103819
Total Nitrogen (N)	mg/L	0.260		0.020	0.468		0.020	8105024
Total Phosphorus (P)	mg/L	7.33		0.10	3.70		0.020	8105368
<b>Physical Properties</b>								
Conductivity	uS/cm	403		1.0	332		1.0	8104332
pH	pH	8.22		N/A	8.23		N/A	8104333
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Sample arrived to laboratory past recommended hold time.								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NO7329	NO7329		NO7330	NO7330		
<b>Sampling Date</b>		2015/10/30 18:15	2015/10/30 18:15		2015/11/01 16:45	2015/11/01 16:45		
<b>COC Number</b>		08413339	08413339		08413339	08413339		
	<b>UNITS</b>	<b>BH95G-21</b>	<b>BH95G-21 Lab-Dup</b>	<b>RDL</b>	<b>BH95G-22</b>	<b>BH95G-22 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Total Suspended Solids	mg/L	6540 (1)		20	970 (1)		20	8104447
Total Dissolved Solids	mg/L	284		1.0	256		1.0	8102716
Turbidity	NTU	3570 (2)		0.50	1630 (3)		0.10	8103557

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) RDL raised due to high concentration of solids in the sample.  
(2) Sample arrived to laboratory past recommended hold time, RDL raised due to sample dilution.  
(3) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NO7331	NO7331			NO7332		
Sampling Date		2015/11/01 18:15	2015/11/01 18:15			2015/11/01 18:00		
COC Number		08413339	08413339			08413339		
	UNITS	BH95G-25S	BH95G-25S Lab-Dup	RDL	QC Batch	BH95G-25D	RDL	QC Batch
<b>Misc. Inorganics</b>								
Acidity (pH 4.5)	mg/L	<0.50		0.50	8103513	<0.50	0.50	8103513
Acidity (pH 8.3)	mg/L	18.5		0.50	8103513	14.6	0.50	8103513
<b>Calculated Parameters</b>								
Anion Sum	meq/L	11		N/A	8103427	12	N/A	8103427
Cation Sum	meq/L	12		N/A	8103427	12	N/A	8103427
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	1.1		0.010	8102665	1.0	0.010	8102665
Nitrate (N)	mg/L	<0.0020		0.0020	8102944	<0.0020	0.0020	8102944
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.110		0.010	8105108	0.083	0.010	8105108
Alkalinity (Total as CaCO3)	mg/L	329		0.50	8104328	350	0.50	8104328
Total Organic Carbon (C)	mg/L	1.98		0.50	8105389	1.51	0.50	8105389
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8104328	<0.50	0.50	8104328
Bicarbonate (HCO3)	mg/L	401		0.50	8104328	427	0.50	8104328
Carbonate (CO3)	mg/L	<0.50		0.50	8104328	<0.50	0.50	8104328
Hydroxide (OH)	mg/L	<0.50		0.50	8104328	<0.50	0.50	8104328
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0011 (1)	0.0039	0.0010	8105363	0.0014 (1)	0.0010	8105363
Dissolved Sulphate (SO4)	mg/L	189		0.50	8104659	222	5.0	8104659
Dissolved Chloride (Cl)	mg/L	1.2		0.50	8104652	1.2	0.50	8104662
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.20		0.0050	8107759	0.079	0.0050	8107759
Dissolved Phosphorus (P)	mg/L	0.0067		0.0020	8105367	0.0036	0.0020	8105367
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.319		0.020	8102798	0.171	0.020	8102798
Nitrate plus Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8103818	<0.0020 (1)	0.0020	8103818
Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8103819	<0.0020 (1)	0.0020	8103819
Total Nitrogen (N)	mg/L	0.319		0.020	8105026	0.171	0.020	8105024
Total Phosphorus (P)	mg/L	0.676		0.020	8105368	0.256	0.0020	8105368
<b>Physical Properties</b>								
Conductivity	uS/cm	962		1.0	8104332	1050	1.0	8104332
pH	pH	8.15		N/A	8104333	8.16	N/A	8104333
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NO7331	NO7331			NO7332		
<b>Sampling Date</b>		2015/11/01 18:15	2015/11/01 18:15			2015/11/01 18:00		
<b>COC Number</b>		08413339	08413339			08413339		
	<b>UNITS</b>	<b>BH95G-25S</b>	<b>BH95G-25S Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-25D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>								
Total Suspended Solids	mg/L	539 (1)		10	8104447	459 (1)	10	8104447
Total Dissolved Solids	mg/L	688		1.0	8102716	772	1.0	8102716
Turbidity	NTU	193 (2)		0.10	8103557	201 (2)	0.10	8103557

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) RDL raised due to high concentration of solids in the sample.  
 (2) Sample arrived to laboratory past recommended hold time.



Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### RESULTS OF CHEMICAL ANALYSES OF WATER

Maxxam ID		NO7333			NO7334			NO7335		
Sampling Date		2015/10/31 10:15			2015/10/31 15:30			2015/10/02 10:20		
COC Number		08413339			08413339			08413339		
	UNITS	BH95-131	RDL	QC Batch	DUP01	RDL	QC Batch	DUP02	RDL	QC Batch
<b>Misc. Inorganics</b>										
Acidity (pH 4.5)	mg/L	<0.50	0.50	8103513	<0.50	0.50	8103513	<0.50	0.50	8103513
Acidity (pH 8.3)	mg/L	18.0	0.50	8103513	1.27	0.50	8103513	3.61	0.50	8103513
<b>Calculated Parameters</b>										
Anion Sum	meq/L	12	N/A	8103427	3.6	N/A	8103427	4.3	N/A	8103427
Cation Sum	meq/L	13	N/A	8103427	4.2	N/A	8103427	4.4	N/A	8103427
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	1.1	0.010	8102665	1.1	0.010	8102665	1.0	0.010	8102665
Nitrate (N)	mg/L	0.0027	0.0020	8102944	0.0050	0.0020	8102944	<0.0020	0.0020	8102944
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.085	0.010	8105110	0.250	0.010	8105108	0.150	0.010	8105108
Alkalinity (Total as CaCO3)	mg/L	355	0.50	8113055	139	0.50	8104328	187	0.50	8104328
Total Organic Carbon (C)	mg/L	1.42	0.50	8105389	1.66	0.50	8105389	0.91	0.50	8105389
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8113055	<0.50	0.50	8104328	<0.50	0.50	8104328
Bicarbonate (HCO3)	mg/L	433	0.50	8113055	169	0.50	8104328	228	0.50	8104328
Carbonate (CO3)	mg/L	<0.50	0.50	8113055	<0.50	0.50	8104328	<0.50	0.50	8104328
Hydroxide (OH)	mg/L	<0.50	0.50	8113055	<0.50	0.50	8104328	<0.50	0.50	8104328
<b>Anions</b>										
Orthophosphate (P)	mg/L	0.0021 (1)	0.0010	8105363	0.0018 (1)	0.0010	8105363	0.0021 (1)	0.0010	8105363
Dissolved Sulphate (SO4)	mg/L	235	5.0	8114703	36.8	0.50	8104659	23.9	0.50	8104659
Dissolved Chloride (Cl)	mg/L	0.69	0.50	8114700	3.2	0.50	8104652	1.6	0.50	8104662
<b>Nutrients</b>										
Total Ammonia (N)	mg/L	0.042	0.0050	8107759	0.065	0.0050	8107759	0.15	0.0050	8107759
Dissolved Phosphorus (P)	mg/L	0.0076	0.0020	8105367	0.0046	0.0020	8105367	0.0044	0.0020	8105367
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.153	0.020	8102798	0.170	0.020	8102798	0.202	0.020	8102798
Nitrate plus Nitrite (N)	mg/L	0.0027 (1)	0.0020	8103818	0.0050 (1)	0.0020	8103818	<0.0020 (1)	0.0020	8103818
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8103819	<0.0020 (1)	0.0020	8103819	<0.0020 (1)	0.0020	8103819
Total Nitrogen (N)	mg/L	0.156	0.020	8105024	0.175	0.020	8105024	0.202	0.020	8105024
Total Phosphorus (P)	mg/L	0.157	0.0020	8105368	9.58	0.10	8105368	0.0058	0.0020	8105368
<b>Physical Properties</b>										
Conductivity	uS/cm	1120	1.0	8104332	354	1.0	8104332	402	1.0	8104332
pH	pH	8.07	N/A	8104333	8.23	N/A	8104333	8.29	N/A	8104333
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.										

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NO7333			NO7334			NO7335		
<b>Sampling Date</b>		2015/10/31 10:15			2015/10/31 15:30			2015/10/02 10:20		
<b>COC Number</b>		08413339			08413339			08413339		
	<b>UNITS</b>	<b>BH95-131</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP01</b>	<b>RDL</b>	<b>QC Batch</b>	<b>DUP02</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	154	1.0	8104447	5180 (1)	20	8104447	3.4	1.0	8104447
Total Dissolved Solids	mg/L	832	1.0	8102716	264	1.0	8102716	260	1.0	8102716
Turbidity	NTU	148 (2)	0.10	8103557	2710 (3)	0.50	8103557	3.18	0.10	8103557

RDL = Reportable Detection Limit  
 (1) RDL raised due to high concentration of solids in the sample.  
 (2) Sample arrived to laboratory past recommended hold time.  
 (3) Sample arrived to laboratory past recommended hold time, RDL raised due to sample dilution.

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NO7335			NO7341			NO7342		
Sampling Date		2015/10/02 10:20			2015/10/02 10:20			2015/10/02 10:50		
COC Number		08413339			G022395			G022395		
	UNITS	DUP02 Lab-Dup	RDL	QC Batch	MW15-03S	RDL	QC Batch	MW15-03D	RDL	QC Batch
<b>Misc. Inorganics</b>										
Acidity (pH 4.5)	mg/L	<0.50	0.50	8103513	<0.50	0.50	8103513	<0.50	0.50	8103513
Acidity (pH 8.3)	mg/L	3.69	0.50	8103513	1.28	0.50	8103513	4.26	0.50	8103513
<b>Calculated Parameters</b>										
Anion Sum	meq/L		N/A	8103427	2.9	N/A	8103427	4.3	N/A	8103427
Cation Sum	meq/L		N/A	8103427	2.9	N/A	8103427	4.4	N/A	8103427
Filter and HNO3 Preservation	N/A		N/A	ONSITE	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	8102665	1.0	0.010	8102665	1.0	0.010	8102665
Nitrate (N)	mg/L		0.0020	8102944	0.0723	0.0020	8102944	0.0027	0.0020	8102944
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L		0.010	8105108	0.069	0.010	8105108	0.150	0.010	8105108
Alkalinity (Total as CaCO3)	mg/L	185	0.50	8104328	129	0.50	8104328	188	0.50	8104328
Total Organic Carbon (C)	mg/L		0.50	8105389	1.40	0.50	8105389	1.17	0.50	8105389
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8104328	<0.50	0.50	8104328	<0.50	0.50	8104328
Bicarbonate (HCO3)	mg/L	225	0.50	8104328	157	0.50	8104328	229	0.50	8104328
Carbonate (CO3)	mg/L	<0.50	0.50	8104328	<0.50	0.50	8104328	<0.50	0.50	8104328
Hydroxide (OH)	mg/L	<0.50	0.50	8104328	<0.50	0.50	8104328	<0.50	0.50	8104328
<b>Anions</b>										
Orthophosphate (P)	mg/L		0.0010	8105363	0.0041 (1)	0.0010	8105363	0.0018 (1)	0.0010	8105363
Dissolved Sulphate (SO4)	mg/L		0.50	8104659	11.6	0.50	8104659	24.0	0.50	8104659
Dissolved Chloride (Cl)	mg/L		0.50	8104662	0.99	0.50	8104652	1.1	0.50	8104652
<b>Nutrients</b>										
Total Ammonia (N)	mg/L		0.0050	8107759	0.027	0.0050	8107759	0.16	0.0050	8107759
Dissolved Phosphorus (P)	mg/L		0.0020	8105367	0.0035	0.0020	8105367	0.0031	0.0020	8105367
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.020	8102798	0.073	0.020	8102798	0.225	0.020	8102798
Nitrate plus Nitrite (N)	mg/L		0.0020	8103818	0.0723 (1)	0.0020	8103818	0.0027 (1)	0.0020	8103818
Nitrite (N)	mg/L		0.0020	8103819	<0.0020 (1)	0.0020	8103819	<0.0020 (1)	0.0020	8103819
Total Nitrogen (N)	mg/L		0.020	8105024	0.145	0.020	8105026	0.228	0.020	8105024
Total Phosphorus (P)	mg/L		0.0020	8105368	2.15	0.020	8105368	0.0092	0.0020	8105368
<b>Physical Properties</b>										
Conductivity	uS/cm	394	1.0	8104332	269	1.0	8104332	395	1.0	8104332
pH	pH	8.23	N/A	8104333	8.24	N/A	8104333	8.29	N/A	8104333
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.										

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NO7335			NO7341			NO7342		
<b>Sampling Date</b>		2015/10/02 10:20			2015/10/02 10:20			2015/10/02 10:50		
<b>COC Number</b>		08413339			G022395			G022395		
	<b>UNITS</b>	<b>DUP02 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L		1.0	8104447	821 (1)	10	8104447	3.5	1.0	8104447
Total Dissolved Solids	mg/L		1.0	8102716	190	1.0	8102716	240	1.0	8102716
Turbidity	NTU	3.45	0.10	8103557	275 (2)	0.10	8103557	3.59 (2)	0.10	8103557

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) RDL raised due to high concentration of solids in the sample.  
 (2) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NO7325	NO7326	NO7327		NO7328		
Sampling Date		2015/11/01 11:30	2015/10/31 14:45	2015/10/31 15:30		2015/11/01 15:00		
COC Number		08413339	08413339	08413339		08413339		
	UNITS	MW15-01	MW15-04S	MW15-04D	QC Batch	MW15-05D	RDL	QC Batch
<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	251	121	78.9	8102664	206	0.50	8102664
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	8111092	<0.0000020	0.0000020	8111092
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00921	0.00565	0.00299	8104319	0.00615	0.00050	8104319
Dissolved Antimony (Sb)	mg/L	0.000048	0.000025	0.000033	8104319	0.000022	0.000020	8104319
Dissolved Arsenic (As)	mg/L	0.000126	0.000270	0.00174	8104319	0.000110	0.000020	8104319
Dissolved Barium (Ba)	mg/L	0.0224	0.0737	0.0227	8104319	0.0408	0.000020	8104319
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	8104319	<0.000010	0.000010	8104319
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	8104319	<0.0000050	0.0000050	8104319
Dissolved Boron (B)	mg/L	<0.010	<0.010	0.023	8104319	<0.010	0.010	8104319
Dissolved Cadmium (Cd)	mg/L	0.0000200	0.0000140	0.0000280	8104319	0.0000570	0.0000050	8104319
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00016	<0.00010	8104319	<0.00010	0.00010	8104319
Dissolved Cobalt (Co)	mg/L	0.0000760	0.000114	0.000343	8104319	0.000180	0.0000050	8104319
Dissolved Copper (Cu)	mg/L	0.000490	0.00117	0.000885	8104319	0.000396	0.000050	8104319
Dissolved Iron (Fe)	mg/L	0.0076	0.0051	0.0716	8104319	0.0106	0.0010	8104319
Dissolved Lead (Pb)	mg/L	0.0000140	0.0000100	0.0000960	8104319	0.0000950	0.0000050	8104319
Dissolved Lithium (Li)	mg/L	0.00113	<0.00050	0.00293	8104319	0.00121	0.00050	8104319
Dissolved Manganese (Mn)	mg/L	0.00541	0.0255	0.102	8104319	0.0217	0.000050	8104319
Dissolved Molybdenum (Mo)	mg/L	0.000912	0.00206	0.00519	8104319	0.000983	0.000050	8104319
Dissolved Nickel (Ni)	mg/L	0.000512	0.00219	0.00107	8104319	0.000487	0.000020	8104319
Dissolved Phosphorus (P)	mg/L	0.0028	<0.0020	0.0094	8104319	<0.0020	0.0020	8104319
Dissolved Selenium (Se)	mg/L	0.000579	0.000773	0.000089	8104319	0.00177	0.000040	8104319
Dissolved Silicon (Si)	mg/L	1.99	2.79	2.57	8104319	2.26	0.050	8104319
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	8104319	<0.0000050	0.0000050	8104319
Dissolved Strontium (Sr)	mg/L	0.217	0.159	0.203	8104319	0.274	0.000050	8104319
Dissolved Thallium (Tl)	mg/L	0.0000020	0.0000020	0.0000040	8104319	0.0000020	0.0000020	8104319
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	8104319	<0.00020	0.00020	8104319
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	0.00065	8104319	<0.00050	0.00050	8104319
Dissolved Uranium (U)	mg/L	0.00377	0.000762	0.00391	8104319	0.00262	0.0000020	8104319
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	8104319	<0.00020	0.00020	8104319
Dissolved Zinc (Zn)	mg/L	0.00226	0.00255	0.00956	8104319	0.00346	0.00010	8104319
Dissolved Zirconium (Zr)	mg/L	0.00014	<0.00010	<0.00010	8104319	<0.00010	0.00010	8104319
Dissolved Calcium (Ca)	mg/L	85.7	42.2	28.3	8103428	70.3	0.050	8111939
RDL = Reportable Detection Limit								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NO7325	NO7326	NO7327		NO7328		
Sampling Date		2015/11/01 11:30	2015/10/31 14:45	2015/10/31 15:30		2015/11/01 15:00		
COC Number		08413339	08413339	08413339		08413339		
	UNITS	MW15-01	MW15-04S	MW15-04D	QC Batch	MW15-05D	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	9.01	3.66	3.05	8103428	7.49	0.050	8111939
Dissolved Potassium (K)	mg/L	0.633	1.48	2.69	8103428	1.71	0.050	8111939
Dissolved Sodium (Na)	mg/L	1.32	2.02	55.8 (1)	8103428	3.67	0.050	8111939
Dissolved Sulphur (S)	mg/L	31.5	3.5	17.3	8103428	10.8	3.0	8111939

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NO7329	NO7330	NO7331	NO7332		
Sampling Date		2015/10/30 18:15	2015/11/01 16:45	2015/11/01 18:15	2015/11/01 18:00		
COC Number		08413339	08413339	08413339	08413339		
	UNITS	BH95G-21	BH95G-22	BH95G-25S	BH95G-25D	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	219	177	558	593	0.50	8102664
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8111092
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00569	0.0300	0.00204	0.00258	0.00050	8104319
Dissolved Antimony (Sb)	mg/L	0.000132	0.000097	<0.000020	0.000024	0.000020	8104319
Dissolved Arsenic (As)	mg/L	0.00156	0.000132	0.00824	0.00152	0.000020	8104319
Dissolved Barium (Ba)	mg/L	0.0458	0.106	0.0698	0.0233	0.000020	8104319
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8104319
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8104319
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	8104319
Dissolved Cadmium (Cd)	mg/L	0.0000150	0.000102	<0.0000050	<0.0000050	0.0000050	8104319
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	<0.00010	<0.00010	0.00010	8104319
Dissolved Cobalt (Co)	mg/L	0.0000390	0.0000280	0.000176	0.000121	0.0000050	8104319
Dissolved Copper (Cu)	mg/L	0.000242	0.00105	0.000089	0.000134	0.000050	8104319
Dissolved Iron (Fe)	mg/L	0.592	0.0493	7.62	2.21	0.0010	8104319
Dissolved Lead (Pb)	mg/L	0.0000470	0.000195	0.0000170	0.0000540	0.0000050	8104319
Dissolved Lithium (Li)	mg/L	0.00490	0.00099	0.0111	0.0114	0.00050	8104319
Dissolved Manganese (Mn)	mg/L	0.0579	0.000498	0.389	0.317	0.000050	8104319
Dissolved Molybdenum (Mo)	mg/L	0.000331	0.000210	0.00149	0.000240	0.000050	8104319
Dissolved Nickel (Ni)	mg/L	0.000237	0.000248	0.000481	0.000252	0.000020	8104319
Dissolved Phosphorus (P)	mg/L	0.0022	<0.0020	0.0065	0.0061	0.0020	8104319
Dissolved Selenium (Se)	mg/L	<0.000040	0.000804	<0.000040	<0.000040	0.000040	8104319
Dissolved Silicon (Si)	mg/L	3.44	2.82	5.78	4.51	0.050	8104319
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000110	0.0000050	8104319
Dissolved Strontium (Sr)	mg/L	0.201	0.156	0.468	0.490	0.000050	8104319
Dissolved Thallium (Tl)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8104319
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8104319
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00125	<0.00050	<0.00050	0.00050	8104319
Dissolved Uranium (U)	mg/L	0.00509	0.00241	0.00495	0.00910	0.0000020	8104319
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8104319
Dissolved Zinc (Zn)	mg/L	0.00553	0.00735	0.00134	0.00794	0.00010	8104319
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	<0.00010	0.00467	0.00010	8104319
Dissolved Calcium (Ca)	mg/L	67.7	56.5	150	146	0.050	8103428
RDL = Reportable Detection Limit							

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NO7329	NO7330	NO7331	NO7332		
Sampling Date		2015/10/30 18:15	2015/11/01 16:45	2015/11/01 18:15	2015/11/01 18:00		
COC Number		08413339	08413339	08413339	08413339		
	UNITS	BH95G-21	BH95G-22	BH95G-25S	BH95G-25D	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	12.2	8.83	44.3	55.5	0.050	8103428
Dissolved Potassium (K)	mg/L	1.49	1.43	5.76	4.52	0.050	8103428
Dissolved Sodium (Na)	mg/L	1.04	1.16	2.22	2.31	0.050	8103428
Dissolved Sulphur (S)	mg/L	16.1	14.0	74.1	81.2	3.0	8103428
RDL = Reportable Detection Limit							



Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NO7333		NO7334		NO7335		
Sampling Date		2015/10/31 10:15		2015/10/31 15:30		2015/10/02 10:20		
COC Number		08413339		08413339		08413339		
	UNITS	BH95-131	QC Batch	DUP01	QC Batch	DUP02	RDL	QC Batch
<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	653	8102664	89.0	8102664	208	0.50	8102664
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.0000020	8111092	<0.0000020	8111092	<0.0000020	0.0000020	8111127
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.0136	8104319	0.00715	8104319	0.00781	0.00050	8104319
Dissolved Antimony (Sb)	mg/L	0.000616	8104319	0.000026	8104319	0.00174	0.000020	8104319
Dissolved Arsenic (As)	mg/L	0.00272	8104319	0.00182	8104319	0.00227	0.000020	8104319
Dissolved Barium (Ba)	mg/L	0.0173	8104319	0.0221	8104319	0.0460	0.000020	8104319
Dissolved Beryllium (Be)	mg/L	<0.000010	8104319	<0.000010	8104319	<0.000010	0.000010	8104319
Dissolved Bismuth (Bi)	mg/L	<0.0000050	8104319	<0.0000050	8104319	<0.0000050	0.0000050	8104319
Dissolved Boron (B)	mg/L	<0.010	8104319	0.022	8104319	<0.010	0.010	8104319
Dissolved Cadmium (Cd)	mg/L	0.0000200	8104319	0.0000280	8104319	<0.0000050	0.0000050	8104319
Dissolved Chromium (Cr)	mg/L	<0.00010	8104319	<0.00010	8104319	<0.00010	0.00010	8104319
Dissolved Cobalt (Co)	mg/L	0.0000980	8104319	0.000353	8104319	0.000128	0.0000050	8104319
Dissolved Copper (Cu)	mg/L	0.000359	8104319	0.000230	8104319	0.000094	0.000050	8104319
Dissolved Iron (Fe)	mg/L	1.43	8104319	0.0708	8104319	0.779	0.0010	8104319
Dissolved Lead (Pb)	mg/L	0.00194	8104319	0.0000320	8104319	0.0000470	0.0000050	8104319
Dissolved Lithium (Li)	mg/L	0.0131	8104319	0.00291	8104319	0.00588	0.00050	8104319
Dissolved Manganese (Mn)	mg/L	0.159	8104319	0.103	8104319	0.0733	0.000050	8104319
Dissolved Molybdenum (Mo)	mg/L	0.000071	8104319	0.00578	8104319	0.00325	0.000050	8104319
Dissolved Nickel (Ni)	mg/L	0.000196	8104319	0.000849	8104319	0.000476	0.000020	8104319
Dissolved Phosphorus (P)	mg/L	0.0099	8104319	0.0075	8104319	0.0044	0.0020	8104319
Dissolved Selenium (Se)	mg/L	<0.000040	8104319	0.000088	8104319	<0.000040	0.000040	8104319
Dissolved Silicon (Si)	mg/L	10.4	8104319	2.50	8104319	4.02	0.050	8104319
Dissolved Silver (Ag)	mg/L	0.0000230	8104319	<0.0000050	8104319	<0.0000050	0.0000050	8104319
Dissolved Strontium (Sr)	mg/L	0.686	8104319	0.206	8104319	0.243	0.000050	8104319
Dissolved Thallium (Tl)	mg/L	0.0000040	8104319	0.0000030	8104319	<0.0000020	0.0000020	8104319
Dissolved Tin (Sn)	mg/L	<0.00020	8104319	<0.00020	8104319	<0.00020	0.00020	8104319
Dissolved Titanium (Ti)	mg/L	0.00085	8104319	<0.00050	8104319	<0.00050	0.00050	8104319
Dissolved Uranium (U)	mg/L	0.0177	8104319	0.00378	8104319	0.00270	0.0000020	8104319
Dissolved Vanadium (V)	mg/L	<0.00020	8104319	<0.00020	8104319	<0.00020	0.00020	8104319
Dissolved Zinc (Zn)	mg/L	0.00467	8104319	0.00064	8104319	0.00039	0.00010	8104319
Dissolved Zirconium (Zr)	mg/L	0.00955	8104319	0.00019	8104319	0.00042	0.00010	8104319
Dissolved Calcium (Ca)	mg/L	166	8111939	27.6	8103428	56.5	0.050	8103428
RDL = Reportable Detection Limit								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NO7333		NO7334		NO7335		
Sampling Date		2015/10/31 10:15		2015/10/31 15:30		2015/10/02 10:20		
COC Number		08413339		08413339		08413339		
	UNITS	BH95-131	QC Batch	DUP01	QC Batch	DUP02	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	57.7	8111939	3.04	8103428	16.4	0.050	8103428
Dissolved Potassium (K)	mg/L	4.09	8111939	2.64	8103428	2.69	0.050	8103428
Dissolved Sodium (Na)	mg/L	1.71	8111939	55.0 (1)	8103428	2.70	0.050	8103428
Dissolved Sulphur (S)	mg/L	80.3	8111939	17.3	8103428	8.2	3.0	8103428

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NO7341	NO7342		
Sampling Date		2015/10/02 10:20	2015/10/02 10:50		
COC Number		G022395	G022395		
	UNITS	MW15-03S	MW15-03D	RDL	QC Batch
<b>Misc. Inorganics</b>					
Dissolved Hardness (CaCO3)	mg/L	135	210	0.50	8102664
<b>Elements</b>					
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	8111127
<b>Dissolved Metals by ICPMS</b>					
Dissolved Aluminum (Al)	mg/L	0.0266	0.0144	0.00050	8104319
Dissolved Antimony (Sb)	mg/L	0.000040	0.00193	0.000020	8104319
Dissolved Arsenic (As)	mg/L	0.000207	0.00229	0.000020	8104319
Dissolved Barium (Ba)	mg/L	0.0459	0.0501	0.000020	8104319
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	0.000010	8104319
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	0.0000050	8104319
Dissolved Boron (B)	mg/L	<0.010	<0.010	0.010	8104319
Dissolved Cadmium (Cd)	mg/L	0.0000330	<0.0000050	0.0000050	8104319
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00010	8104319
Dissolved Cobalt (Co)	mg/L	0.000606	0.000134	0.0000050	8104319
Dissolved Copper (Cu)	mg/L	0.000380	0.000091	0.000050	8104319
Dissolved Iron (Fe)	mg/L	0.112	0.806	0.0010	8104319
Dissolved Lead (Pb)	mg/L	0.0000580	0.0000140	0.0000050	8104319
Dissolved Lithium (Li)	mg/L	0.00087	0.00670	0.00050	8104319
Dissolved Manganese (Mn)	mg/L	0.135	0.0738	0.000050	8104319
Dissolved Molybdenum (Mo)	mg/L	0.00746	0.00372	0.000050	8104319
Dissolved Nickel (Ni)	mg/L	0.00210	0.000455	0.000020	8104319
Dissolved Phosphorus (P)	mg/L	0.0105	0.0041	0.0020	8104319
Dissolved Selenium (Se)	mg/L	0.000189	<0.000040	0.000040	8104319
Dissolved Silicon (Si)	mg/L	2.81	4.13	0.050	8104319
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	0.0000050	8104319
Dissolved Strontium (Sr)	mg/L	0.139	0.244	0.000050	8104319
Dissolved Thallium (Tl)	mg/L	0.0000080	<0.0000020	0.0000020	8104319
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	0.00020	8104319
Dissolved Titanium (Ti)	mg/L	0.00116	0.00062	0.00050	8104319
Dissolved Uranium (U)	mg/L	0.000884	0.00302	0.0000020	8104319
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	0.00020	8104319
Dissolved Zinc (Zn)	mg/L	0.00090	0.00048	0.00010	8104319
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00043	0.00010	8104319
Dissolved Calcium (Ca)	mg/L	45.6	57.6	0.050	8103428
RDL = Reportable Detection Limit					

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NO7341	NO7342		
Sampling Date		2015/10/02 10:20	2015/10/02 10:50		
COC Number		G022395	G022395		
	<b>UNITS</b>	<b>MW15-03S</b>	<b>MW15-03D</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Magnesium (Mg)	mg/L	5.10	16.2	0.050	8103428
Dissolved Potassium (K)	mg/L	1.32	2.68	0.050	8103428
Dissolved Sodium (Na)	mg/L	2.61	2.71	0.050	8103428
Dissolved Sulphur (S)	mg/L	3.8	8.2	3.0	8103428
RDL = Reportable Detection Limit					

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NO7335	NO7342	NO7342		
Sampling Date		2015/10/02 10:20	2015/10/02 10:50	2015/10/02 10:50		
COC Number		08413339	G022395	G022395		
	UNITS	DUP02	MW15-03D	MW15-03D Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>						
Total Hardness (CaCO3)	mg/L	207	199		0.50	8102299
<b>Elements</b>						
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020		0.0000020	8112008
<b>Total Metals by ICPMS</b>						
Total Aluminum (Al)	mg/L	0.0141	0.0138	0.0140	0.00050	8104091
Total Antimony (Sb)	mg/L	0.00190	0.00181	0.00184	0.000020	8104091
Total Arsenic (As)	mg/L	0.00223	0.00244	0.00236	0.000020	8104091
Total Barium (Ba)	mg/L	0.0496	0.0494	0.0488	0.000020	8104091
Total Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	0.000010	8104091
Total Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000050	8104091
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	0.010	8104091
Total Cadmium (Cd)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000050	8104091
Total Chromium (Cr)	mg/L	0.00012	<0.00010	<0.00010	0.00010	8104091
Total Cobalt (Co)	mg/L	0.000193	0.000180	0.000185	0.0000050	8104091
Total Copper (Cu)	mg/L	0.000162	0.000143	0.000144	0.000050	8104091
Total Iron (Fe)	mg/L	0.846	0.856	0.826	0.0010	8104091
Total Lead (Pb)	mg/L	0.0000530	0.0000540	0.0000520	0.0000050	8104091
Total Lithium (Li)	mg/L	0.00639	0.00581	0.00624	0.00050	8104091
Total Manganese (Mn)	mg/L	0.0815	0.0809	0.0806	0.000050	8104091
Total Molybdenum (Mo)	mg/L	0.00333	0.00321	0.00333	0.000050	8104091
Total Nickel (Ni)	mg/L	0.000673	0.000546	0.000526	0.000020	8104091
Total Phosphorus (P)	mg/L	0.0100	0.0079	0.0072	0.0020	8104091
Total Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	0.000040	8104091
Total Silicon (Si)	mg/L	4.91	4.91	4.90	0.050	8104091
Total Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000050	8104091
Total Strontium (Sr)	mg/L	0.257	0.263	0.263	0.000050	8104091
Total Thallium (Tl)	mg/L	<0.0000020	<0.0000020	<0.0000020	0.0000020	8104091
Total Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	8104091
Total Titanium (Ti)	mg/L	0.00099	<0.00050	<0.00050	0.00050	8104091
Total Uranium (U)	mg/L	0.00271	0.00270	0.00277	0.0000020	8104091
Total Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	0.00020	8104091
Total Zinc (Zn)	mg/L	0.00059	0.00060	0.00057	0.00010	8104091
Total Zirconium (Zr)	mg/L	0.00060	0.00062	0.00060	0.00010	8104091
RDL = Reportable Detection Limit						
Lab-Dup = Laboratory Initiated Duplicate						

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NO7335	NO7342	NO7342		
Sampling Date		2015/10/02 10:20	2015/10/02 10:50	2015/10/02 10:50		
COC Number		08413339	G022395	G022395		
	UNITS	DUP02	MW15-03D	MW15-03D Lab-Dup	RDL	QC Batch
Total Calcium (Ca)	mg/L	56.4	53.6		0.050	8102943
Total Magnesium (Mg)	mg/L	16.2	15.8		0.050	8102943
Total Potassium (K)	mg/L	2.71	2.71		0.050	8102943
Total Sodium (Na)	mg/L	2.42	2.45		0.050	8102943
Total Sulphur (S)	mg/L	8.7	8.3		3.0	8102943
RDL = Reportable Detection Limit						
Lab-Dup = Laboratory Initiated Duplicate						

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NO7325	NO7326		NO7327		
Sampling Date		2015/11/01 11:30	2015/10/31 14:45		2015/10/31 15:30		
COC Number		08413339	08413339		08413339		
	UNITS	MW15-01	MW15-04S	QC Batch	MW15-04D	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	1010	802	8102299	2530	0.50	8115569
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	8110604	<0.0000020	0.0000020	8110604
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	83.6	68.5	8104792	86.5	0.0030	8117507
Total Antimony (Sb)	mg/L	0.000448	0.000323	8104792	0.000285	0.000050	8117507
Total Arsenic (As)	mg/L	0.0239	0.0557	8104792	0.184	0.000020	8117507
Total Barium (Ba)	mg/L	0.599	1.79	8104792	4.52	0.00010	8117507
Total Beryllium (Be)	mg/L	0.00155	0.00248	8104792	0.00418	0.000010	8117507
Total Bismuth (Bi)	mg/L	0.000683	0.00207	8104792	0.00131	0.000020	8117507
Total Boron (B)	mg/L	<0.050	<0.050	8104792	<0.050	0.050	8117507
Total Cadmium (Cd)	mg/L	0.00314	0.00397	8104792	0.0100	0.0000050	8117507
Total Chromium (Cr)	mg/L	0.119	0.215	8104792	0.978	0.00050	8117507
Total Cobalt (Co)	mg/L	0.0760	0.120	8104792	0.356	0.000010	8117507
Total Copper (Cu)	mg/L	0.263	0.502	8104792	0.944	0.00020	8117507
Total Iron (Fe)	mg/L	200	130	8104792	264	0.0050	8117507
Total Lead (Pb)	mg/L	0.0424	0.230	8104792	0.338	0.000050	8117507
Total Lithium (Li)	mg/L	0.0449	0.0494	8104792	0.0938	0.00050	8117507
Total Manganese (Mn)	mg/L	3.86	4.82	8104792	10.8	0.00010	8117507
Total Molybdenum (Mo)	mg/L	0.00435	0.00673	8104792	0.0343	0.000050	8117507
Total Nickel (Ni)	mg/L	0.122	0.238	8104792	0.794	0.00010	8117507
Total Phosphorus (P)	mg/L	7.06	8.77	8104792	27.8	0.010	8117507
Total Selenium (Se)	mg/L	0.00314	0.00100	8104792	0.00278	0.000040	8117507
Total Silicon (Si)	mg/L	89.6	74.9	8104792	92.3	0.10	8117507
Total Silver (Ag)	mg/L	0.0428	0.0174	8104792	0.0129	0.0000050	8117507
Total Strontium (Sr)	mg/L	1.09	1.10	8104792	3.72	0.000050	8117507
Total Thallium (Tl)	mg/L	0.000328	0.00134	8104792	0.00161	0.0000020	8117507
Total Tin (Sn)	mg/L	0.00157	0.00180	8104792	0.00311	0.00020	8117507
Total Titanium (Ti)	mg/L	4.24	2.16	8104792	1.03	0.0050	8117507
Total Uranium (U)	mg/L	0.0179	0.00825	8104792	0.0205	0.0000050	8117507
Total Vanadium (V)	mg/L	0.463	0.180	8104792	0.150	0.00050	8117507
Total Zinc (Zn)	mg/L	0.719	0.704	8104792	1.14	0.0010	8117507
Total Zirconium (Zr)	mg/L	0.0147	0.0143	8104792	0.00668	0.00010	8117507
Total Calcium (Ca)	mg/L	305	248	8102943	910	0.25	8115599
RDL = Reportable Detection Limit							

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NO7325	NO7326		NO7327		
Sampling Date		2015/11/01 11:30	2015/10/31 14:45		2015/10/31 15:30		
COC Number		08413339	08413339		08413339		
	UNITS	MW15-01	MW15-04S	QC Batch	MW15-04D	RDL	QC Batch
Total Magnesium (Mg)	mg/L	60.7	44.8	8102943	61.2	0.25	8115599
Total Potassium (K)	mg/L	5.65	19.1	8102943	22.1	0.25	8115599
Total Sodium (Na)	mg/L	3.03	2.45	8102943	8.80	0.25	8115599
Total Sulphur (S)	mg/L	38	<15	8102943	19	15	8115599
RDL = Reportable Detection Limit							



Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NO7328	NO7329		NO7330	NO7331		
Sampling Date		2015/11/01 15:00	2015/10/30 18:15		2015/11/01 16:45	2015/11/01 18:15		
COC Number		08413339	08413339		08413339	08413339		
	UNITS	MW15-05D	BH95G-21	QC Batch	BH95G-22	BH95G-25S	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	247	573	8102299	289	565	0.50	8102299
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	8110604	0.0000070	<0.0000020	0.0000020	8112008
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	1.63	64.6	8104792	33.3	6.33	0.0030	8104792
Total Antimony (Sb)	mg/L	<0.000050	0.00122	8104792	0.00290	0.000179	0.000050	8104792
Total Arsenic (As)	mg/L	0.00101	0.0823	8104792	0.0927	0.0158	0.000020	8104792
Total Barium (Ba)	mg/L	0.0793	18.1	8104792	0.844	0.174	0.00010	8104792
Total Beryllium (Be)	mg/L	0.000502	0.00349	8104792	0.00154	0.000452	0.000010	8104792
Total Bismuth (Bi)	mg/L	0.000154	0.00690	8104792	0.00349	0.000263	0.000020	8104792
Total Boron (B)	mg/L	<0.050	<0.050	8104792	<0.050	<0.050	0.050	8104792
Total Cadmium (Cd)	mg/L	0.000151	0.00496	8104792	0.0142	0.000317	0.000050	8104792
Total Chromium (Cr)	mg/L	0.00095	0.108	8104792	0.0690	0.0140	0.00050	8104792
Total Cobalt (Co)	mg/L	0.000962	0.0644	8104792	0.0765	0.00599	0.000010	8104792
Total Copper (Cu)	mg/L	0.00810	0.770	8104792	0.533	0.0228	0.00020	8104792
Total Iron (Fe)	mg/L	1.54	228	8104792	118	21.7	0.0050	8104792
Total Lead (Pb)	mg/L	0.0177	0.321	8104792	0.406	0.0209	0.000050	8104792
Total Lithium (Li)	mg/L	0.00238	0.0664	8104792	0.0327	0.0191	0.00050	8104792
Total Manganese (Mn)	mg/L	0.0694	2.34	8104792	4.07	0.594	0.00010	8104792
Total Molybdenum (Mo)	mg/L	0.000997	0.000497	8104792	0.00147	0.00160	0.000050	8104792
Total Nickel (Ni)	mg/L	0.00189	0.125	8104792	0.121	0.0125	0.00010	8104792
Total Phosphorus (P)	mg/L	0.055	10.9	8104792	3.67	0.602	0.010	8104792
Total Selenium (Se)	mg/L	0.00219	0.00117	8104792	0.00122	0.000090	0.000040	8104792
Total Silicon (Si)	mg/L	5.06	74.7	8104792	46.7	16.9	0.10	8104792
Total Silver (Ag)	mg/L	0.000123	0.00499	8104792	0.00609	0.000180	0.000050	8104792
Total Strontium (Sr)	mg/L	0.320	1.04	8104792	0.254	0.544	0.000050	8104792
Total Thallium (Tl)	mg/L	0.000100	0.000991	8104792	0.000811	0.000142	0.0000020	8104792
Total Tin (Sn)	mg/L	0.00022	0.00076	8104792	0.00189	0.00039	0.00020	8104792
Total Titanium (Ti)	mg/L	0.0138	0.946	8104792	1.38	0.373	0.0050	8104792
Total Uranium (U)	mg/L	0.00390	0.0464	8104792	0.0100	0.00651	0.0000050	8104792
Total Vanadium (V)	mg/L	0.00101	0.142	8104792	0.122	0.0187	0.00050	8104792
Total Zinc (Zn)	mg/L	0.0178	1.69	8104792	1.97	0.0661	0.0010	8104792
Total Zirconium (Zr)	mg/L	0.00040	0.0436	8104792	0.00826	0.00059	0.00010	8104792
Total Calcium (Ca)	mg/L	82.6	147	8102943	71.5	149	0.25	8102943
RDL = Reportable Detection Limit								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NO7328	NO7329		NO7330	NO7331		
Sampling Date		2015/11/01 15:00	2015/10/30 18:15		2015/11/01 16:45	2015/11/01 18:15		
COC Number		08413339	08413339		08413339	08413339		
	UNITS	MW15-05D	BH95G-21	QC Batch	BH95G-22	BH95G-25S	RDL	QC Batch
Total Magnesium (Mg)	mg/L	9.90	50.0	8102943	26.8	46.7	0.25	8102943
Total Potassium (K)	mg/L	2.42	16.4	8102943	8.88	8.11	0.25	8102943
Total Sodium (Na)	mg/L	5.02	1.72	8102943	1.20	2.12	0.25	8102943
Total Sulphur (S)	mg/L	<15	24	8102943	<15	72	15	8102943
RDL = Reportable Detection Limit								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NO7332	NO7333	NO7334		NO7341		
Sampling Date		2015/11/01 18:00	2015/10/31 10:15	2015/10/31 15:30		2015/10/02 10:20		
COC Number		08413339	08413339	08413339		G022395		
	UNITS	BH95G-25D	BH95-131	DUP01	QC Batch	MW15-03S	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	677	773	1460	8102299	159	0.50	8115569
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	8112008	<0.0000020	0.0000020	8112008
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	3.58	1.28	65.5	8104792	4.13	0.0030	8108439
Total Antimony (Sb)	mg/L	0.000619	0.0363	0.000277	8104792	0.000174	0.000050	8108439
Total Arsenic (As)	mg/L	0.00853	0.110	0.207	8104792	0.00616	0.000020	8108439
Total Barium (Ba)	mg/L	0.551	0.0601	3.84	8104792	0.106	0.00010	8108439
Total Beryllium (Be)	mg/L	0.000346	0.000152	0.00288	8104792	0.000234	0.000010	8108439
Total Bismuth (Bi)	mg/L	0.000239	0.000213	0.00117	8104792	0.000103	0.000020	8108439
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	8104792	<0.050	0.050	8108439
Total Cadmium (Cd)	mg/L	0.000334	0.00107	0.00636	8104792	0.000275	0.0000050	8108439
Total Chromium (Cr)	mg/L	0.00483	0.00226	0.698	8104792	0.0281	0.00050	8108439
Total Cobalt (Co)	mg/L	0.00332	0.000931	0.327	8104792	0.00588	0.000010	8108439
Total Copper (Cu)	mg/L	0.0143	0.00953	0.736	8104792	0.0335	0.00020	8108439
Total Iron (Fe)	mg/L	12.3	15.3	194	8104792	12.4	0.0050	8108439
Total Lead (Pb)	mg/L	0.0219	0.423	0.195	8104792	0.0118	0.000050	8108439
Total Lithium (Li)	mg/L	0.0162	0.0184	0.0601	8104792	0.00569	0.00050	8108439
Total Manganese (Mn)	mg/L	0.580	0.269	6.53	8104792	0.309	0.00010	8108439
Total Molybdenum (Mo)	mg/L	0.000480	0.000306	0.0277	8104792	0.00723	0.000050	8108439
Total Nickel (Ni)	mg/L	0.00724	0.00211	0.695	8104792	0.0191	0.00010	8108439
Total Phosphorus (P)	mg/L	0.246	0.109	19.0	8104792	0.418	0.010	8108439
Total Selenium (Se)	mg/L	0.000102	0.000318	0.00416	8104792	0.000199	0.000040	8108439
Total Silicon (Si)	mg/L	11.4	15.9	72.2	8104792	8.90	0.10	8108439
Total Silver (Ag)	mg/L	0.000162	0.000529	0.0175	8104792	0.000345	0.0000050	8108439
Total Strontium (Sr)	mg/L	0.649	0.919	2.12	8104792	0.140	0.000050	8108439
Total Thallium (Tl)	mg/L	0.0000670	0.0000750	0.00111	8104792	0.0000900	0.0000020	8108439
Total Tin (Sn)	mg/L	0.00067	0.00075	0.00323	8104792	0.00045	0.00020	8108439
Total Titanium (Ti)	mg/L	0.129	0.0680	0.574	8104792	0.171	0.0050	8108439
Total Uranium (U)	mg/L	0.0116	0.0225	0.0174	8104792	0.00132	0.0000050	8108439
Total Vanadium (V)	mg/L	0.00778	0.00345	0.108	8104792	0.0130	0.00050	8108439
Total Zinc (Zn)	mg/L	0.313	0.197	0.849	8104792	0.0439	0.0010	8108439
Total Zirconium (Zr)	mg/L	0.00476	0.0976	0.0114	8104792	0.00075	0.00010	8108439
Total Calcium (Ca)	mg/L	165	193	512	8102943	49.7	0.25	8115599
RDL = Reportable Detection Limit								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NO7332	NO7333	NO7334		NO7341		
Sampling Date		2015/11/01 18:00	2015/10/31 10:15	2015/10/31 15:30		2015/10/02 10:20		
COC Number		08413339	08413339	08413339		G022395		
	UNITS	BH95G-25D	BH95-131	DUP01	QC Batch	MW15-03S	RDL	QC Batch
Total Magnesium (Mg)	mg/L	64.4	70.4	44.4	8102943	8.47	0.25	8115599
Total Potassium (K)	mg/L	6.56	5.33	14.7	8102943	2.85	0.25	8115599
Total Sodium (Na)	mg/L	2.53	1.88	7.76	8102943	1.96	0.25	8115599
Total Sulphur (S)	mg/L	94	93	<15	8102943	<15	15	8115599
RDL = Reportable Detection Limit								

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		NO7341		
<b>Sampling Date</b>		2015/10/02 10:20		
<b>COC Number</b>		G022395		
	<b>UNITS</b>	<b>MW15-03S Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	4.21	0.0030	8108439
Total Antimony (Sb)	mg/L	0.000171	0.000050	8108439
Total Arsenic (As)	mg/L	0.00622	0.000020	8108439
Total Barium (Ba)	mg/L	0.101	0.00010	8108439
Total Beryllium (Be)	mg/L	0.000233	0.000010	8108439
Total Bismuth (Bi)	mg/L	0.000105	0.000020	8108439
Total Boron (B)	mg/L	<0.050	0.050	8108439
Total Cadmium (Cd)	mg/L	0.000258	0.0000050	8108439
Total Chromium (Cr)	mg/L	0.0279	0.00050	8108439
Total Cobalt (Co)	mg/L	0.00590	0.000010	8108439
Total Copper (Cu)	mg/L	0.0337	0.00020	8108439
Total Iron (Fe)	mg/L	12.4	0.0050	8108439
Total Lead (Pb)	mg/L	0.0120	0.000050	8108439
Total Lithium (Li)	mg/L	0.00566	0.00050	8108439
Total Manganese (Mn)	mg/L	0.307	0.00010	8108439
Total Molybdenum (Mo)	mg/L	0.00729	0.000050	8108439
Total Nickel (Ni)	mg/L	0.0190	0.00010	8108439
Total Phosphorus (P)	mg/L	0.416	0.010	8108439
Total Selenium (Se)	mg/L	0.000212	0.000040	8108439
Total Silicon (Si)	mg/L	8.28	0.10	8108439
Total Silver (Ag)	mg/L	0.000392	0.0000050	8108439
Total Strontium (Sr)	mg/L	0.141	0.000050	8108439
Total Thallium (Tl)	mg/L	0.0000940	0.0000020	8108439
Total Tin (Sn)	mg/L	0.00045	0.00020	8108439
Total Titanium (Ti)	mg/L	0.187	0.0050	8108439
Total Uranium (U)	mg/L	0.00133	0.0000050	8108439
Total Vanadium (V)	mg/L	0.0132	0.00050	8108439
Total Zinc (Zn)	mg/L	0.0437	0.0010	8108439
Total Zirconium (Zr)	mg/L	0.00083	0.00010	8108439
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate				

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C
Package 2	4.3°C

Sample NO7325-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7326-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7327-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7328-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7329-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7330-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7331-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7332-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7333-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7334-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NO7341-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

**Results relate only to the items tested.**

Maxxam Job #: B598984  
Report Date: 2015/11/19

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8102716	Total Dissolved Solids	2015/11/09	102	80 - 120	98	80 - 120	<1.0	mg/L	2.8	20
8103513	Acidity (pH 4.5)	2015/11/05					<0.50	mg/L	NC	20
8103513	Acidity (pH 8.3)	2015/11/05			108	80 - 120	0.58, RDL=0.50	mg/L	2.1	20
8103557	Turbidity	2015/11/05			102	80 - 120	<0.10	NTU	8.1	20
8103818	Nitrate plus Nitrite (N)	2015/11/05	100	80 - 120	110	80 - 120	<0.0020	mg/L	NC	25
8103819	Nitrite (N)	2015/11/05	94	80 - 120	104	80 - 120	<0.0020	mg/L	NC	25
8104091	Total Aluminum (Al)	2015/11/06	99	80 - 120	107	80 - 120	<0.00050	mg/L	1.7	20
8104091	Total Antimony (Sb)	2015/11/06	NC	80 - 120	112	80 - 120	<0.000020	mg/L	1.2	20
8104091	Total Arsenic (As)	2015/11/06	98	80 - 120	96	80 - 120	<0.000020	mg/L	3.3	20
8104091	Total Barium (Ba)	2015/11/06	NC	80 - 120	117	80 - 120	0.000033, RDL=0.000020	mg/L	1.4	20
8104091	Total Beryllium (Be)	2015/11/06	95	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8104091	Total Bismuth (Bi)	2015/11/06	101	80 - 120	113	80 - 120	<0.0000050	mg/L	NC	20
8104091	Total Boron (B)	2015/11/06					<0.010	mg/L	NC	20
8104091	Total Cadmium (Cd)	2015/11/06	99	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8104091	Total Chromium (Cr)	2015/11/06	99	80 - 120	97	80 - 120	<0.00010	mg/L	NC	20
8104091	Total Cobalt (Co)	2015/11/06	104	80 - 120	105	80 - 120	<0.0000050	mg/L	2.7	20
8104091	Total Copper (Cu)	2015/11/06	96	80 - 120	102	80 - 120	<0.000050	mg/L	NC	20
8104091	Total Iron (Fe)	2015/11/06	NC	80 - 120	106	80 - 120	<0.0010	mg/L	3.5	20
8104091	Total Lead (Pb)	2015/11/06	118	80 - 120	112	80 - 120	<0.0000050	mg/L	3.8	20
8104091	Total Lithium (Li)	2015/11/06	NC	80 - 120	98	80 - 120	<0.00050	mg/L	7.1	20
8104091	Total Manganese (Mn)	2015/11/06	NC	80 - 120	98	80 - 120	<0.000050	mg/L	0.35	20
8104091	Total Molybdenum (Mo)	2015/11/06	NC	80 - 120	106	80 - 120	<0.000050	mg/L	3.8	20
8104091	Total Nickel (Ni)	2015/11/06	93	80 - 120	99	80 - 120	0.000020, RDL=0.000020	mg/L	3.7	20
8104091	Total Phosphorus (P)	2015/11/06					<0.0020	mg/L	NC	20
8104091	Total Selenium (Se)	2015/11/06	96	80 - 120	92	80 - 120	<0.000040	mg/L	NC	20
8104091	Total Silicon (Si)	2015/11/06					<0.050	mg/L	0.25	20
8104091	Total Silver (Ag)	2015/11/06	97	80 - 120	108	80 - 120	<0.0000050	mg/L	NC	20
8104091	Total Strontium (Sr)	2015/11/06	NC	80 - 120	97	80 - 120	<0.000050	mg/L	0.12	20
8104091	Total Thallium (Tl)	2015/11/06	106	80 - 120	112	80 - 120	<0.0000020	mg/L	NC	20

Maxxam Job #: B598984  
Report Date: 2015/11/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8104091	Total Tin (Sn)	2015/11/06	102	80 - 120	113	80 - 120	<0.00020	mg/L	NC	20
8104091	Total Titanium (Ti)	2015/11/06	95	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8104091	Total Uranium (U)	2015/11/06	119	80 - 120	113	80 - 120	<0.0000020	mg/L	2.8	20
8104091	Total Vanadium (V)	2015/11/06	101	80 - 120	100	80 - 120	<0.00020	mg/L	NC	20
8104091	Total Zinc (Zn)	2015/11/06	104	80 - 120	107	80 - 120	<0.00010	mg/L	5.1	20
8104091	Total Zirconium (Zr)	2015/11/06					<0.00010	mg/L	3.3	20
8104319	Dissolved Aluminum (Al)	2015/11/09	107	80 - 120	106	80 - 120	<0.00050	mg/L	NC	20
8104319	Dissolved Antimony (Sb)	2015/11/09	101	80 - 120	98	80 - 120	<0.000020	mg/L	NC	20
8104319	Dissolved Arsenic (As)	2015/11/09	100	80 - 120	95	80 - 120	<0.000020	mg/L	NC	20
8104319	Dissolved Barium (Ba)	2015/11/09	114	80 - 120	110	80 - 120	<0.000020	mg/L	NC	20
8104319	Dissolved Beryllium (Be)	2015/11/09	103	80 - 120	104	80 - 120	<0.000010	mg/L	NC	20
8104319	Dissolved Bismuth (Bi)	2015/11/09	104	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8104319	Dissolved Boron (B)	2015/11/09					<0.010	mg/L	NC	20
8104319	Dissolved Cadmium (Cd)	2015/11/09	98	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8104319	Dissolved Chromium (Cr)	2015/11/09	103	80 - 120	99	80 - 120	<0.00010	mg/L	NC	20
8104319	Dissolved Cobalt (Co)	2015/11/09	106	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8104319	Dissolved Copper (Cu)	2015/11/09	106	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8104319	Dissolved Iron (Fe)	2015/11/09	102	80 - 120	109	80 - 120	<0.0010	mg/L	1.9	20
8104319	Dissolved Lead (Pb)	2015/11/09	118	80 - 120	113	80 - 120	<0.0000050	mg/L	NC	20
8104319	Dissolved Lithium (Li)	2015/11/09	90	80 - 120	85	80 - 120	<0.00050	mg/L	NC	20
8104319	Dissolved Manganese (Mn)	2015/11/09	97	80 - 120	96	80 - 120	<0.000050	mg/L	0.25	20
8104319	Dissolved Molybdenum (Mo)	2015/11/09	96	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8104319	Dissolved Nickel (Ni)	2015/11/09	104	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8104319	Dissolved Phosphorus (P)	2015/11/09					<0.0020	mg/L	9.6	20
8104319	Dissolved Selenium (Se)	2015/11/09	97	80 - 120	94	80 - 120	<0.000040	mg/L	NC	20
8104319	Dissolved Silicon (Si)	2015/11/09					<0.050	mg/L	NC	20
8104319	Dissolved Silver (Ag)	2015/11/09	101	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8104319	Dissolved Strontium (Sr)	2015/11/09	94	80 - 120	93	80 - 120	<0.000050	mg/L	8.3	20
8104319	Dissolved Thallium (Tl)	2015/11/09	104	80 - 120	103	80 - 120	<0.0000020	mg/L	NC	20
8104319	Dissolved Tin (Sn)	2015/11/09	98	80 - 120	97	80 - 120	<0.00020	mg/L	NC	20
8104319	Dissolved Titanium (Ti)	2015/11/09	95	80 - 120	91	80 - 120	<0.00050	mg/L	NC	20



Maxxam Job #: B598984  
Report Date: 2015/11/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8104319	Dissolved Uranium (U)	2015/11/09	115	80 - 120	115	80 - 120	<0.0000020	mg/L	1.7	20
8104319	Dissolved Vanadium (V)	2015/11/09	102	80 - 120	96	80 - 120	<0.00020	mg/L	NC	20
8104319	Dissolved Zinc (Zn)	2015/11/09	101	80 - 120	102	80 - 120	<0.00010	mg/L	NC	20
8104319	Dissolved Zirconium (Zr)	2015/11/09					<0.00010	mg/L	NC	20
8104328	Alkalinity (PP as CaCO3)	2015/11/06					<0.50	mg/L	NC	20
8104328	Alkalinity (Total as CaCO3)	2015/11/06	NC	80 - 120	99	80 - 120	<0.50	mg/L	1.1	20
8104328	Bicarbonate (HCO3)	2015/11/06					<0.50	mg/L	1.1	20
8104328	Carbonate (CO3)	2015/11/06					<0.50	mg/L	NC	20
8104328	Hydroxide (OH)	2015/11/06					<0.50	mg/L	NC	20
8104332	Conductivity	2015/11/06			100	80 - 120	<1.0	uS/cm	2.0	20
8104333	pH	2015/11/06			102	97 - 103			0.73	N/A
8104447	Total Suspended Solids	2015/11/09			92	80 - 120	<1.0	mg/L		
8104652	Dissolved Chloride (Cl)	2015/11/06			97	80 - 120	<0.50	mg/L	NC	20
8104659	Dissolved Sulphate (SO4)	2015/11/06			94	80 - 120	<0.50	mg/L		
8104662	Dissolved Chloride (Cl)	2015/11/09			99	80 - 120	<0.50	mg/L	NC	20
8104792	Total Aluminum (Al)	2015/11/07	NC	80 - 120	112	80 - 120	<0.0030	mg/L	3.9	20
8104792	Total Antimony (Sb)	2015/11/07	108	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8104792	Total Arsenic (As)	2015/11/07	105	80 - 120	105	80 - 120	<0.000020	mg/L	1.4	20
8104792	Total Barium (Ba)	2015/11/07	NC	80 - 120	119	80 - 120	<0.00010	mg/L	0.47	20
8104792	Total Beryllium (Be)	2015/11/07	100	80 - 120	97	80 - 120	<0.000010	mg/L	NC	20
8104792	Total Bismuth (Bi)	2015/11/07	106	80 - 120	98	80 - 120	<0.000020	mg/L	NC	20
8104792	Total Boron (B)	2015/11/07					<0.050	mg/L	NC	20
8104792	Total Cadmium (Cd)	2015/11/07	101	80 - 120	102	80 - 120	<0.0000050	mg/L	2.2	20
8104792	Total Chromium (Cr)	2015/11/07	105	80 - 120	104	80 - 120	<0.00050	mg/L	NC	20
8104792	Total Cobalt (Co)	2015/11/07	109	80 - 120	112	80 - 120	<0.000010	mg/L	3.8	20
8104792	Total Copper (Cu)	2015/11/07	98	80 - 120	107	80 - 120	<0.00020	mg/L	3.0	20
8104792	Total Iron (Fe)	2015/11/07	NC	80 - 120	109	80 - 120	<0.0050	mg/L	2.8	20
8104792	Total Lead (Pb)	2015/11/07	119	80 - 120	110	80 - 120	<0.000050	mg/L	NC	20
8104792	Total Lithium (Li)	2015/11/07	102	80 - 120	98	80 - 120	<0.00050	mg/L	NC	20
8104792	Total Manganese (Mn)	2015/11/07	NC	80 - 120	106	80 - 120	<0.00010	mg/L	1.4	20
8104792	Total Molybdenum (Mo)	2015/11/07	NC	80 - 120	104	80 - 120	<0.000050	mg/L	2.6	20

Maxxam Job #: B598984  
Report Date: 2015/11/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8104792	Total Nickel (Ni)	2015/11/07	100	80 - 120	104	80 - 120	<0.00010	mg/L	2.0	20
8104792	Total Phosphorus (P)	2015/11/07					<0.010	mg/L	NC	20
8104792	Total Selenium (Se)	2015/11/07	95	80 - 120	94	80 - 120	<0.000040	mg/L	3.6	20
8104792	Total Silicon (Si)	2015/11/07					<0.10	mg/L	2.0	20
8104792	Total Silver (Ag)	2015/11/07	101	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8104792	Total Strontium (Sr)	2015/11/07	NC	80 - 120	108	80 - 120	<0.000050	mg/L	1.3	20
8104792	Total Thallium (Tl)	2015/11/07	103	80 - 120	97	80 - 120	<0.0000020	mg/L	NC	20
8104792	Total Tin (Sn)	2015/11/07	102	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8104792	Total Titanium (Ti)	2015/11/07	109	80 - 120	110	80 - 120	<0.0050	mg/L	NC	20
8104792	Total Uranium (U)	2015/11/07	122 (1)	80 - 120	108	80 - 120	<0.0000050	mg/L	0.80	20
8104792	Total Vanadium (V)	2015/11/07	104	80 - 120	104	80 - 120	<0.00050	mg/L	NC	20
8104792	Total Zinc (Zn)	2015/11/07	99	80 - 120	107	80 - 120	<0.0010	mg/L	NC	20
8104792	Total Zirconium (Zr)	2015/11/07					<0.00010	mg/L	NC	20
8105024	Total Nitrogen (N)	2015/11/09	NC	80 - 120	99	80 - 120	<0.020	mg/L	7.9	20
8105026	Total Nitrogen (N)	2015/11/09	119	80 - 120	91	80 - 120	<0.020	mg/L	NC	20
8105108	Fluoride (F)	2015/11/06			98	80 - 120	0.012, RDL=0.010	mg/L		
8105110	Fluoride (F)	2015/11/06	98	80 - 120	96	80 - 120	0.013, RDL=0.010	mg/L	1.9	20
8105363	Orthophosphate (P)	2015/11/06	104	80 - 120	102	80 - 120	0.0017, RDL=0.0010	mg/L	NC	20
8105367	Dissolved Phosphorus (P)	2015/11/06	96	80 - 120	103	80 - 120	<0.0020	mg/L	NC	20
8105368	Total Phosphorus (P)	2015/11/06	NC	80 - 120	99	80 - 120	<0.0020	mg/L	1.3	20
8105389	Total Organic Carbon (C)	2015/11/06	85	80 - 120	100	80 - 120	0.75, RDL=0.50	mg/L	NC	20
8107753	Total Ammonia (N)	2015/11/09	106	80 - 120	108	80 - 120	<0.0050	mg/L	NC	20
8107759	Total Ammonia (N)	2015/11/09	NC	80 - 120	102	80 - 120	<0.0050	mg/L	3.2	20
8108439	Total Aluminum (Al)	2015/11/10	NC	80 - 120	103	80 - 120	<0.0030	mg/L	1.9	20
8108439	Total Antimony (Sb)	2015/11/10	95	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8108439	Total Arsenic (As)	2015/11/10	NC	80 - 120	96	80 - 120	<0.000020	mg/L	0.94	20
8108439	Total Barium (Ba)	2015/11/10	NC	80 - 120	105	80 - 120	<0.00010	mg/L	4.9	20
8108439	Total Beryllium (Be)	2015/11/10	99	80 - 120	94	80 - 120	<0.000010	mg/L	0.43	20

Maxxam Job #: B598984  
Report Date: 2015/11/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8108439	Total Bismuth (Bi)	2015/11/10	106	80 - 120	99	80 - 120	<0.000020	mg/L	1.9	20
8108439	Total Boron (B)	2015/11/10					<0.050	mg/L	NC	20
8108439	Total Cadmium (Cd)	2015/11/10	97	80 - 120	96	80 - 120	<0.0000050	mg/L	6.4	20
8108439	Total Chromium (Cr)	2015/11/10	NC	80 - 120	98	80 - 120	<0.00050	mg/L	0.65	20
8108439	Total Cobalt (Co)	2015/11/10	NC	80 - 120	99	80 - 120	<0.000010	mg/L	0.36	20
8108439	Total Copper (Cu)	2015/11/10	NC	80 - 120	101	80 - 120	<0.00020	mg/L	0.64	20
8108439	Total Iron (Fe)	2015/11/10	NC	80 - 120	102	80 - 120	<0.0050	mg/L	0.53	20
8108439	Total Lead (Pb)	2015/11/10	NC	80 - 120	100	80 - 120	<0.000050	mg/L	1.9	20
8108439	Total Lithium (Li)	2015/11/10	NC	80 - 120	90	80 - 120	<0.00050	mg/L	0.56	20
8108439	Total Manganese (Mn)	2015/11/10	NC	80 - 120	98	80 - 120	<0.00010	mg/L	0.53	20
8108439	Total Molybdenum (Mo)	2015/11/10	NC	80 - 120	94	80 - 120	<0.000050	mg/L	0.74	20
8108439	Total Nickel (Ni)	2015/11/10	NC	80 - 120	100	80 - 120	<0.00010	mg/L	0.81	20
8108439	Total Phosphorus (P)	2015/11/10					<0.010	mg/L	0.52	20
8108439	Total Selenium (Se)	2015/11/10	84	80 - 120	93	80 - 120	<0.000040	mg/L	NC	20
8108439	Total Silicon (Si)	2015/11/10					<0.10	mg/L	7.3	20
8108439	Total Silver (Ag)	2015/11/10	117	80 - 120	98	80 - 120	<0.0000050	mg/L	13	20
8108439	Total Strontium (Sr)	2015/11/10	NC	80 - 120	96	80 - 120	<0.000050	mg/L	0.94	20
8108439	Total Thallium (Tl)	2015/11/10	105	80 - 120	98	80 - 120	<0.0000020	mg/L	4.3	20
8108439	Total Tin (Sn)	2015/11/10	100	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8108439	Total Titanium (Ti)	2015/11/10	NC	80 - 120	94	80 - 120	<0.0050	mg/L	9.0	20
8108439	Total Uranium (U)	2015/11/10	118	80 - 120	105	80 - 120	<0.0000050	mg/L	1.1	20
8108439	Total Vanadium (V)	2015/11/10	NC	80 - 120	97	80 - 120	<0.00050	mg/L	1.3	20
8108439	Total Zinc (Zn)	2015/11/10	NC	80 - 120	108	80 - 120	<0.0010	mg/L	0.35	20
8108439	Total Zirconium (Zr)	2015/11/10					<0.00010	mg/L	11	20
8110604	Total Mercury (Hg)	2015/11/12	104	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
8111092	Dissolved Mercury (Hg)	2015/11/12	97	80 - 120	94	80 - 120	<0.0000020	mg/L	NC	20
8111127	Dissolved Mercury (Hg)	2015/11/12	92	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8112008	Total Mercury (Hg)	2015/11/13	92	80 - 120	93	80 - 120	<0.0000020	mg/L	NC	20
8113055	Alkalinity (PP as CaCO3)	2015/11/14					<0.50	mg/L	NC	20
8113055	Alkalinity (Total as CaCO3)	2015/11/14	103	80 - 120	93	80 - 120	0.58, RDL=0.50	mg/L	3.2	20
8113055	Bicarbonate (HCO3)	2015/11/14					0.71, RDL=0.50	mg/L	3.2	20

Maxxam Job #: B598984  
Report Date: 2015/11/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8113055	Carbonate (CO3)	2015/11/14					<0.50	mg/L	NC	20
8113055	Hydroxide (OH)	2015/11/14					<0.50	mg/L	NC	20
8114700	Dissolved Chloride (Cl)	2015/11/16			103	80 - 120	<0.50	mg/L		
8114703	Dissolved Sulphate (SO4)	2015/11/16			98	80 - 120	<0.50	mg/L		
8116059	Orthophosphate (P)	2015/11/17	NC	80 - 120	103	80 - 120	<0.0010	mg/L	0.17	20
8117507	Total Aluminum (Al)	2015/11/19	NC	80 - 120	104	80 - 120	<0.0030	mg/L		
8117507	Total Antimony (Sb)	2015/11/19	115	80 - 120	104	80 - 120	<0.000050	mg/L		
8117507	Total Arsenic (As)	2015/11/19	101	80 - 120	100	80 - 120	<0.000020	mg/L		
8117507	Total Barium (Ba)	2015/11/19	NC	80 - 120	103	80 - 120	<0.00010	mg/L		
8117507	Total Beryllium (Be)	2015/11/19	101	80 - 120	95	80 - 120	<0.000010	mg/L		
8117507	Total Bismuth (Bi)	2015/11/19	100	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8117507	Total Boron (B)	2015/11/19					<0.050	mg/L		
8117507	Total Cadmium (Cd)	2015/11/19	97	80 - 120	96	80 - 120	<0.0000050	mg/L		
8117507	Total Chromium (Cr)	2015/11/19	101	80 - 120	100	80 - 120	<0.00050	mg/L		
8117507	Total Cobalt (Co)	2015/11/19	101	80 - 120	102	80 - 120	<0.000010	mg/L		
8117507	Total Copper (Cu)	2015/11/19	99	80 - 120	105	80 - 120	<0.00020	mg/L		
8117507	Total Iron (Fe)	2015/11/19	NC	80 - 120	104	80 - 120	<0.0050	mg/L		
8117507	Total Lead (Pb)	2015/11/19	105	80 - 120	105	80 - 120	<0.000050	mg/L		
8117507	Total Lithium (Li)	2015/11/19	NC	80 - 120	91	80 - 120	<0.00050	mg/L		
8117507	Total Manganese (Mn)	2015/11/19	NC	80 - 120	101	80 - 120	<0.00010	mg/L		
8117507	Total Molybdenum (Mo)	2015/11/19	NC	80 - 120	97	80 - 120	<0.000050	mg/L		
8117507	Total Nickel (Ni)	2015/11/19	103	80 - 120	100	80 - 120	<0.00010	mg/L		
8117507	Total Phosphorus (P)	2015/11/19					<0.010	mg/L		
8117507	Total Selenium (Se)	2015/11/19	93	80 - 120	94	80 - 120	<0.000040	mg/L		
8117507	Total Silicon (Si)	2015/11/19					<0.10	mg/L		
8117507	Total Silver (Ag)	2015/11/19	99	80 - 120	92	80 - 120	<0.0000050	mg/L		
8117507	Total Strontium (Sr)	2015/11/19	NC	80 - 120	100	80 - 120	<0.000050	mg/L		
8117507	Total Thallium (Tl)	2015/11/19	100	80 - 120	100	80 - 120	<0.0000020	mg/L		
8117507	Total Tin (Sn)	2015/11/19	105	80 - 120	101	80 - 120	<0.00020	mg/L		
8117507	Total Titanium (Ti)	2015/11/19	110	80 - 120	98	80 - 120	<0.0050	mg/L		
8117507	Total Uranium (U)	2015/11/19	110	80 - 120	104	80 - 120	<0.0000050	mg/L		

Maxxam Job #: B598984  
Report Date: 2015/11/19

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8117507	Total Vanadium (V)	2015/11/19	NC	80 - 120	100	80 - 120	<0.00050	mg/L		
8117507	Total Zinc (Zn)	2015/11/19	NC	80 - 120	102	80 - 120	<0.0010	mg/L		
8117507	Total Zirconium (Zr)	2015/11/19					<0.00010	mg/L		

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

(1) Recovery or RPD for this parameter is outside control limits. The overall quality control for this analysis meets acceptability criteria.

Maxxam Job #: B598984  
Report Date: 2015/11/19

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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Name REDACTED Data Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Invoice Information		Report Information (if differs from invoice)		Project Information		Turnaround Time (TAT) Required						
Company Name: #11954 BMC Mineral (NO. 1) LTD.	Company Name: #31161 Tetra Tech EBA	Quotation #: B50743	Name REDACTED		<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses) PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS							
Contact Name: ACCOUNTS PAYABLE	Contact Name: Name REDACTED	P.O. #/ AFTER:			Rush TAT (Surcharges will be applied)							
Address: 530-1130 West Fender Street, Vancouver	Address: 61 Wesson Place	Project #: ENVMNO3071-01			<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days							
BC                      PC: VSE 644	Whitehorse, YT                      PC: V1A 0K7	Site Location: Kudz La Kayah			Date Required:							
Phone: Email: Email REDACTED	Phone: 867-668-8225	Site #: Name REDACTED	Email REDACTED		Rush Confirmation #:							
Regulatory Criteria		Special Instructions		Analysis Requested		LABORATORY USE ONLY						
<input type="checkbox"/> BC CSA Soil <input type="checkbox"/> BC CSR Water <input checked="" type="checkbox"/> CCME (Specify) AN <input checked="" type="checkbox"/> Other (Specify) MMER <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		ROUTINE ANALYSIS MAJOR IONS NUTRIENTS (INCLUDING NH4, NO2, TOTAL P) Lead Level Dissolved Metals with CV Pig Lead Level Total Metals with CV Pig Phosphorus (IL, Tot, dissolved)-P/P/P		CUSTODY SEAL Y <input checked="" type="checkbox"/> N Present    Intact NA                      6/6/2 NA                      4/5/4 COOLING MEDIA PRESENT <input checked="" type="checkbox"/> / / % COMMENTS: MAXXAM						
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM												
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE ANALYSIS	MAJOR IONS	NUTRIENTS (INCLUDING NH4, NO2, TOTAL P)	Lead Level Dissolved Metals with CV Pig	Lead Level Total Metals with CV Pig	Phosphorus (IL, Tot, dissolved)-P/P/P	# OF CONTAINERS SUBMITTED	REMARKS
1 MWIS-01	NO7325	NOV 1	1130pm	GW	x	x	x	x	x	x	13	Dissolved metals and phosphorus were field filtered and preserved.
2 MWIS-04S	NO7326	OCT 31	245pm		x	x	x	x	x	x	13	Total metals were field preserved.
3 MWIS-04D	NO7327	OCT 31	330pm		x	x	x	x	x	x		
4 MWIS-05D	NO7328	NOV 2	3pm		x	x	x	x	x	x		
5 BH95G-21	NO7329	OCT 30	615pm		x	x	x	x	x	x		
6 BH95G-22	NO7330	NOV 1	445pm		x	x	x	x	x	x		
7 BH95G-25S	NO7331	NOV 1	615pm		x	x	x	x	x	x		
8 BH95G-25D	NO7332	NOV 1	6pm		x	x	x	x	x	x		
9 BH95-131	NO7333	OCT 31	1015pm		x	x	x	x	x	x		
10 Dup 01	NO7334	OCT 31	330pm		x	x	x	x	x	x		
11 Dup 02	NO7335	NOV 2	1020pm		x	x	x	x	x	x		
RELINQUISHED BY: (Signature/Print)	DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)						
Name REDACTED	NOV 3, 2015	8 AM.	Name REDACTED		2015/11/05	09:35						



B598984







Your Project #: ENVMIN03071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08413422

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/11/17**  
 Report #: R2080972  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B5A0147**

**Received: 2015/11/09, 10:00**

Sample Matrix: Water  
 # Samples Received: 4

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	4	N/A	2015/11/09	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	4	2015/11/09	2015/11/10	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	4	N/A	2015/11/10	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	4	N/A	2015/11/10	BBY6SOP-00026	SM 22 2510 B m
Fluoride	4	N/A	2015/11/10	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	4	N/A	2015/11/12	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	4	N/A	2015/11/12	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	4	N/A	2015/11/13	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	4	2015/11/13	2015/11/13	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	4	N/A	2015/11/12	BBY WI-00033	SM 22 1030E
Sum of cations, anions	4	N/A	2015/11/12	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	4	N/A	2015/11/12	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	4	N/A	2015/11/12	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	4	N/A	2015/11/12	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	4	N/A	2015/11/12	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	4	2015/11/12	2015/11/12	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	4	N/A	2015/11/12	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	4	N/A	2015/11/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	4	N/A	2015/11/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	4	N/A	2015/11/12	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	4	N/A	2015/11/10	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (1)	4	N/A	2015/11/10	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	3	N/A	2015/11/10	BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2015/11/14	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	4	N/A	2015/11/10	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	4	N/A	2015/11/13	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	4	N/A	2015/11/12	BBY WI-00033	Calculation
Carbon (Total Organic) (2)	4	N/A	2015/11/10	BBY6SOP-00003	SM 22 5310 C m
Phosphorus-P (LL Tot, dissolved) - FF/FP	3	2015/11/10	2015/11/10	BBY6SOP-00013	SM 22 4500-P E m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/11/14	2015/11/14	BBY6SOP-00013	SM 22 4500-P E m

Your Project #: ENVMIN03071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08413422

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/11/17**  
 Report #: R2080972  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B5A0147**

**Received: 2015/11/09, 10:00**

Sample Matrix: Water  
 # Samples Received: 4

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Phosphorus	4	N/A	2015/11/10	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	4	2015/11/12	2015/11/12	BBY6SOP-00034	SM 22 2540 D
Turbidity	4	N/A	2015/11/09	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(2) TOC present in the sample should be considered as non-purgeable TOC.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED Burnaby Project Manager

Email: Email REDACTED

Phone# Phone REDACTED

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NP4192			NP4193	NP4193		NP4194		
Sampling Date		2015/11/05 12:30			2015/11/05 10:30	2015/11/05 10:30		2015/11/05 16:30		
COC Number		08413422			08413422	08413422		08413422		
	UNITS	MW15-075	RDL	QC Batch	BH95G-2	BH95G-2 Lab-Dup	RDL	BH95G-31	RDL	QC Batch
<b>Misc. Inorganics</b>										
Acidity (pH 4.5)	mg/L	<0.50	0.50	8107366	<0.50		0.50	<0.50	0.50	8107366
Acidity (pH 8.3)	mg/L	2.99	0.50	8107366	4.31		0.50	0.72	0.50	8107366
<b>Calculated Parameters</b>										
Anion Sum	meq/L	4.2	N/A	8107236	6.3		N/A	3.0	N/A	8107236
Cation Sum	meq/L	4.0	N/A	8107236	6.5		N/A	3.4	N/A	8107236
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		N/A	FIELD	N/A	ONSITE
Ion Balance	N/A	0.96	0.010	8107235	1.0		0.010	1.1	0.010	8107235
Nitrate (N)	mg/L	0.0048	0.0020	8107001	0.407		0.0020	0.199	0.0020	8107001
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.300	0.010	8109106	0.057		0.010	0.100	0.010	8109106
Alkalinity (Total as CaCO3)	mg/L	173	0.50	8108305	260		0.50	127	0.50	8108305
Total Organic Carbon (C)	mg/L	<0.50	0.50	8108996	<0.50		0.50	<0.50	0.50	8108996
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8108305	<0.50		0.50	<0.50	0.50	8108305
Bicarbonate (HCO3)	mg/L	211	0.50	8108305	317		0.50	155	0.50	8108305
Carbonate (CO3)	mg/L	<0.50	0.50	8108305	<0.50		0.50	<0.50	0.50	8108305
Hydroxide (OH)	mg/L	<0.50	0.50	8108305	<0.50		0.50	<0.50	0.50	8108305
<b>Anions</b>										
Orthophosphate (P)	mg/L	<0.0010 (1)	0.0010	8113324	0.0062 (1)		0.0010	0.0062 (1)	0.0010	8109179
Dissolved Sulphate (SO4)	mg/L	33.2	0.50	8108713	51.1		0.50	20.4	0.50	8108713
Dissolved Chloride (Cl)	mg/L	0.94	0.50	8108674	0.79		0.50	0.60	0.50	8108674
<b>Nutrients</b>										
Total Ammonia (N)	mg/L	0.053	0.0050	8111290	0.051		0.0050	0.20	0.0050	8111290
Dissolved Phosphorus (P)	mg/L	0.0031	0.0020	8113323	0.0048		0.0020	0.0029	0.0020	8109181
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.113	0.020	8107003	0.029		0.020	0.160	0.020	8107003
Nitrate plus Nitrite (N)	mg/L	0.0048 (1)	0.0020	8109074	0.409 (1)		0.0020	0.202 (1)	0.0020	8109074
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8109077	0.0020 (1)		0.0020	0.0032 (1)	0.0020	8109077
Total Nitrogen (N)	mg/L	0.118	0.020	8110996	0.438		0.020	0.362	0.020	8110996
Total Phosphorus (P)	mg/L	1.03	0.020	8109182	0.442		0.0020	1.09	0.020	8109182
<b>Physical Properties</b>										
Conductivity	uS/cm	393	1.0	8108308	564		1.0	289	1.0	8108308
pH	pH	8.10	N/A	8108309	8.18		N/A	8.16	N/A	8108309
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.										

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NP4192			NP4193	NP4193		NP4194		
<b>Sampling Date</b>		2015/11/05 12:30			2015/11/05 10:30	2015/11/05 10:30		2015/11/05 16:30		
<b>COC Number</b>		08413422			08413422	08413422		08413422		
	<b>UNITS</b>	<b>MW15-07S</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-2</b>	<b>BH95G-2 Lab-Dup</b>	<b>RDL</b>	<b>BH95G-31</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	6590 (1)	20	8110933	162 (1)		3.0	713 (1)	10	8110933
Total Dissolved Solids	mg/L	250	1.0	8109205	310		1.0	172	1.0	8109205
Turbidity	NTU	1600 (2)	0.10	8107703	55.3 (2)	57.7	0.10	323 (2)	0.10	8107703

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) RDL raised due to high concentration of solids in the sample.  
 (2) Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NP4194		NP4195		
Sampling Date		2015/11/05 16:30		2015/11/05 15:00		
COC Number		08413422		08413422		
	UNITS	BH95G-31 Lab-Dup	RDL	BH95G-32	RDL	QC Batch
<b>Misc. Inorganics</b>						
Acidity (pH 4.5)	mg/L		0.50	<0.50	0.50	8107366
Acidity (pH 8.3)	mg/L		0.50	3.18	0.50	8107366
<b>Calculated Parameters</b>						
Anion Sum	meq/L		N/A	4.3	N/A	8107236
Cation Sum	meq/L		N/A	4.2	N/A	8107236
Filter and HNO3 Preservation	N/A		N/A	FIELD	N/A	ONSITE
Ion Balance	N/A		0.010	0.97	0.010	8107235
Nitrate (N)	mg/L		0.0020	0.0512	0.0020	8107001
<b>Misc. Inorganics</b>						
Fluoride (F)	mg/L		0.010	0.039	0.010	8109106
Alkalinity (Total as CaCO3)	mg/L		0.50	179	0.50	8108305
Total Organic Carbon (C)	mg/L		0.50	<0.50	0.50	8108996
Alkalinity (PP as CaCO3)	mg/L		0.50	<0.50	0.50	8108305
Bicarbonate (HCO3)	mg/L		0.50	219	0.50	8108305
Carbonate (CO3)	mg/L		0.50	<0.50	0.50	8108305
Hydroxide (OH)	mg/L		0.50	<0.50	0.50	8108305
<b>Anions</b>						
Orthophosphate (P)	mg/L		0.0010	0.0026 (1)	0.0010	8109179
Dissolved Sulphate (SO4)	mg/L		0.50	34.4	0.50	8108713
Dissolved Chloride (Cl)	mg/L		0.50	0.75	0.50	8108674
<b>Nutrients</b>						
Total Ammonia (N)	mg/L		0.0050	0.029	0.0050	8111290
Dissolved Phosphorus (P)	mg/L		0.0020	0.0025	0.0020	8109181
Total Total Kjeldahl Nitrogen (Calc)	mg/L		0.020	0.076	0.020	8107003
Nitrate plus Nitrite (N)	mg/L		0.0020	0.0533 (1)	0.0020	8109074
Nitrite (N)	mg/L		0.0020	0.0021 (1)	0.0020	8109077
Total Nitrogen (N)	mg/L		0.020	0.129	0.020	8110996
Total Phosphorus (P)	mg/L		0.020	0.454	0.0020	8109182
<b>Physical Properties</b>						
Conductivity	uS/cm		1.0	409	1.0	8108308
pH	pH		N/A	8.12	N/A	8108309
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time.						

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NP4194		NP4195		
<b>Sampling Date</b>		2015/11/05 16:30		2015/11/05 15:00		
<b>COC Number</b>		08413422		08413422		
	<b>UNITS</b>	<b>BH95G-31 Lab-Dup</b>	<b>RDL</b>	<b>BH95G-32</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>						
Total Suspended Solids	mg/L		10	301 (1)	10	8110933
Total Dissolved Solids	mg/L	168	1.0	244	1.0	8109205
Turbidity	NTU		0.10	251 (2)	0.10	8107703
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) RDL raised due to high concentration of solids in the sample. (2) Sample arrived to laboratory past recommended hold time.						

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NP4192	NP4193		NP4194	NP4195		
Sampling Date		2015/11/05 12:30	2015/11/05 10:30		2015/11/05 16:30	2015/11/05 15:00		
COC Number		08413422	08413422		08413422	08413422		
	<b>UNITS</b>	<b>MW15-07S</b>	<b>BH95G-2</b>	<b>QC Batch</b>	<b>BH95G-31</b>	<b>BH95G-32</b>	<b>RDL</b>	<b>QC Batch</b>

**Misc. Inorganics**

Dissolved Hardness (CaCO3)	mg/L	191	325	8106998	162	202	0.50	8106998
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**Elements**

Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	8112092	<0.000020	<0.000020	0.000020	8112092
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**Dissolved Metals by ICPMS**

Dissolved Aluminum (Al)	mg/L	0.0239	0.0244	8110655	0.0852	0.0142	0.00050	8110655
Dissolved Antimony (Sb)	mg/L	0.000023	<0.000020	8110655	0.000108 (1)	0.000033	0.000020	8110655
Dissolved Arsenic (As)	mg/L	0.00507	0.000085	8110655	0.000137	0.000256	0.000020	8110655
Dissolved Barium (Ba)	mg/L	0.0341	0.0247	8110655	0.146	0.176	0.000020	8110655
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	8110655	<0.000010	<0.000010	0.000010	8110655
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	8110655	<0.0000050	<0.0000050	0.0000050	8110655
Dissolved Boron (B)	mg/L	<0.010	<0.010	8110655	<0.010	<0.010	0.010	8110655
Dissolved Cadmium (Cd)	mg/L	0.0000150	0.00157	8110655	0.0000230	0.0000510	0.0000050	8110655
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	8110655	0.00023	<0.00010	0.00010	8110655
Dissolved Cobalt (Co)	mg/L	0.000517	0.0000090	8110655	0.000162	0.000279	0.0000050	8110655
Dissolved Copper (Cu)	mg/L	0.000219	0.000368	8110655	0.00132	0.000305	0.000050	8110655
Dissolved Iron (Fe)	mg/L	0.307	0.0026	8110655	0.0875	0.129	0.0010	8110655
Dissolved Lead (Pb)	mg/L	0.0000570	0.0000610	8110655	0.000259	0.0000520	0.0000050	8110655
Dissolved Lithium (Li)	mg/L	0.00624	0.00154	8110655	0.00102	0.00119	0.00050	8110655
Dissolved Manganese (Mn)	mg/L	0.155	0.000446	8110655	0.00121	0.0729	0.000050	8110655
Dissolved Molybdenum (Mo)	mg/L	0.000837	0.00194	8110655	0.00179 (1)	0.000721 (1)	0.000050	8112287
Dissolved Nickel (Ni)	mg/L	0.00125	0.000439	8110655	0.000597	0.00110	0.000020	8110655
Dissolved Phosphorus (P)	mg/L	0.0069	0.0097	8110655	0.0090	<0.0020	0.0020	8110655
Dissolved Selenium (Se)	mg/L	<0.000040	0.00623	8110655	0.00166	0.000561	0.000040	8110655
Dissolved Silicon (Si)	mg/L	6.46	2.23	8110655	2.97	2.09	0.050	8110655
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	8110655	<0.0000050	<0.0000050	0.0000050	8110655
Dissolved Strontium (Sr)	mg/L	0.264	0.247	8110655	0.197	0.266	0.000050	8110655
Dissolved Thallium (Tl)	mg/L	<0.0000020	<0.0000020	8110655	0.0000020	0.0000060	0.0000020	8110655
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	8110655	<0.00020	<0.00020	0.00020	8110655
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	8110655	0.00357	<0.00050	0.00050	8110655
Dissolved Uranium (U)	mg/L	0.00200	0.00316	8110655	0.00120	0.00123	0.0000020	8110655
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	8110655	<0.00020	<0.00020	0.00020	8110655
Dissolved Zinc (Zn)	mg/L	0.00107	0.0245	8110655	0.00260	0.00218	0.00010	8110655
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	8110655	<0.00010	<0.00010	0.00010	8110655

RDL = Reportable Detection Limit

(1) Dissolved greater than total. Reanalysis yields similar results.

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NP4192	NP4193		NP4194	NP4195		
Sampling Date		2015/11/05 12:30	2015/11/05 10:30		2015/11/05 16:30	2015/11/05 15:00		
COC Number		08413422	08413422		08413422	08413422		
	UNITS	MW15-07S	BH95G-2	QC Batch	BH95G-31	BH95G-32	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	59.9	80.0	8107508	59.8	74.3	0.050	8107508
Dissolved Magnesium (Mg)	mg/L	9.96	30.4	8107508	3.13	3.93	0.050	8107508
Dissolved Potassium (K)	mg/L	1.39	0.445	8107508	3.15	4.31	0.050	8107508
Dissolved Sodium (Na)	mg/L	3.56	0.726	8107508	1.09	0.664	0.050	8107508
Dissolved Sulphur (S)	mg/L	11.8	17.2	8107508	7.3	10.7	3.0	8107508
RDL = Reportable Detection Limit								



Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NP4192	NP4193	NP4194	NP4195		
Sampling Date		2015/11/05 12:30	2015/11/05 10:30	2015/11/05 16:30	2015/11/05 15:00		
COC Number		08413422	08413422	08413422	08413422		
	<b>UNITS</b>	<b>MW15-07S</b>	<b>BH95G-2</b>	<b>BH95G-31</b>	<b>BH95G-32</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	453	289	152	215	0.50	8106997
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8112008
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	5.14	0.167	1.89	3.14	0.00050	8110793
Total Antimony (Sb)	mg/L	0.000052	0.000052	0.000063	0.000101	0.000020	8110793
Total Arsenic (As)	mg/L	0.00936	0.000767	0.00627	0.00501	0.000020	8110793
Total Barium (Ba)	mg/L	0.308	0.0331	0.275	0.423	0.000020	8110793
Total Beryllium (Be)	mg/L	0.000950	0.000021	0.000136	0.000434	0.000010	8110793
Total Bismuth (Bi)	mg/L	0.0000930	0.0000080	0.000270	0.000219	0.0000050	8110793
Total Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	0.010	8110793
Total Cadmium (Cd)	mg/L	0.000510	0.00275	0.000699	0.000798	0.0000050	8110793
Total Chromium (Cr)	mg/L	0.0284	0.00067	0.00454	0.00920	0.00010	8110793
Total Cobalt (Co)	mg/L	0.0123	0.000768	0.0164	0.00683	0.0000050	8110793
Total Copper (Cu)	mg/L	0.168	0.00781	0.104	0.0179	0.000050	8110793
Total Iron (Fe)	mg/L	26.2	0.898	13.8	8.93	0.0010	8110793
Total Lead (Pb)	mg/L	0.0248	0.0106	0.0809	0.0258	0.0000050	8110793
Total Lithium (Li)	mg/L	0.0114	0.00151	0.00191	0.00245	0.00050	8110793
Total Manganese (Mn)	mg/L	1.72	0.0305	0.327	0.436	0.000050	8110793
Total Molybdenum (Mo)	mg/L	0.00161	0.00180	0.00129	0.000578	0.000050	8110793
Total Nickel (Ni)	mg/L	0.0264	0.00226	0.0246	0.00983	0.000020	8110793
Total Phosphorus (P)	mg/L	3.09	0.245	0.247	0.357	0.0020	8110793
Total Selenium (Se)	mg/L	0.000150	0.00530	0.00142	0.000752	0.000040	8110793
Total Silicon (Si)	mg/L	12.5	2.35	6.09	7.82	0.050	8110793
Total Silver (Ag)	mg/L	0.000646	0.000189	0.000703	0.000101	0.0000050	8110793
Total Strontium (Sr)	mg/L	0.487	0.250	0.192	0.307	0.000050	8110793
Total Thallium (Tl)	mg/L	0.0000980	0.0000070	0.0000370	0.0000740	0.0000020	8110793
Total Tin (Sn)	mg/L	<0.00020	<0.00020	0.00034	<0.00020	0.00020	8110793
Total Titanium (Ti)	mg/L	0.159	0.00509	0.142	0.281	0.00050	8110793
Total Uranium (U)	mg/L	0.00986	0.00320	0.00144	0.00191	0.0000020	8110793
Total Vanadium (V)	mg/L	0.0261	0.00085	0.0196	0.0290	0.00020	8110793
Total Zinc (Zn)	mg/L	0.0765	0.0681	0.0514	0.0491	0.00010	8110793
Total Zirconium (Zr)	mg/L	0.00670	0.00020	0.00086	0.00088	0.00010	8110793
Total Calcium (Ca)	mg/L	154	67.4	54.8	76.8	0.050	8107509
RDL = Reportable Detection Limit							

Maxxam Job #: B5A0147  
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TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		NP4192	NP4193	NP4194	NP4195		
Sampling Date		2015/11/05 12:30	2015/11/05 10:30	2015/11/05 16:30	2015/11/05 15:00		
COC Number		08413422	08413422	08413422	08413422		
	<b>UNITS</b>	<b>MW15-07S</b>	<b>BH95G-2</b>	<b>BH95G-31</b>	<b>BH95G-32</b>	<b>RDL</b>	<b>QC Batch</b>
Total Magnesium (Mg)	mg/L	16.8	29.4	3.74	5.57	0.050	8107509
Total Potassium (K)	mg/L	3.25	0.466	3.22	5.51	0.050	8107509
Total Sodium (Na)	mg/L	3.53	0.689	0.922	0.752	0.050	8107509
Total Sulphur (S)	mg/L	11.0	17.3	6.8	11.5	3.0	8107509
RDL = Reportable Detection Limit							

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.3°C
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Sample NP4194, Elements by ICPMS Low Level (dissolved): Test repeated.  
Sample NP4195, Elements by ICPMS Low Level (dissolved): Test repeated.

**Results relate only to the items tested.**

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8107366	Acidity (pH 4.5)	2015/11/09					<0.50	mg/L	NC	20
8107366	Acidity (pH 8.3)	2015/11/09			97	80 - 120	<0.50	mg/L	8.2	20
8107703	Turbidity	2015/11/09			101	80 - 120	<0.10	NTU	4.2	20
8108305	Alkalinity (PP as CaCO3)	2015/11/09					<0.50	mg/L	NC	20
8108305	Alkalinity (Total as CaCO3)	2015/11/09	NC	80 - 120	101	80 - 120	<0.50	mg/L	0.41	20
8108305	Bicarbonate (HCO3)	2015/11/09					<0.50	mg/L	0.41	20
8108305	Carbonate (CO3)	2015/11/09					<0.50	mg/L	NC	20
8108305	Hydroxide (OH)	2015/11/09					<0.50	mg/L	NC	20
8108308	Conductivity	2015/11/09			102	80 - 120	1.0, RDL=1.0	uS/cm	0.43	20
8108309	pH	2015/11/10			102	97 - 103			0.25	N/A
8108674	Dissolved Chloride (Cl)	2015/11/10	89	80 - 120	103	80 - 120	0.55, RDL=0.50	mg/L	1.2	20
8108713	Dissolved Sulphate (SO4)	2015/11/10			97	80 - 120	0.69, RDL=0.50	mg/L		
8108996	Total Organic Carbon (C)	2015/11/10	90	80 - 120	106	80 - 120	<0.50	mg/L	NC	20
8109074	Nitrate plus Nitrite (N)	2015/11/10			98	80 - 120	<0.0020	mg/L		
8109077	Nitrite (N)	2015/11/10			99	80 - 120	<0.0020	mg/L		
8109106	Fluoride (F)	2015/11/10	NC	80 - 120	104	80 - 120	<0.010	mg/L	NC	20
8109179	Orthophosphate (P)	2015/11/10			102	80 - 120	<0.0010	mg/L		
8109181	Dissolved Phosphorus (P)	2015/11/10	102	80 - 120	97	80 - 120	<0.0020	mg/L		
8109182	Total Phosphorus (P)	2015/11/10			96	80 - 120	<0.0020	mg/L		
8109205	Total Dissolved Solids	2015/11/13	103	80 - 120	94	80 - 120	<1.0	mg/L	2.4	20
8110655	Dissolved Aluminum (Al)	2015/11/12	97	80 - 120	105	80 - 120	<0.00050	mg/L	0.90	20
8110655	Dissolved Antimony (Sb)	2015/11/12	97	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8110655	Dissolved Arsenic (As)	2015/11/12	93	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8110655	Dissolved Barium (Ba)	2015/11/12	104	80 - 120	108	80 - 120	<0.000020	mg/L	NC	20
8110655	Dissolved Beryllium (Be)	2015/11/12	92	80 - 120	101	80 - 120	<0.000010	mg/L	NC	20
8110655	Dissolved Bismuth (Bi)	2015/11/12	96	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Boron (B)	2015/11/12					<0.010	mg/L	NC	20
8110655	Dissolved Cadmium (Cd)	2015/11/12	85	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Chromium (Cr)	2015/11/12	95	80 - 120	104	80 - 120	<0.00010	mg/L	NC	20
8110655	Dissolved Cobalt (Co)	2015/11/12	95	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Copper (Cu)	2015/11/12	96	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20

Maxxam Job #: B5A0147  
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**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8110655	Dissolved Iron (Fe)	2015/11/12	96	80 - 120	109	80 - 120	<0.0010	mg/L	NC	20
8110655	Dissolved Lead (Pb)	2015/11/12	101	80 - 120	108	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Lithium (Li)	2015/11/12	94	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20
8110655	Dissolved Manganese (Mn)	2015/11/12	96	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8110655	Dissolved Molybdenum (Mo)	2015/11/12	93	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8110655	Dissolved Nickel (Ni)	2015/11/12	94	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8110655	Dissolved Phosphorus (P)	2015/11/12					<0.0020	mg/L	NC	20
8110655	Dissolved Selenium (Se)	2015/11/12	90	80 - 120	98	80 - 120	<0.000040	mg/L	NC	20
8110655	Dissolved Silicon (Si)	2015/11/12					<0.050	mg/L	NC	20
8110655	Dissolved Silver (Ag)	2015/11/12	93	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Strontium (Sr)	2015/11/12	95	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8110655	Dissolved Thallium (Tl)	2015/11/12	96	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8110655	Dissolved Tin (Sn)	2015/11/12	98	80 - 120	104	80 - 120	<0.00020	mg/L	NC	20
8110655	Dissolved Titanium (Ti)	2015/11/12	98	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20
8110655	Dissolved Uranium (U)	2015/11/12	102	80 - 120	108	80 - 120	<0.0000020	mg/L	NC	20
8110655	Dissolved Vanadium (V)	2015/11/12	92	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8110655	Dissolved Zinc (Zn)	2015/11/12	97	80 - 120	109	80 - 120	<0.00010	mg/L	NC	20
8110655	Dissolved Zirconium (Zr)	2015/11/12					<0.00010	mg/L	NC	20
8110793	Total Aluminum (Al)	2015/11/12	NC	80 - 120	102	80 - 120	<0.00050	mg/L	19	20
8110793	Total Antimony (Sb)	2015/11/12	97	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8110793	Total Arsenic (As)	2015/11/12	97	80 - 120	101	80 - 120	<0.000020	mg/L	6.4	20
8110793	Total Barium (Ba)	2015/11/12	NC	80 - 120	110	80 - 120	<0.000020	mg/L	1.9	20
8110793	Total Beryllium (Be)	2015/11/12	93	80 - 120	96	80 - 120	<0.000010	mg/L	NC	20
8110793	Total Bismuth (Bi)	2015/11/12	90	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8110793	Total Boron (B)	2015/11/12					<0.010	mg/L	NC	20
8110793	Total Cadmium (Cd)	2015/11/12	91	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8110793	Total Chromium (Cr)	2015/11/12	93	80 - 120	104	80 - 120	<0.00010	mg/L	NC	20
8110793	Total Cobalt (Co)	2015/11/12	92	80 - 120	105	80 - 120	<0.0000050	mg/L	7.2	20
8110793	Total Copper (Cu)	2015/11/12	89	80 - 120	103	80 - 120	<0.000050	mg/L	3.9	20
8110793	Total Iron (Fe)	2015/11/12	NC	80 - 120	111	80 - 120	<0.0010	mg/L	2.8	20
8110793	Total Lead (Pb)	2015/11/12	97	80 - 120	108	80 - 120	<0.0000050	mg/L	1.1	20

Maxxam Job #: B5A0147  
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**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8110793	Total Lithium (Li)	2015/11/12	NC	80 - 120	94	80 - 120	<0.00050	mg/L	8.6	20
8110793	Total Manganese (Mn)	2015/11/12	NC	80 - 120	104	80 - 120	<0.000050	mg/L	0.23	20
8110793	Total Molybdenum (Mo)	2015/11/12	NC	80 - 120	98	80 - 120	<0.000050	mg/L	0.92	20
8110793	Total Nickel (Ni)	2015/11/12	90	80 - 120	103	80 - 120	<0.000020	mg/L	2.9	20
8110793	Total Phosphorus (P)	2015/11/12					<0.0020	mg/L		
8110793	Total Selenium (Se)	2015/11/12	96	80 - 120	98	80 - 120	<0.000040	mg/L	NC	20
8110793	Total Silicon (Si)	2015/11/12					<0.050	mg/L	18	20
8110793	Total Silver (Ag)	2015/11/12	92	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8110793	Total Strontium (Sr)	2015/11/12	NC	80 - 120	105	80 - 120	<0.000050	mg/L	2.3	20
8110793	Total Thallium (Tl)	2015/11/12	91	80 - 120	103	80 - 120	<0.0000020	mg/L	NC	20
8110793	Total Tin (Sn)	2015/11/12	96	80 - 120	107	80 - 120	<0.00020	mg/L	NC	20
8110793	Total Titanium (Ti)	2015/11/12	90	80 - 120	106	80 - 120	<0.00050	mg/L	NC	20
8110793	Total Uranium (U)	2015/11/12	101	80 - 120	109	80 - 120	<0.0000020	mg/L	1.5	20
8110793	Total Vanadium (V)	2015/11/12	93	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8110793	Total Zinc (Zn)	2015/11/12	117	80 - 120	107	80 - 120	0.00016, RDL=0.00010	mg/L	6.7	20
8110793	Total Zirconium (Zr)	2015/11/12					<0.00010	mg/L	NC	20
8110933	Total Suspended Solids	2015/11/12			96	80 - 120	<1.0	mg/L		
8110996	Total Nitrogen (N)	2015/11/12	87	80 - 120	94	80 - 120	<0.020	mg/L	7.9	20
8111290	Total Ammonia (N)	2015/11/12	NC	80 - 120	108	80 - 120	<0.0050	mg/L	1.4	20
8112008	Total Mercury (Hg)	2015/11/13	92	80 - 120	93	80 - 120	<0.0000020	mg/L	NC	20
8112092	Dissolved Mercury (Hg)	2015/11/13	97	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8112287	Dissolved Molybdenum (Mo)	2015/11/13			94	80 - 120	<0.000050	mg/L		
8113323	Dissolved Phosphorus (P)	2015/11/14			93	80 - 120	<0.0020	mg/L		

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8113324	Orthophosphate (P)	2015/11/14	104	80 - 120	109	80 - 120	<0.0010	mg/L	NC	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B5A0147  
Report Date: 2015/11/17

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

---

Name REDACTED Validation Coordinator

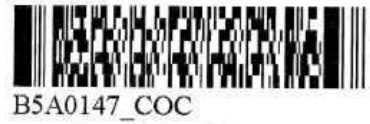
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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.





Invoice Information		Report Information (if differs from invoice)				Project Information				Turnaround Time (TAT) Required				
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)				
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS				
Address: 530-1130 West Pender Street, Vancouver BC PC: V6E 4A4		Address: 61 Wasson Place Whitehorse, YT PC: V1A 0H7				Project #: ENVMINO3071-01				Rush TAT (Surcharges will be applied)				
Phone: Email REDACTED		Phone: 867-668-6225				Site Location: Kudz Ze Kayah				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days				
Email: Email REDACTED		Email: Email REDACTED				Site #: Name REDACTED				Date Required:				
Sampled By:										Rush Confirmation #:				
Regulatory Criteria		Special Instructions				Analysis Requested				LABORATORY USE ONLY				
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input checked="" type="checkbox"/> CCME (Specify) <u>AN</u> <input checked="" type="checkbox"/> Other (Specify) <u>MMEK</u> <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler  <input type="checkbox"/> Ship Sample Bottles (Please Specify)				ROUTINE (incl. TDS)    MAJOR IONS    NUTRIENTS (INCLUDING NO3, NO2, TOTAL P) Low Level Dissolved Metals with CV/Hg    Low Level Total Metals with CV/Hg    Phosphorus (LL Tot, dissolved)/PF/FP				CUSTODY SEAL Y/N <u>(N)</u> COOLER TEMPERATURES Present Intact <u>1A</u> <u>2.1</u> COOLING MEDIA PRESENT <u>(Y)</u> / N COMMENTS <u>HS</u>				
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM														
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (INCLUDING NO3, NO2, TOTAL P)	Low Level Dissolved Metals with CV/Hg	Low Level Total Metals with CV/Hg	Phosphorus (LL Tot, dissolved)/PF/FP			# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE
1	MWIS-07S	NOV 5	1250pm	GW	x	x	x	x	x	x			13	
2	BH95G-2	NOV 5	1030am	GW	x	x	x	x	x	x			13	
3	BH95G-31	NOV 5	430pm	GW	α	α	α	α	α	α			13	
4	BH95G-32	NOV 5	3pm	GW	α	α	α	α	α	α			13	
5														
6														
7														
8														
9														
10														
11														
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #						
Name REDACTED				Name REDACTED		2015/11/09	10:00	B5A0147						



Your Project #: ENVMIN03071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08413452

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/11/16**  
 Report #: R2080050  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B5A0448**

**Received: 2015/11/10, 09:20**

Sample Matrix: Water  
 # Samples Received: 1

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	1	N/A	2015/11/13	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	1	2015/11/10	2015/11/10	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	1	N/A	2015/11/12	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	1	N/A	2015/11/10	BBY6SOP-00026	SM 22 2510 B m
Fluoride	1	N/A	2015/11/12	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	1	N/A	2015/11/13	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	1	N/A	2015/11/12	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	1	N/A	2015/11/13	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	1	2015/11/13	2015/11/13	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	1	N/A	2015/11/13	BBY WI-00033	SM 22 1030E
Sum of cations, anions	1	N/A	2015/11/12	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	1	N/A	2015/11/12	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	1	N/A	2015/11/12	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	1	N/A	2015/11/13	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	1	N/A	2015/11/12	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	1	2015/11/12	2015/11/12	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	1	N/A	2015/11/13	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	1	N/A	2015/11/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	1	N/A	2015/11/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	1	N/A	2015/11/12	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	1	N/A	2015/11/12	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (1)	1	N/A	2015/11/10	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	1	N/A	2015/11/12	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	1	N/A	2015/11/12	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	1	N/A	2015/11/13	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	1	N/A	2015/11/12	BBY WI-00033	Calculation
Carbon (Total Organic) (2)	1	N/A	2015/11/13	BBY6SOP-00003	SM 22 5310 C m
Phosphorus-P (LL Tot, dissolved) - FF/FP	1	2015/11/12	2015/11/12	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	1	N/A	2015/11/12	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	1	2015/11/12	2015/11/13	BBY6SOP-00034	SM 22 2540 D

Your Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Your C.O.C. #: 08413452

**Attention:** Name REDACTED

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

**Report Date: 2015/11/16**  
Report #: R2080050  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B5A0448**

**Received: 2015/11/10, 09:20**

Sample Matrix: Water  
# Samples Received: 1

<b>Analyses</b>	<b>Quantity</b>	<b>Date Extracted</b>	<b>Date Analyzed</b>	<b>Laboratory Method</b>	<b>Analytical Method</b>
Turbidity	1	N/A	2015/11/10	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(2) TOC present in the sample should be considered as non-purgeable TOC.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email: Email REDACTED

Phone#Phone REDACTED

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NP5786	NP5786		
Sampling Date		2015/11/08 10:00	2015/11/08 10:00		
COC Number		08413452	08413452		
	UNITS	MW15-11S	MW15-11S Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>					
Acidity (pH 4.5)	mg/L	<0.50		0.50	8112180
Acidity (pH 8.3)	mg/L	1.01		0.50	8112180
<b>Calculated Parameters</b>					
Anion Sum	meq/L	7.1		N/A	8108484
Cation Sum	meq/L	6.8		N/A	8108484
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE
Ion Balance	N/A	0.96		0.010	8108483
Nitrate (N)	mg/L	0.0871		0.0020	8108185
<b>Misc. Inorganics</b>					
Fluoride (F)	mg/L	0.190		0.010	8111038
Alkalinity (Total as CaCO3)	mg/L	188		0.50	8109230
Total Organic Carbon (C)	mg/L	34.3		0.50	8112479
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8109230
Bicarbonate (HCO3)	mg/L	230		0.50	8109230
Carbonate (CO3)	mg/L	<0.50		0.50	8109230
Hydroxide (OH)	mg/L	<0.50		0.50	8109230
<b>Anions</b>					
Orthophosphate (P)	mg/L	0.0015 (1)	0.0019	0.0010	8111483
Dissolved Sulphate (SO4)	mg/L	128		0.50	8110898
Dissolved Chloride (Cl)	mg/L	24		0.50	8110892
<b>Nutrients</b>					
Total Ammonia (N)	mg/L	0.64		0.0050	8112193
Dissolved Phosphorus (P)	mg/L	0.0114	0.0112	0.0020	8111493
Total Total Kjeldahl Nitrogen (Calc)	mg/L	4.65		0.20	8108188
Nitrate plus Nitrite (N)	mg/L	0.109		0.0020	8109063
Nitrite (N)	mg/L	0.0216		0.0020	8109073
Total Nitrogen (N)	mg/L	4.76		0.20	8111003
Total Phosphorus (P)	mg/L	0.122		0.0020	8111495
<b>Physical Properties</b>					
Conductivity	uS/cm	680		1.0	8109234
pH	pH	7.98		N/A	8109233
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Sample analysed past recommended hold time.					

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NP5786	NP5786		
<b>Sampling Date</b>		2015/11/08 10:00	2015/11/08 10:00		
<b>COC Number</b>		08413452	08413452		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>MW15-11S Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Physical Properties</b>					
Total Suspended Solids	mg/L	88 (1)		10	8110940
Total Dissolved Solids	mg/L	462		1.0	8109205
Turbidity	NTU	42.4		0.10	8108609
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) RDL raised due to sample matrix interference.					

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NP5786		
<b>Sampling Date</b>		2015/11/08 10:00		
<b>COC Number</b>		08413452		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	226	0.50	8108384
<b>Elements</b>				
Dissolved Mercury (Hg)	mg/L	<0.0000020	0.0000020	8112092
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	mg/L	0.0462	0.00050	8110655
Dissolved Antimony (Sb)	mg/L	0.00286	0.000020	8110655
Dissolved Arsenic (As)	mg/L	0.000407	0.000020	8110655
Dissolved Barium (Ba)	mg/L	0.0722	0.000020	8110655
Dissolved Beryllium (Be)	mg/L	<0.000010	0.000010	8110655
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000050	8110655
Dissolved Boron (B)	mg/L	0.018	0.010	8110655
Dissolved Cadmium (Cd)	mg/L	0.000171	0.0000050	8110655
Dissolved Chromium (Cr)	mg/L	0.00021	0.00010	8110655
Dissolved Cobalt (Co)	mg/L	0.000564	0.0000050	8110655
Dissolved Copper (Cu)	mg/L	0.00109	0.000050	8110655
Dissolved Iron (Fe)	mg/L	0.114	0.0010	8110655
Dissolved Lead (Pb)	mg/L	0.000179	0.0000050	8110655
Dissolved Lithium (Li)	mg/L	0.00970	0.00050	8110655
Dissolved Manganese (Mn)	mg/L	0.158	0.000050	8110655
Dissolved Molybdenum (Mo)	mg/L	0.0103	0.000050	8110655
Dissolved Nickel (Ni)	mg/L	0.00193	0.000020	8110655
Dissolved Phosphorus (P)	mg/L	0.0165	0.0020	8110655
Dissolved Selenium (Se)	mg/L	0.00135	0.000040	8110655
Dissolved Silicon (Si)	mg/L	3.17	0.050	8110655
Dissolved Silver (Ag)	mg/L	0.0000110	0.0000050	8110655
Dissolved Strontium (Sr)	mg/L	0.242	0.000050	8110655
Dissolved Thallium (Tl)	mg/L	0.0000090	0.0000020	8110655
Dissolved Tin (Sn)	mg/L	<0.00020	0.00020	8110655
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00050	8110655
Dissolved Uranium (U)	mg/L	0.00934	0.0000020	8110655
Dissolved Vanadium (V)	mg/L	<0.00020	0.00020	8110655
Dissolved Zinc (Zn)	mg/L	0.00391	0.00010	8110655
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00010	8110655
Dissolved Calcium (Ca)	mg/L	68.5	0.050	8108485
RDL = Reportable Detection Limit				

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NP5786		
<b>Sampling Date</b>		2015/11/08 10:00		
<b>COC Number</b>		08413452		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Magnesium (Mg)	mg/L	13.4	0.050	8108485
Dissolved Potassium (K)	mg/L	11.5	0.050	8108485
Dissolved Sodium (Na)	mg/L	44.4	0.050	8108485
Dissolved Sulphur (S)	mg/L	37.9	3.0	8108485
RDL = Reportable Detection Limit				

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NP5786		
<b>Sampling Date</b>		2015/11/08 10:00		
<b>COC Number</b>		08413452		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Total Hardness (CaCO3)	mg/L	218	0.50	8108183
<b>Elements</b>				
Total Mercury (Hg)	mg/L	0.0000040	0.0000020	8112135
<b>Total Metals by ICPMS</b>				
Total Aluminum (Al)	mg/L	0.867	0.00050	8110793
Total Antimony (Sb)	mg/L	0.00285	0.000020	8110793
Total Arsenic (As)	mg/L	0.00110	0.000020	8110793
Total Barium (Ba)	mg/L	0.110	0.000020	8110793
Total Beryllium (Be)	mg/L	0.000049	0.000010	8110793
Total Bismuth (Bi)	mg/L	0.0000260	0.0000050	8110793
Total Boron (B)	mg/L	0.017	0.010	8110793
Total Cadmium (Cd)	mg/L	0.000371	0.0000050	8110793
Total Chromium (Cr)	mg/L	0.00270	0.00010	8110793
Total Cobalt (Co)	mg/L	0.00121	0.0000050	8110793
Total Copper (Cu)	mg/L	0.00851	0.000050	8110793
Total Iron (Fe)	mg/L	3.51	0.0010	8110793
Total Lead (Pb)	mg/L	0.00498	0.0000050	8110793
Total Lithium (Li)	mg/L	0.0106	0.00050	8110793
Total Manganese (Mn)	mg/L	0.310	0.000050	8110793
Total Molybdenum (Mo)	mg/L	0.0117	0.000050	8110793
Total Nickel (Ni)	mg/L	0.00367	0.000020	8110793
Total Phosphorus (P)	mg/L	0.131	0.0020	8110793
Total Selenium (Se)	mg/L	0.00139	0.000040	8110793
Total Silicon (Si)	mg/L	4.66	0.050	8110793
Total Silver (Ag)	mg/L	0.00292	0.0000050	8110793
Total Strontium (Sr)	mg/L	0.240	0.000050	8110793
Total Thallium (Tl)	mg/L	0.0000360	0.0000020	8110793
Total Tin (Sn)	mg/L	0.00041	0.00020	8110793
Total Titanium (Ti)	mg/L	0.0837	0.00050	8110793
Total Uranium (U)	mg/L	0.00948	0.0000020	8110793
Total Vanadium (V)	mg/L	0.00354	0.00020	8110793
Total Zinc (Zn)	mg/L	0.0196	0.00010	8110793
Total Zirconium (Zr)	mg/L	0.00079	0.00010	8110793
Total Calcium (Ca)	mg/L	65.3	0.050	8108486
RDL = Reportable Detection Limit				



Maxxam Job #: B5A0448  
Report Date: 2015/11/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		NP5786		
<b>Sampling Date</b>		2015/11/08 10:00		
<b>COC Number</b>		08413452		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>RDL</b>	<b>QC Batch</b>
Total Magnesium (Mg)	mg/L	13.3	0.050	8108486
Total Potassium (K)	mg/L	11.1	0.050	8108486
Total Sodium (Na)	mg/L	43.0	0.050	8108486
Total Sulphur (S)	mg/L	36.7	3.0	8108486
RDL = Reportable Detection Limit				

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**GENERAL COMMENTS**

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	1.0°C
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**Results relate only to the items tested.**

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8108609	Turbidity	2015/11/10			102	80 - 120	<0.10	NTU	NC	20
8109063	Nitrate plus Nitrite (N)	2015/11/10	NC	80 - 120	97	80 - 120	<0.0020	mg/L	0.62	25
8109073	Nitrite (N)	2015/11/10	103	80 - 120	101	80 - 120	<0.0020	mg/L	NC	25
8109205	Total Dissolved Solids	2015/11/13	103	80 - 120	94	80 - 120	<1.0	mg/L	2.4	20
8109230	Alkalinity (PP as CaCO3)	2015/11/10					<0.50	mg/L	NC	20
8109230	Alkalinity (Total as CaCO3)	2015/11/10	NC	80 - 120	94	80 - 120	0.82, RDL=0.50	mg/L	0.15	20
8109230	Bicarbonate (HCO3)	2015/11/10					1.00, RDL=0.50	mg/L	0.15	20
8109230	Carbonate (CO3)	2015/11/10					<0.50	mg/L	NC	20
8109230	Hydroxide (OH)	2015/11/10					<0.50	mg/L	NC	20
8109233	pH	2015/11/10			102	97 - 103			0.50	N/A
8109234	Conductivity	2015/11/10			102	80 - 120	1.1, RDL=1.0	uS/cm	0.18	20
8110655	Dissolved Aluminum (Al)	2015/11/12	97	80 - 120	105	80 - 120	<0.00050	mg/L	0.90	20
8110655	Dissolved Antimony (Sb)	2015/11/12	97	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8110655	Dissolved Arsenic (As)	2015/11/12	93	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8110655	Dissolved Barium (Ba)	2015/11/12	104	80 - 120	108	80 - 120	<0.000020	mg/L	NC	20
8110655	Dissolved Beryllium (Be)	2015/11/12	92	80 - 120	101	80 - 120	<0.000010	mg/L	NC	20
8110655	Dissolved Bismuth (Bi)	2015/11/12	96	80 - 120	103	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Boron (B)	2015/11/12					<0.010	mg/L	NC	20
8110655	Dissolved Cadmium (Cd)	2015/11/12	85	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Chromium (Cr)	2015/11/12	95	80 - 120	104	80 - 120	<0.00010	mg/L	NC	20
8110655	Dissolved Cobalt (Co)	2015/11/12	95	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Copper (Cu)	2015/11/12	96	80 - 120	103	80 - 120	<0.000050	mg/L	NC	20
8110655	Dissolved Iron (Fe)	2015/11/12	96	80 - 120	109	80 - 120	<0.0010	mg/L	NC	20
8110655	Dissolved Lead (Pb)	2015/11/12	101	80 - 120	108	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Lithium (Li)	2015/11/12	94	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20
8110655	Dissolved Manganese (Mn)	2015/11/12	96	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8110655	Dissolved Molybdenum (Mo)	2015/11/12	93	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8110655	Dissolved Nickel (Ni)	2015/11/12	94	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8110655	Dissolved Phosphorus (P)	2015/11/12					<0.0020	mg/L	NC	20
8110655	Dissolved Selenium (Se)	2015/11/12	90	80 - 120	98	80 - 120	<0.000040	mg/L	NC	20
8110655	Dissolved Silicon (Si)	2015/11/12					<0.050	mg/L	NC	20

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8110655	Dissolved Silver (Ag)	2015/11/12	93	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8110655	Dissolved Strontium (Sr)	2015/11/12	95	80 - 120	104	80 - 120	<0.000050	mg/L	NC	20
8110655	Dissolved Thallium (Tl)	2015/11/12	96	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8110655	Dissolved Tin (Sn)	2015/11/12	98	80 - 120	104	80 - 120	<0.00020	mg/L	NC	20
8110655	Dissolved Titanium (Ti)	2015/11/12	98	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20
8110655	Dissolved Uranium (U)	2015/11/12	102	80 - 120	108	80 - 120	<0.0000020	mg/L	NC	20
8110655	Dissolved Vanadium (V)	2015/11/12	92	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8110655	Dissolved Zinc (Zn)	2015/11/12	97	80 - 120	109	80 - 120	<0.00010	mg/L	NC	20
8110655	Dissolved Zirconium (Zr)	2015/11/12					<0.00010	mg/L	NC	20
8110793	Total Aluminum (Al)	2015/11/12	NC	80 - 120	102	80 - 120	<0.00050	mg/L	19	20
8110793	Total Antimony (Sb)	2015/11/12	97	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8110793	Total Arsenic (As)	2015/11/12	97	80 - 120	101	80 - 120	<0.000020	mg/L	6.4	20
8110793	Total Barium (Ba)	2015/11/12	NC	80 - 120	110	80 - 120	<0.000020	mg/L	1.9	20
8110793	Total Beryllium (Be)	2015/11/12	93	80 - 120	96	80 - 120	<0.000010	mg/L	NC	20
8110793	Total Bismuth (Bi)	2015/11/12	90	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8110793	Total Boron (B)	2015/11/12					<0.010	mg/L	NC	20
8110793	Total Cadmium (Cd)	2015/11/12	91	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8110793	Total Chromium (Cr)	2015/11/12	93	80 - 120	104	80 - 120	<0.00010	mg/L	NC	20
8110793	Total Cobalt (Co)	2015/11/12	92	80 - 120	105	80 - 120	<0.0000050	mg/L	7.2	20
8110793	Total Copper (Cu)	2015/11/12	89	80 - 120	103	80 - 120	<0.000050	mg/L	3.9	20
8110793	Total Iron (Fe)	2015/11/12	NC	80 - 120	111	80 - 120	<0.0010	mg/L	2.8	20
8110793	Total Lead (Pb)	2015/11/12	97	80 - 120	108	80 - 120	<0.0000050	mg/L	1.1	20
8110793	Total Lithium (Li)	2015/11/12	NC	80 - 120	94	80 - 120	<0.00050	mg/L	8.6	20
8110793	Total Manganese (Mn)	2015/11/12	NC	80 - 120	104	80 - 120	<0.000050	mg/L	0.23	20
8110793	Total Molybdenum (Mo)	2015/11/12	NC	80 - 120	98	80 - 120	<0.000050	mg/L	0.92	20
8110793	Total Nickel (Ni)	2015/11/12	90	80 - 120	103	80 - 120	<0.000020	mg/L	2.9	20
8110793	Total Phosphorus (P)	2015/11/12					<0.0020	mg/L		
8110793	Total Selenium (Se)	2015/11/12	96	80 - 120	98	80 - 120	<0.000040	mg/L	NC	20
8110793	Total Silicon (Si)	2015/11/12					<0.050	mg/L	18	20
8110793	Total Silver (Ag)	2015/11/12	92	80 - 120	100	80 - 120	<0.0000050	mg/L	NC	20
8110793	Total Strontium (Sr)	2015/11/12	NC	80 - 120	105	80 - 120	<0.000050	mg/L	2.3	20

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8110793	Total Thallium (Tl)	2015/11/12	91	80 - 120	103	80 - 120	<0.0000020	mg/L	NC	20
8110793	Total Tin (Sn)	2015/11/12	96	80 - 120	107	80 - 120	<0.00020	mg/L	NC	20
8110793	Total Titanium (Ti)	2015/11/12	90	80 - 120	106	80 - 120	<0.00050	mg/L	NC	20
8110793	Total Uranium (U)	2015/11/12	101	80 - 120	109	80 - 120	<0.0000020	mg/L	1.5	20
8110793	Total Vanadium (V)	2015/11/12	93	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8110793	Total Zinc (Zn)	2015/11/12	117	80 - 120	107	80 - 120	0.00016, RDL=0.00010	mg/L	6.7	20
8110793	Total Zirconium (Zr)	2015/11/12					<0.00010	mg/L	NC	20
8110892	Dissolved Chloride (Cl)	2015/11/12	94	80 - 120	103	80 - 120	<0.50	mg/L	NC	20
8110898	Dissolved Sulphate (SO4)	2015/11/12			98	80 - 120	<0.50	mg/L		
8110940	Total Suspended Solids	2015/11/13			109	80 - 120	<1.0	mg/L		
8111003	Total Nitrogen (N)	2015/11/12	NC	80 - 120	94	80 - 120	<0.020	mg/L	0.87	20
8111038	Fluoride (F)	2015/11/12	NC	80 - 120	100	80 - 120	0.014, RDL=0.010	mg/L	0	20
8111483	Orthophosphate (P)	2015/11/12	96	80 - 120	95	80 - 120	0.0010, RDL=0.0010	mg/L	14	20
8111493	Dissolved Phosphorus (P)	2015/11/12	91	80 - 120	102	80 - 120	<0.0020	mg/L	1.4	20
8111495	Total Phosphorus (P)	2015/11/12	88	80 - 120	102	80 - 120	<0.0020	mg/L	NC	20
8112092	Dissolved Mercury (Hg)	2015/11/13	97	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8112135	Total Mercury (Hg)	2015/11/13	99	80 - 120	95	80 - 120	<0.0000020	mg/L	NC	20
8112180	Acidity (pH 4.5)	2015/11/13					<0.50	mg/L	NC	20
8112180	Acidity (pH 8.3)	2015/11/13			101	80 - 120	<0.50	mg/L	NC	20
8112193	Total Ammonia (N)	2015/11/13	108	80 - 120	104	80 - 120	<0.0050	mg/L	NC	20

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8112479	Total Organic Carbon (C)	2015/11/13	89	80 - 120	103	80 - 120	<0.50	mg/L	7.4	20

N/A = Not Applicable

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B5A0448  
Report Date: 2015/11/16

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).

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Name REDACTED Data Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

## CHAIN OF CUSTODY RECORD

08413452

Invoice Information		Report Information (if differs from invoice)				Project Information		Turnaround Time (TAT) Required					
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743		<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)					
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:		PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS					
Address: 530-1130 West Pender Street, Vancouver		Address: 61 Wasson Place				Project #: ENVMINO3071-01		Rush TAT (Surcharges will be applied)					
BC PC: V6E 4A4		Whitehorse, YT PC: V1A 0H7				Site Location: Kudz Ze Kayah		<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days <input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days					
Phone: -Email REDACTED		Phone: 867-668-6225				Site #:		Date Required:					
Email: -Email REDACTED		Email: Email REDACTED				Sampled By: Name REDACTED							
Regulatory Criteria		Special Instructions		Analysis Requested				Rush Confirmation #:					
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input checked="" type="checkbox"/> CCME (Specify) <input checked="" type="checkbox"/> Other (Specify) AW MMR <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)		MAJOR IONS NUTRIENTS (INCLUDING NO3, NO2, TOTAL P) Low Level Dissolved Metals with CV Hig Low Level Total Metals with CV Hig Phosphorus (L Tot, doshvel)-FF/PP				LABORATORY USE ONLY CUSTODY SEAL Y./N. Present Intact COOLING MEDIA PRESENT Y./N.					
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM													
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE (incl. TD5)	MAJOR IONS	NUTRIENTS (INCLUDING NO3, NO2, TOTAL P)	Low Level Dissolved Metals with CV Hig	Low Level Total Metals with CV Hig	Phosphorus (L Tot, doshvel)-FF/PP	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	COMMENTS
1	MW15-115	NPS786	11/8/2015	10am	GW	X	X	X	X	X	13		Dissolved metals and mercury were field filtered and preserved.
2	Travel Blank	NPS787	-	-	DI						7	X	Total metals were field preserved.
3													
4													
5													
6													
7													
8													
9													
10													
11													
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)		TIME: (HH:MM)		RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)		TIME: (HH:MM)		MAXXAM JOB #	
Name REDACTED		NOV 9		1 pm		Name REDACTED		2015/11/10		09:20		B5A 0448	



B5A0448\_COC



Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08413393

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/11/13**  
 Report #: R2078284  
 Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B599724**

**Received: 2015/11/06, 13:35**

Sample Matrix: Water  
 # Samples Received: 4

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO3)	4	N/A	2015/11/09	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	4	2015/11/09	2015/11/09	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	3	N/A	2015/11/09	BBY6SOP-00011	SM 22 4500-Cl- G m
Chloride by Automated Colourimetry	1	N/A	2015/11/10	BBY6SOP-00011	SM 22 4500-Cl- G m
Conductance - water	4	N/A	2015/11/09	BBY6SOP-00026	SM 22 2510 B m
Fluoride	4	N/A	2015/11/10	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO3)	4	N/A	2015/11/10	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO3)	4	N/A	2015/11/10	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAF	4	N/A	2015/11/11	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAF	4	2015/11/11	2015/11/11	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	4	N/A	2015/11/10	BBY WI-00033	SM 22 1030E
Sum of cations, anions	4	N/A	2015/11/10	Calc	
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	4	N/A	2015/11/10	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	4	N/A	2015/11/10	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	4	2015/11/10	2015/11/10	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	4	N/A	2015/11/10	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	4	2015/11/12	2015/11/12	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Preserved)	4	N/A	2015/11/10	BBY6SOP-00009	SM 22 4500-NH3- G m
Nitrate+Nitrite (N) (low level)	4	N/A	2015/11/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	4	N/A	2015/11/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	4	N/A	2015/11/10	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	4	N/A	2015/11/09	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (1)	4	N/A	2015/11/09	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	4	N/A	2015/11/09	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	4	N/A	2015/11/09	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	4	N/A	2015/11/12	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	4	N/A	2015/11/12	BBY WI-00033	Calculation
Carbon (Total Organic) (2)	4	N/A	2015/11/10	BBY6SOP-00003	SM 22 5310 C m
Phosphorus-P (LL Tot, dissolved) - FF/FP	4	2015/11/09	2015/11/09	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus	4	N/A	2015/11/09	BBY6SOP-00013	SM 22 4500-P E m

Your Project #: ENVMINO3071-01  
 Site Location: KUDZ ZE KAYAH  
 Your C.O.C. #: 08413393

**Attention:** Name REDACTED

TETRATECH EBA  
 61 WASSON PLACE  
 WHITEHORSE, YT  
 Canada Y1A 0H7

**Report Date: 2015/11/13**  
 Report #: R2078284  
 Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B599724**

**Received: 2015/11/06, 13:35**

Sample Matrix: Water  
 # Samples Received: 4

Analyses	Quantity	Date		Laboratory Method	Analytical Method
		Extracted	Analyzed		
Total Suspended Solids-Low Level	4	2015/11/10	2015/11/10	BBY6SOP-00034	SM 22 2540 D
Turbidity	2	N/A	2015/11/07	BBY6SOP-00027	SM 22 2130 B m
Turbidity	2	N/A	2015/11/09	BBY6SOP-00027	SM 22 2130 B m

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

(2) TOC present in the sample should be considered as non-purgeable TOC.

**Encryption Key**

Please direct all questions regarding this Certificate of Analysis to your Project Manager.  
 Name REDACTED, Burnaby Project Manager  
 Email: Email REDACTED  
 Phone#Phone REDACTED

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NP1435			NP1436	NP1436		
Sampling Date		2015/11/03 16:30			2015/11/04 15:00	2015/11/04 15:00		
COC Number		08413393			08413393	08413393		
	UNITS	MW15-08D	RDL	QC Batch	MW15-10D	MW15-10D Lab-Dup	RDL	QC Batch
<b>Misc. Inorganics</b>								
Acidity (pH 4.5)	mg/L	<0.50	0.50	8107366	<0.50	<0.50	0.50	8107366
Acidity (pH 8.3)	mg/L	5.27	0.50	8107366	395	428	0.50	8107366
<b>Calculated Parameters</b>								
Anion Sum	meq/L	5.9	N/A	8105885	37		N/A	8105885
Cation Sum	meq/L	6.0	N/A	8105885	43		N/A	8105885
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	1.0	0.010	8105884	1.2		0.010	8105884
Nitrate (N)	mg/L	0.0047	0.0020	8105888	0.0051		0.0020	8105888
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.540	0.010	8108983	1.30		0.010	8108983
Alkalinity (Total as CaCO3)	mg/L	245	0.50	8108283	1840		0.50	8108283
Total Organic Carbon (C)	mg/L	0.93	0.50	8108879	<0.50		0.50	8108879
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8108283	<0.50		0.50	8108283
Bicarbonate (HCO3)	mg/L	299	0.50	8108283	2240		0.50	8108283
Carbonate (CO3)	mg/L	<0.50	0.50	8108283	<0.50		0.50	8108283
Hydroxide (OH)	mg/L	<0.50	0.50	8108283	<0.50		0.50	8108283
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0038 (1)	0.0010	8107607	0.0081 (2)		0.0010	8107607
Dissolved Sulphate (SO4)	mg/L	45.0	0.50	8107604	1.01		0.50	8107604
Dissolved Chloride (Cl)	mg/L	0.96	0.50	8107598	3.8		0.50	8107598
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.12	0.0050	8108976	0.24		0.0050	8108976
Dissolved Phosphorus (P)	mg/L	0.0050	0.0020	8107611	0.0085	0.0084	0.0020	8107611
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.550	0.020	8105889	0.269		0.020	8105889
Nitrate plus Nitrite (N)	mg/L	0.0047 (1)	0.0020	8108883	0.0051 (2)		0.0020	8108883
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8108887	<0.0020 (2)		0.0020	8108887
Total Nitrogen (N)	mg/L	0.555	0.020	8110996	0.274		0.020	8110996
Total Phosphorus (P)	mg/L	0.0048	0.0020	8107613	0.253		0.0020	8107613
<b>Physical Properties</b>								
Conductivity	uS/cm	539	1.0	8108286	2850		1.0	8108286
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis. (2) Sample analysed past recommended hold time.								

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NP1435			NP1436	NP1436		
Sampling Date		2015/11/03 16:30			2015/11/04 15:00	2015/11/04 15:00		
COC Number		08413393			08413393	08413393		
	UNITS	MW15-08D	RDL	QC Batch	MW15-10D	MW15-10D Lab-Dup	RDL	QC Batch
pH	pH	8.05	N/A	8108287	6.77		N/A	8108287
<b>Physical Properties</b>								
Total Suspended Solids	mg/L	242	1.0	8108289	302 (1)		5.0	8108292
Total Dissolved Solids	mg/L	338	1.0	8109205	1940		1.0	8109205
Turbidity	NTU	149 (2)	0.10	8107635	188		0.10	8106063
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) RDL raised due to high concentration of solids in the sample. (2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.								

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		NP1437	NP1437			NP1438	NP1438		
Sampling Date		2015/11/03 10:45	2015/11/03 10:45			2015/11/04 20:00	2015/11/04 20:00		
COC Number		08413393	08413393			08413393	08413393		
	<b>UNITS</b>	<b>BNH95G-33D</b>	<b>BNH95G-33D Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95-129</b>	<b>BH95-129 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>									
Acidity (pH 4.5)	mg/L	<0.50		0.50	8107366	<0.50		0.50	8107363
Acidity (pH 8.3)	mg/L	<0.50		0.50	8107366	<0.50		0.50	8107363

<b>Calculated Parameters</b>									
Anion Sum	meq/L	4.9		N/A	8105885	4.0		N/A	8105885
Cation Sum	meq/L	5.2		N/A	8105885	4.4		N/A	8105885
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	1.0		0.010	8105884	1.1		0.010	8105884
Nitrate (N)	mg/L	0.213		0.0020	8105888	0.0055		0.0020	8105888

<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.055		0.010	8108983	0.220		0.010	8108983
Alkalinity (Total as CaCO3)	mg/L	173		0.50	8108283	160		0.50	8108283
Total Organic Carbon (C)	mg/L	1.08		0.50	8108879	0.84		0.50	8108879
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8108283	<0.50		0.50	8108283
Bicarbonate (HCO3)	mg/L	211		0.50	8108283	195		0.50	8108283
Carbonate (CO3)	mg/L	<0.50		0.50	8108283	<0.50		0.50	8108283
Hydroxide (OH)	mg/L	<0.50		0.50	8108283	<0.50		0.50	8108283

<b>Anions</b>									
Orthophosphate (P)	mg/L	0.0024 (1)		0.0010	8107607	0.0022 (2)	0.0019	0.0010	8107607
Dissolved Sulphate (SO4)	mg/L	68.6		0.50	8107604	37.2		0.50	8107596
Dissolved Chloride (Cl)	mg/L	0.78		0.50	8109038	2.5	2.5	0.50	8107594

<b>Nutrients</b>									
Total Ammonia (N)	mg/L	0.019		0.0050	8108976	0.032		0.0050	8108976
Dissolved Phosphorus (P)	mg/L	0.151		0.0020	8107611	0.0035		0.0020	8107611
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.089		0.020	8105889	0.105		0.020	8105889
Nitrate plus Nitrite (N)	mg/L	0.216 (1)		0.0020	8108883	0.0076 (2)	0.0059	0.0020	8108883
Nitrite (N)	mg/L	0.0022 (1)		0.0020	8108887	0.0021 (2)	<0.0020	0.0020	8108887
Total Nitrogen (N)	mg/L	0.304		0.020	8110996	0.113	0.104	0.020	8110996
Total Phosphorus (P)	mg/L	1.05	1.08	0.020	8107613	0.0321		0.0020	8107613

<b>Physical Properties</b>									
Conductivity	uS/cm	460		1.0	8108286	383		1.0	8108286
pH	pH	8.17		N/A	8108287	8.17		N/A	8108287

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.  
(2) Sample analysed past recommended hold time.

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		NP1437	NP1437			NP1438	NP1438		
<b>Sampling Date</b>		2015/11/03 10:45	2015/11/03 10:45			2015/11/04 20:00	2015/11/04 20:00		
<b>COC Number</b>		08413393	08413393			08413393	08413393		
	<b>UNITS</b>	<b>BNH95G-33D</b>	<b>BNH95G-33D Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95-129</b>	<b>BH95-129 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>									
Total Suspended Solids	mg/L	1290 (1)		20	8108292	20.1		1.0	8108292
Total Dissolved Solids	mg/L	326		1.0	8109205	230		1.0	8109205
Turbidity	NTU	598 (2)		0.10	8107635	12.3		0.10	8106063

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) RDL raised due to high concentration of solids in the sample.  
 (2) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NP1435	NP1436	NP1437	NP1438		
Sampling Date		2015/11/03 16:30	2015/11/04 15:00	2015/11/03 10:45	2015/11/04 20:00		
COC Number		08413393	08413393	08413393	08413393		
	UNITS	MW15-08D	MW15-10D	BNH95G-33D	BH95-129	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	269	2020	255	211	0.50	8105764
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8109005
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00361	0.298	0.00199	0.00527	0.00050	8108066
Dissolved Antimony (Sb)	mg/L	0.000135	0.000064	<0.000020	0.000227	0.000020	8108066
Dissolved Arsenic (As)	mg/L	0.00496	0.00109	0.000144	0.00611	0.000020	8108066
Dissolved Barium (Ba)	mg/L	0.0463	0.415	0.0982	0.0666	0.000020	8108066
Dissolved Beryllium (Be)	mg/L	<0.000010	0.00105	<0.000010	<0.000010	0.000010	8108066
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000120	<0.0000050	0.0000220	0.0000050	8108066
Dissolved Boron (B)	mg/L	<0.010	0.011	<0.010	<0.010	0.010	8108066
Dissolved Cadmium (Cd)	mg/L	0.0000320	0.000172	0.0000060	0.0000220	0.0000050	8108066
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00155	<0.00010	<0.00010	0.00010	8108066
Dissolved Cobalt (Co)	mg/L	0.000709	0.000833	0.0000150	0.000153	0.0000050	8108066
Dissolved Copper (Cu)	mg/L	0.000087	0.000993	0.000360	0.000253	0.000050	8108066
Dissolved Iron (Fe)	mg/L	0.563	30.0	0.0042	0.310	0.0010	8108066
Dissolved Lead (Pb)	mg/L	0.0000190	0.00123	0.0000110	0.0000280	0.0000050	8108066
Dissolved Lithium (Li)	mg/L	0.0282	0.237	0.00111	0.00948	0.00050	8108066
Dissolved Manganese (Mn)	mg/L	0.191	5.09	0.00483	0.113	0.000050	8108066
Dissolved Molybdenum (Mo)	mg/L	0.00664	0.000450	0.00120	0.00135	0.000050	8108066
Dissolved Nickel (Ni)	mg/L	0.00327	0.00145	0.00108	0.000408	0.000020	8108066
Dissolved Phosphorus (P)	mg/L	0.0037	0.0039	0.0045	0.0041	0.0020	8108066
Dissolved Selenium (Se)	mg/L	0.000272	0.000043	0.00614	<0.000040	0.000040	8108066
Dissolved Silicon (Si)	mg/L	9.90	41.8	3.52	6.49	0.050	8108066
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000120	<0.0000050	0.0000140	0.0000050	8108066
Dissolved Strontium (Sr)	mg/L	0.317	2.80	0.260	0.213	0.000050	8108066
Dissolved Thallium (Tl)	mg/L	0.0000020	0.0000030	<0.0000020	0.0000030	0.0000020	8108066
Dissolved Tin (Sn)	mg/L	<0.00020	0.00023	<0.00020	<0.00020	0.00020	8108066
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00076	<0.00050	<0.00050	0.00050	8108066
Dissolved Uranium (U)	mg/L	0.00143	0.000562	0.00475	0.0112	0.0000020	8108066
Dissolved Vanadium (V)	mg/L	<0.00020	0.00064	<0.00020	<0.00020	0.00020	8108066
Dissolved Zinc (Zn)	mg/L	0.00309	0.0217	0.00182	0.00663	0.00010	8108066
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00209	<0.00010	0.00016	0.00010	8108066
Dissolved Calcium (Ca)	mg/L	76.5	673	87.2	61.2	0.050	8105886
RDL = Reportable Detection Limit							

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		NP1435	NP1436	NP1437	NP1438		
Sampling Date		2015/11/03 16:30	2015/11/04 15:00	2015/11/03 10:45	2015/11/04 20:00		
COC Number		08413393	08413393	08413393	08413393		
	UNITS	MW15-08D	MW15-10D	BNH95G-33D	BH95-129	RDL	QC Batch
Dissolved Magnesium (Mg)	mg/L	18.9	83.4	9.17	14.2	0.050	8105886
Dissolved Potassium (K)	mg/L	3.91	9.83	1.05	2.44	0.050	8105886
Dissolved Sodium (Na)	mg/L	11.8	23.6	0.812	3.07	0.050	8105886
Dissolved Sulphur (S)	mg/L	15.9	4.0	23.0	14.7	3.0	8105886
RDL = Reportable Detection Limit							



Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NP1435	NP1436	NP1437	NP1438		
Sampling Date		2015/11/03 16:30	2015/11/04 15:00	2015/11/03 10:45	2015/11/04 20:00		
COC Number		08413393	08413393	08413393	08413393		
	UNITS	MW15-08D	MW15-10D	BNH95G-33D	BH95-129	RDL	QC Batch
<b>Calculated Parameters</b>							
Total Hardness (CaCO3)	mg/L	361	2120	335	234	0.50	8105763
<b>Elements</b>							
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8110045
<b>Total Metals by ICPMS</b>							
Total Aluminum (Al)	mg/L	7.17	4.13	15.0	0.258	0.0030	8108439
Total Antimony (Sb)	mg/L	0.000178	0.000083	0.000284	0.000622	0.000050	8108439
Total Arsenic (As)	mg/L	0.0124	0.00302	0.0316	0.0100	0.000020	8108439
Total Barium (Ba)	mg/L	0.0758	0.469	0.372	0.0819	0.00010	8108439
Total Beryllium (Be)	mg/L	0.000269	0.00125	0.000927	<0.000010	0.000010	8108439
Total Bismuth (Bi)	mg/L	0.000105	0.000741	0.000322	0.000041	0.000020	8108439
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	<0.050	0.050	8108439
Total Cadmium (Cd)	mg/L	0.000212	0.00131	0.000380	0.000129	0.0000050	8108439
Total Chromium (Cr)	mg/L	0.0305	0.0168	0.0242	0.00103	0.00050	8108439
Total Cobalt (Co)	mg/L	0.00580	0.00488	0.0396	0.000442	0.000010	8108439
Total Copper (Cu)	mg/L	0.00620	0.0145	0.114	0.0110	0.00020	8108439
Total Iron (Fe)	mg/L	11.0	39.2	50.5	1.44	0.0050	8108439
Total Lead (Pb)	mg/L	0.00657	0.0338	0.0213	0.00551	0.000050	8108439
Total Lithium (Li)	mg/L	0.0421	0.266	0.0139	0.0120	0.00050	8108439
Total Manganese (Mn)	mg/L	0.430	5.38	3.09	0.137	0.00010	8108439
Total Molybdenum (Mo)	mg/L	0.00546	0.00348	0.00241	0.00142	0.000050	8108439
Total Nickel (Ni)	mg/L	0.0195	0.00777	0.165	0.00143	0.00010	8108439
Total Phosphorus (P)	mg/L	0.157	0.233	0.862	0.049	0.010	8108439
Total Selenium (Se)	mg/L	0.000421	0.000367	0.00569	<0.000040	0.000040	8108439
Total Silicon (Si)	mg/L	23.4	49.2	28.8	7.89	0.10	8108439
Total Silver (Ag)	mg/L	0.000543	0.000677	0.000434	0.0000750	0.0000050	8108439
Total Strontium (Sr)	mg/L	0.411	2.81	0.317	0.226	0.000050	8108439
Total Thallium (Tl)	mg/L	0.0000350	0.0000340	0.000158	0.0000090	0.0000020	8108439
Total Tin (Sn)	mg/L	0.00052	<0.00020	0.00080	0.00152	0.00020	8108439
Total Titanium (Ti)	mg/L	0.198	0.214	0.297	0.0121	0.0050	8108439
Total Uranium (U)	mg/L	0.00301	0.000682	0.00880	0.0126	0.0000050	8108439
Total Vanadium (V)	mg/L	0.0305	0.0127	0.0531	<0.00050	0.00050	8108439
Total Zinc (Zn)	mg/L	0.0231	0.0335	0.251	0.0321	0.0010	8108439
Total Zirconium (Zr)	mg/L	0.00223	0.00278	0.00601	0.00043	0.00010	8108439
Total Calcium (Ca)	mg/L	97.3	699	103	68.4	0.25	8105887
RDL = Reportable Detection Limit							

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		NP1435	NP1436	NP1437	NP1438		
Sampling Date		2015/11/03 16:30	2015/11/04 15:00	2015/11/03 10:45	2015/11/04 20:00		
COC Number		08413393	08413393	08413393	08413393		
	UNITS	MW15-08D	MW15-10D	BNH95G-33D	BH95-129	RDL	QC Batch
Total Magnesium (Mg)	mg/L	28.6	90.7	19.0	15.4	0.25	8105887
Total Potassium (K)	mg/L	4.99	10.9	3.49	2.68	0.25	8105887
Total Sodium (Na)	mg/L	10.7	24.2	1.14	3.43	0.25	8105887
Total Sulphur (S)	mg/L	17	<15	25	15	15	8105887
RDL = Reportable Detection Limit							

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	5.0°C
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Sample NP1435-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NP1436-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NP1437-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample NP1438-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

**Results relate only to the items tested.**

Maxxam Job #: B599724  
Report Date: 2015/11/13

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8106063	Turbidity	2015/11/07			98	80 - 120	<0.10	NTU	NC	20
8107363	Acidity (pH 4.5)	2015/11/09					<0.50	mg/L	NC	20
8107363	Acidity (pH 8.3)	2015/11/09			96	80 - 120	<0.50	mg/L	0.81	20
8107366	Acidity (pH 4.5)	2015/11/09					<0.50	mg/L	NC	20
8107366	Acidity (pH 8.3)	2015/11/09			97	80 - 120	<0.50	mg/L	8.2	20
8107594	Dissolved Chloride (Cl)	2015/11/09	NC	80 - 120	97	80 - 120	<0.50	mg/L	0.24	20
8107596	Dissolved Sulphate (SO4)	2015/11/09			93	80 - 120	<0.50	mg/L		
8107598	Dissolved Chloride (Cl)	2015/11/09	93	80 - 120	107	80 - 120	0.52, RDL=0.50	mg/L	NC	20
8107604	Dissolved Sulphate (SO4)	2015/11/09			95	80 - 120	<0.50	mg/L		
8107607	Orthophosphate (P)	2015/11/09	103	80 - 120	102	80 - 120	<0.0010	mg/L	NC	20
8107611	Dissolved Phosphorus (P)	2015/11/09	91	80 - 120	92	80 - 120	<0.0020	mg/L	NC	20
8107613	Total Phosphorus (P)	2015/11/09	NC	80 - 120	92	80 - 120	<0.0020	mg/L	3.1	20
8107635	Turbidity	2015/11/09			101	80 - 120	<0.10	NTU	5.3	20
8108066	Dissolved Aluminum (Al)	2015/11/10	100	80 - 120	102	80 - 120	<0.00050	mg/L		
8108066	Dissolved Antimony (Sb)	2015/11/10	98	80 - 120	99	80 - 120	<0.000020	mg/L		
8108066	Dissolved Arsenic (As)	2015/11/10	93	80 - 120	98	80 - 120	<0.000020	mg/L		
8108066	Dissolved Barium (Ba)	2015/11/10	104	80 - 120	103	80 - 120	<0.000020	mg/L		
8108066	Dissolved Beryllium (Be)	2015/11/10	92	80 - 120	96	80 - 120	<0.000010	mg/L		
8108066	Dissolved Bismuth (Bi)	2015/11/10	94	80 - 120	99	80 - 120	<0.0000050	mg/L		
8108066	Dissolved Boron (B)	2015/11/10					<0.010	mg/L		
8108066	Dissolved Cadmium (Cd)	2015/11/10	92	80 - 120	96	80 - 120	<0.0000050	mg/L		
8108066	Dissolved Chromium (Cr)	2015/11/10	95	80 - 120	100	80 - 120	<0.00010	mg/L		
8108066	Dissolved Cobalt (Co)	2015/11/10	96	80 - 120	101	80 - 120	<0.0000050	mg/L		
8108066	Dissolved Copper (Cu)	2015/11/10	97	80 - 120	102	80 - 120	<0.000050	mg/L	3.6	20
8108066	Dissolved Iron (Fe)	2015/11/10	97	80 - 120	102	80 - 120	<0.0010	mg/L		
8108066	Dissolved Lead (Pb)	2015/11/10	97	80 - 120	99	80 - 120	<0.0000050	mg/L		
8108066	Dissolved Lithium (Li)	2015/11/10	96	80 - 120	96	80 - 120	<0.00050	mg/L		
8108066	Dissolved Manganese (Mn)	2015/11/10	96	80 - 120	99	80 - 120	<0.000050	mg/L		
8108066	Dissolved Molybdenum (Mo)	2015/11/10	94	80 - 120	95	80 - 120	<0.000050	mg/L		
8108066	Dissolved Nickel (Ni)	2015/11/10	95	80 - 120	99	80 - 120	<0.000020	mg/L		
8108066	Dissolved Phosphorus (P)	2015/11/10					<0.0020	mg/L	NC	20

Maxxam Job #: B599724  
Report Date: 2015/11/13

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8108066	Dissolved Selenium (Se)	2015/11/10	90	80 - 120	95	80 - 120	<0.000040	mg/L		
8108066	Dissolved Silicon (Si)	2015/11/10					<0.050	mg/L		
8108066	Dissolved Silver (Ag)	2015/11/10	96	80 - 120	93	80 - 120	<0.0000050	mg/L		
8108066	Dissolved Strontium (Sr)	2015/11/10	95	80 - 120	95	80 - 120	<0.000050	mg/L		
8108066	Dissolved Thallium (Tl)	2015/11/10	95	80 - 120	96	80 - 120	<0.0000020	mg/L		
8108066	Dissolved Tin (Sn)	2015/11/10	92	80 - 120	94	80 - 120	<0.00020	mg/L		
8108066	Dissolved Titanium (Ti)	2015/11/10	88	80 - 120	96	80 - 120	<0.00050	mg/L		
8108066	Dissolved Uranium (U)	2015/11/10	102	80 - 120	104	80 - 120	<0.0000020	mg/L		
8108066	Dissolved Vanadium (V)	2015/11/10	94	80 - 120	97	80 - 120	<0.00020	mg/L		
8108066	Dissolved Zinc (Zn)	2015/11/10	97	80 - 120	105	80 - 120	<0.00010	mg/L	NC	20
8108066	Dissolved Zirconium (Zr)	2015/11/10					<0.00010	mg/L		
8108283	Alkalinity (PP as CaCO3)	2015/11/09					<0.50	mg/L	NC	20
8108283	Alkalinity (Total as CaCO3)	2015/11/09	98	80 - 120	98	80 - 120	0.61, RDL=0.50	mg/L	NC	20
8108283	Bicarbonate (HCO3)	2015/11/09					0.74, RDL=0.50	mg/L	NC	20
8108283	Carbonate (CO3)	2015/11/09					<0.50	mg/L	NC	20
8108283	Hydroxide (OH)	2015/11/09					<0.50	mg/L	NC	20
8108286	Conductivity	2015/11/09			101	80 - 120	<1.0	uS/cm		
8108287	pH	2015/11/09			102	97 - 103				
8108289	Total Suspended Solids	2015/11/10			102	80 - 120	<1.0	mg/L		
8108292	Total Suspended Solids	2015/11/10			104	80 - 120	<1.0	mg/L		
8108439	Total Aluminum (Al)	2015/11/10	NC	80 - 120	103	80 - 120	<0.0030	mg/L	1.9	20
8108439	Total Antimony (Sb)	2015/11/10	95	80 - 120	99	80 - 120	<0.000050	mg/L	NC	20
8108439	Total Arsenic (As)	2015/11/10	NC	80 - 120	96	80 - 120	<0.000020	mg/L	0.94	20
8108439	Total Barium (Ba)	2015/11/10	NC	80 - 120	105	80 - 120	<0.00010	mg/L	4.9	20
8108439	Total Beryllium (Be)	2015/11/10	99	80 - 120	94	80 - 120	<0.000010	mg/L	0.43	20
8108439	Total Bismuth (Bi)	2015/11/10	106	80 - 120	99	80 - 120	<0.000020	mg/L	1.9	20
8108439	Total Boron (B)	2015/11/10					<0.050	mg/L	NC	20
8108439	Total Cadmium (Cd)	2015/11/10	97	80 - 120	96	80 - 120	<0.0000050	mg/L	6.4	20
8108439	Total Chromium (Cr)	2015/11/10	NC	80 - 120	98	80 - 120	<0.00050	mg/L	0.65	20
8108439	Total Cobalt (Co)	2015/11/10	NC	80 - 120	99	80 - 120	<0.000010	mg/L	0.36	20
8108439	Total Copper (Cu)	2015/11/10	NC	80 - 120	101	80 - 120	<0.00020	mg/L	0.64	20

Maxxam Job #: B599724  
Report Date: 2015/11/13

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8108439	Total Iron (Fe)	2015/11/10	NC	80 - 120	102	80 - 120	<0.0050	mg/L	0.53	20
8108439	Total Lead (Pb)	2015/11/10	NC	80 - 120	100	80 - 120	<0.000050	mg/L	1.9	20
8108439	Total Lithium (Li)	2015/11/10	NC	80 - 120	90	80 - 120	<0.00050	mg/L	0.56	20
8108439	Total Manganese (Mn)	2015/11/10	NC	80 - 120	98	80 - 120	<0.00010	mg/L	0.53	20
8108439	Total Molybdenum (Mo)	2015/11/10	NC	80 - 120	94	80 - 120	<0.000050	mg/L	0.74	20
8108439	Total Nickel (Ni)	2015/11/10	NC	80 - 120	100	80 - 120	<0.00010	mg/L	0.81	20
8108439	Total Phosphorus (P)	2015/11/10					<0.010	mg/L	0.52	20
8108439	Total Selenium (Se)	2015/11/10	84	80 - 120	93	80 - 120	<0.000040	mg/L	NC	20
8108439	Total Silicon (Si)	2015/11/10					<0.10	mg/L	7.3	20
8108439	Total Silver (Ag)	2015/11/10	117	80 - 120	98	80 - 120	<0.0000050	mg/L	13	20
8108439	Total Strontium (Sr)	2015/11/10	NC	80 - 120	96	80 - 120	<0.000050	mg/L	0.94	20
8108439	Total Thallium (Tl)	2015/11/10	105	80 - 120	98	80 - 120	<0.0000020	mg/L	4.3	20
8108439	Total Tin (Sn)	2015/11/10	100	80 - 120	98	80 - 120	<0.00020	mg/L	NC	20
8108439	Total Titanium (Ti)	2015/11/10	NC	80 - 120	94	80 - 120	<0.0050	mg/L	9.0	20
8108439	Total Uranium (U)	2015/11/10	118	80 - 120	105	80 - 120	<0.0000050	mg/L	1.1	20
8108439	Total Vanadium (V)	2015/11/10	NC	80 - 120	97	80 - 120	<0.00050	mg/L	1.3	20
8108439	Total Zinc (Zn)	2015/11/10	NC	80 - 120	108	80 - 120	<0.0010	mg/L	0.35	20
8108439	Total Zirconium (Zr)	2015/11/10					<0.00010	mg/L	11	20
8108879	Total Organic Carbon (C)	2015/11/10	NC	80 - 120	108	80 - 120	<0.50	mg/L	7.9	20
8108883	Nitrate plus Nitrite (N)	2015/11/10	105	80 - 120	103	80 - 120	<0.0020	mg/L	NC	25
8108887	Nitrite (N)	2015/11/10	101	80 - 120	100	80 - 120	<0.0020	mg/L	NC	25
8108976	Total Ammonia (N)	2015/11/10			96	80 - 120	<0.0050	mg/L		
8108983	Fluoride (F)	2015/11/10			102	80 - 120	0.011, RDL=0.010	mg/L		
8109005	Dissolved Mercury (Hg)	2015/11/11	99	80 - 120	106	80 - 120	<0.0000020	mg/L	NC	20
8109038	Dissolved Chloride (Cl)	2015/11/10			104	80 - 120	<0.50	mg/L		
8109205	Total Dissolved Solids	2015/11/13	103	80 - 120	94	80 - 120	<1.0	mg/L	2.4	20
8110045	Total Mercury (Hg)	2015/11/11	100	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20

Maxxam Job #: B599724  
Report Date: 2015/11/13

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8110996	Total Nitrogen (N)	2015/11/12	87	80 - 120	94	80 - 120	<0.020	mg/L	7.9	20

Duplicate: Paired analysis of a separate portion of the same sample. Used to evaluate the variance in the measurement.

Matrix Spike: A sample to which a known amount of the analyte of interest has been added. Used to evaluate sample matrix interference.

Spiked Blank: A blank matrix sample to which a known amount of the analyte, usually from a second source, has been added. Used to evaluate method accuracy.

Method Blank: A blank matrix containing all reagents used in the analytical procedure. Used to identify laboratory contamination.

NC (Matrix Spike): The recovery in the matrix spike was not calculated. The relative difference between the concentration in the parent sample and the spiked amount was too small to permit a reliable recovery calculation (matrix spike concentration was less than 2x that of the native sample concentration).

NC (Duplicate RPD): The duplicate RPD was not calculated. The concentration in the sample and/or duplicate was too low to permit a reliable RPD calculation (one or both samples < 5x RDL).

Maxxam Job #: B599724  
Report Date: 2015/11/13

TETRATECH EBA  
Client Project #: ENVMINO3071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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Name REDACTED Data Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.





Invoice Information		Report Information (if differs from invoice)				Project Information (where applicable)				Turnaround Time (TAT) Required			
Company Name: #11954 BMC Mineral (NO. 1) LTD.		Company Name: #31161 Tetra Tech EBA				Quotation #: B50743				<input checked="" type="checkbox"/> Regular TAT 5 days (Most analyses)			
Contact Name: ACCOUNTS PAYABLE		Contact Name: Name REDACTED				P.O. #/ AFE#:				PLEASE PROVIDE ADVANCE NOTICE FOR RUSH PROJECTS			
Address: 530-1130 West Pender Street, Vancouver BC PC: V6E 4A4		Address: 61 Wasson Place Whitehorse, YT PC: V1A 0H7				Project #: ENVMIN03071-01				Rush TAT (Surcharges will be applied)			
Phone: -Email REDACTED		Phone: 867-668-6225				Site Location: Kudz Ze Kayah				<input type="checkbox"/> Same Day <input type="checkbox"/> 2 Days			
Email: -Email REDACTED		Email: Email REDACTED				Site #: Name REDACTED				<input type="checkbox"/> 1 Day <input type="checkbox"/> 3 Days			
Date Required:		Sampled By:											
Regulatory Criteria		Special Instructions				Analysis Requested				Rush Confirmation #:			
<input type="checkbox"/> BC CSR Soil <input type="checkbox"/> BC CSR Water <input checked="" type="checkbox"/> CCME (Specify) <u>AW</u> <input checked="" type="checkbox"/> Other (Specify) <u>MMER</u> <input type="checkbox"/> Drinking Water <input type="checkbox"/> BC Water Quality		<input type="checkbox"/> Return Cooler <input type="checkbox"/> Ship Sample Bottles (Please Specify)				ROUTINE (incl. TDS) MAJOR IONS NUTRIENTS (INCLUDING NO3, NO2, TOTAL P) Low Level Dissolved Metals with CV Hg Low Level Total Metals with CV Hg Phosphorus (L Tot, dissolved) SE/FP				LABORATORY USE ONLY CUSTODY SEAL Y / N / N/A Present Intact N/A N/A 6, 5, 4 COOLING MEDIA PRESENT <u>N</u> / <u>N</u> / <u>N</u> COMMENTS <u>N2</u>			
SAMPLES MUST BE KEPT COOL (< 10 °C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM													
Sample Identification	Lab Identification	Date Sampled (YYYY/MM/DD)	Time Sampled (HH:MM)	Matrix	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (INCLUDING NO3, NO2, TOTAL P)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus (L Tot, dissolved) SE/FP	# OF CONTAINERS SUBMITTED	HOLD - DO NOT ANALYZE	COMMENTS
1 MWIS-10D	NP1435	NOV 3	4:30pm	GW	x	x	x	x	x	x	13		Dissolved metals and phosphorus were field filtered and preserved.
2 MWIS-10D	ND1436	NOV 4	3pm	GW	x	x	x	x	x	x	13		Total metals were field preserved.
3 BN95G-33D	NP1437	NOV 3	10:45am	GW	α	α	α	α	α	α	13		
4 BN95-129	NP1438	NOV 4	8pm	GW	α	α	α	α	α	α	13		
5													
6													
7													
8													
9													
10													
11													
RELINQUISHED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	RECEIVED BY: (Signature/Print)		DATE: (YYYY/MM/DD)	TIME: (HH:MM)	MAXXAM JOB #					
Name REDACTED		NOV 5 2015	8:30AM	Name REDACTED		2015/11/06	13:35	B599724					



Your Project #: ENVMIN03071-01

Site Location: KUDZ ZE KAYAH

**Attention:** <sup>Name REDACTED</sup>

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

Your C.O.C. #: 488720-01-01, 488720-02-01, 488720-03-01

**Report Date: 2016/03/31**

Report #: R2150866

Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B621096**

**Received: 2016/03/21, 11:40**

Sample Matrix: Water  
# Samples Received: 18

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Acidity pH 4.5 & pH 8.3 (as CaCO <sub>3</sub> )	18	N/A	2016/03/23	BBY6SOP-00037	SM 22 2310 B m
Alkalinity - Water	18	2016/03/23	2016/03/23	BBY6SOP-00026	SM 22 2320 B m
Chloride by Automated Colourimetry	17	N/A	2016/03/23	BBY6SOP-00011	SM 22 4500-Cl- G m
Chloride by Automated Colourimetry	1	N/A	2016/03/24	BBY6SOP-00011	SM 22 4500-Cl- G m
Carbon (DOC) - field filtered/preserved (1)	16	N/A	2016/03/23	BBY6SOP-00003	SM 22 5310 C m
Carbon (DOC) - unfiltered/unpreserved (1)	2	N/A	2016/03/23	BBY6SOP-00003	SM 22 5310 C m
Conductance - water	18	N/A	2016/03/23	BBY6SOP-00026	SM 22 2510 B m
Fluoride	17	N/A	2016/03/22	BBY6SOP-00048	SM 22 4500-F C m
Fluoride	1	N/A	2016/03/23	BBY6SOP-00048	SM 22 4500-F C m
Hardness Total (calculated as CaCO <sub>3</sub> )	18	N/A	2016/03/29	BBY7SOP-00002	EPA 6020a R1 m
Hardness (calculated as CaCO <sub>3</sub> )	18	N/A	2016/03/29	BBY7SOP-00002	EPA 6020a R1 m
Mercury (Dissolved-LowLevel) by CVAf	18	N/A	2016/03/28	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Mercury (Total-LowLevel) by CVAf	18	2016/03/28	2016/03/28	BBY7SOP-00015	BCMOE BCLM Oct2013 m
Ion Balance	18	N/A	2016/03/29	BBY WI-00033	SM 22 1030E
Na, K, Ca, Mg, S by CRC ICPMS (diss.)	18	N/A	2016/03/29	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	5	N/A	2016/03/23	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	8	N/A	2016/03/24	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (dissolved)	5	N/A	2016/03/25	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	15	2016/03/22	2016/03/25	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2016/03/22	2016/03/28	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Digested LL (total)	1	2016/03/24	2016/03/28	BBY7SOP-00002	EPA 6020A R1 m
Na, K, Ca, Mg, S by CRC ICPMS (total)	18	N/A	2016/03/29	BBY7SOP-00002	EPA 6020A R1 m
Elements by ICPMS Low Level (total)	1	N/A	2016/03/24	BBY7SOP-00002	EPA 6020A R1 m
Nitrogen (Total)	17	2016/03/23	2016/03/24	BBY6SOP-00016	SM 22 4500-N C m
Nitrogen (Total)	1	2016/03/30	2016/03/31	BBY6SOP-00016	SM 22 4500-N C m
Ammonia-N (Unpreserved)	1	N/A	2016/03/23	BBY6SOP-00009	SM 22 4500-NH3- G m
Ammonia-N (Preserved)	16	N/A	2016/03/23	BBY6SOP-00009	SM 22 4500-NH3- G m
Ammonia-N (Preserved)	1	N/A	2016/03/30	BBY6SOP-00009	SM 22 4500-NH3- G m

Your Project #: ENVMIN03071-01

Site Location: KUDZ ZE KAYAH

**Attention:** <sup>Name REDACTED</sup>

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

Your C.O.C. #: 488720-01-01, 488720-02-01, 488720-03-01

**Report Date: 2016/03/31**

Report #: R2150866

Version: 1 - Final

### CERTIFICATE OF ANALYSIS

**MAXXAM JOB #: B621096**

**Received: 2016/03/21, 11:40**

Sample Matrix: Water  
# Samples Received: 18

Analyses	Quantity	Date	Date	Laboratory Method	Analytical Method
		Extracted	Analyzed		
Nitrate+Nitrite (N) (low level)	17	N/A	2016/03/22	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrate+Nitrite (N) (low level)	1	N/A	2016/03/23	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	17	N/A	2016/03/22	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrite (N) (low level)	1	N/A	2016/03/23	BBY6SOP-00010	SM 22 4500-NO3- I m
Nitrogen - Nitrate (as N)	18	N/A	2016/03/29	BBY6SOP-00010	SM 22 4500-NO3- I m
Filter and HNO3 Preserve for Metals	1	N/A	2016/03/24	BBY7 WI-00004	BCMOE Reqs 08/14
Filter and HNO3 Preserve for Metals	17	N/A	2016/03/29	BBY7 WI-00004	BCMOE Reqs 08/14
pH Water (2)	18	N/A	2016/03/23	BBY6SOP-00026	SM 22 4500-H+ B m
Orthophosphate by Konelab (low level)	16	N/A	2016/03/22	BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2016/03/24	BBY6SOP-00013	SM 22 4500-P E m
Orthophosphate by Konelab (low level)	1	N/A	2016/03/30	BBY6SOP-00013	SM 22 4500-P E m
Sulphate by Automated Colourimetry	16	N/A	2016/03/23	BBY6SOP-00017	SM 22 4500-SO42- E m
Sulphate by Automated Colourimetry	2	N/A	2016/03/24	BBY6SOP-00017	SM 22 4500-SO42- E m
Total Dissolved Solids - Low Level	18	N/A	2016/03/24	BBY6SOP-00033	SM 22 2540 C m
TKN (Calc. TN, N/N) total	18	N/A	2016/03/29	BBY WI-00033	Calculation
Total Phosphorus	17	N/A	2016/03/24	BBY6SOP-00013	SM 22 4500-P E m
Total Phosphorus - unpreserved	1	N/A	2016/03/29	BBY6SOP-00013	SM 22 4500-P E m
Total Suspended Solids-Low Level	4	2016/03/22	2016/03/23	BBY6SOP-00034	SM 22 2540 D
Total Suspended Solids-Low Level	14	2016/03/23	2016/03/24	BBY6SOP-00034	SM 22 2540 D

Reference Method suffix "m" indicates test methods incorporate validated modifications from specific reference methods to improve performance.

\* RPDs calculated using raw data. The rounding of final results may result in the apparent difference.

(1) DOC present in the sample should be considered as non-purgeable DOC.

(2) The BC-MOE and APHA Standard Method require pH to be analysed within 15 minutes of sampling and therefore field analysis is required for compliance. All Laboratory pH analyses in this report are reported past the BC-MOE/APHA Standard Method holding time.

Your Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH

**Attention:** <sup>Name REDACTED</sup>

TETRATECH EBA  
61 WASSON PLACE  
WHITEHORSE, YT  
Canada Y1A 0H7

Your C.O.C. #: 488720-01-01, 488720-02-01, 488720-03-01

**Report Date: 2016/03/31**  
Report #: R2150866  
Version: 1 - Final

**CERTIFICATE OF ANALYSIS**

**MAXXAM JOB #: B621096**  
**Received: 2016/03/21, 11:40**

Encryption Key

Please direct all questions regarding this Certificate of Analysis to your Project Manager.

Name REDACTED, Burnaby Project Manager

Email: Email REDACTED

Phone# Phone REDACTED

=====

Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		OH9401			OH9402	OH9403	OH9403		
<b>Sampling Date</b>		2016/03/14 12:15			2016/03/15 09:40	2016/03/15 14:55	2016/03/15 14:55		
<b>COC Number</b>		488720-01-01			488720-01-01	488720-01-01	488720-01-01		
	<b>UNITS</b>	<b>BH95G-22</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-32</b>	<b>BH95G-33D</b>	<b>BH95G-33D Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>									
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD	FIELD		N/A	ONSITE
Ion Balance	N/A	0.95	0.010	8222369	0.31	0.98		0.010	8222369
Nitrate (N)	mg/L	0.156	0.0020	8221913	0.0515	0.205		0.0020	8221913
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.047	0.010	8223359	0.032	0.045		0.010	8223352
Dissolved Organic Carbon (C)	mg/L	3.06	0.50	8223654	1.90	3.08		0.50	8223654
Acidity (pH 4.5)	mg/L	<0.50	0.50	8224219	<0.50	<0.50	<0.50	0.50	8224219
Alkalinity (Total as CaCO3)	mg/L	141	0.50	8224181	589	176		0.50	8224181
Acidity (pH 8.3)	mg/L	1.01	0.50	8224219	1.93	<0.50	<0.50	0.50	8224219
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8224181	<0.50	<0.50		0.50	8224181
Bicarbonate (HCO3)	mg/L	172	0.50	8224181	718	215		0.50	8224181
Carbonate (CO3)	mg/L	<0.50	0.50	8224181	<0.50	<0.50		0.50	8224181
Hydroxide (OH)	mg/L	<0.50	0.50	8224181	<0.50	<0.50		0.50	8224181
<b>Anions</b>									
Orthophosphate (P)	mg/L	0.017 (1)	0.0010	8223471	0.019 (1)	0.011 (2)	0.011	0.0010	8223471
Dissolved Sulphate (SO4)	mg/L	45.1	0.50	8224488	34.3	62.3		0.50	8224488
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8224484	<0.50	<0.50		0.50	8224484
<b>Nutrients</b>									
Total Ammonia (N)	mg/L	0.049	0.0050	8224477	0.058	0.044		0.0050	8224477
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.099	0.020	8221914	0.109	0.075		0.020	8221914
Nitrate plus Nitrite (N)	mg/L	0.163 (1)	0.0020	8224133	0.0573 (1)	0.209 (1)		0.0020	8224133
Nitrite (N)	mg/L	0.0071 (1)	0.0020	8224136	0.0058 (1)	0.0031 (1)		0.0020	8224136
Total Nitrogen (N)	mg/L	0.261	0.020	8224630	0.166	0.284		0.020	8224630
Total Phosphorus (P)	mg/L	0.305	0.0020	8226034	0.860	2.67		0.020	8226034
<b>Physical Properties</b>									
Conductivity	uS/cm	354	1.0	8224184	402	447		1.0	8224184
pH	pH	7.87		8224185	7.28	8.02			8224185

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 N/A = Not Applicable  
 (1) Sample arrived to laboratory past recommended hold time.  
 (2) Matrix spike exceeds acceptance limits due to matrix interference. Re-analysis yields similar results. Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		OH9401			OH9402	OH9403	OH9403		
<b>Sampling Date</b>		2016/03/14 12:15			2016/03/15 09:40	2016/03/15 14:55	2016/03/15 14:55		
<b>COC Number</b>		488720-01-01			488720-01-01	488720-01-01	488720-01-01		
	<b>UNITS</b>	<b>BH95G-22</b>	<b>RDL</b>	<b>QC Batch</b>	<b>BH95G-32</b>	<b>BH95G-33D</b>	<b>BH95G-33D Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>									
Total Suspended Solids	mg/L	1030 (1)	20	8223850	574 (2)	954 (2)		20	8222836
Total Dissolved Solids	mg/L	216 (3)	1.0	8222875	274	300		1.0	8222875

RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) RDL raised due to high concentration of solids in the sample. Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.  
(2) RDL raised due to high concentration of solids in the sample.  
(3) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		OH9404			OH9405			OH9406		
<b>Sampling Date</b>		2016/03/14 16:15			2016/03/15 14:10			2016/03/13 13:15		
<b>COC Number</b>		488720-01-01			488720-01-01			488720-01-01		
	<b>UNITS</b>	<b>BH95-131</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-01</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03S</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	0.98	0.010	8222369	1.0	0.010	8222369	1.1	0.010	8222369
Nitrate (N)	mg/L	<0.0020	0.0020	8221913	0.231	0.0020	8221913	0.0580	0.0020	8221913

**Misc. Inorganics**

Fluoride (F)	mg/L	0.075	0.010	8223352	0.094	0.010	8223352	0.099	0.010	8223359
Dissolved Organic Carbon (C)	mg/L	2.12	0.50	8223654	1.45	0.50	8223654	3.07	0.50	8223654
Acidity (pH 4.5)	mg/L	<0.50	0.50	8224219	<0.50	0.50	8224219	<0.50	0.50	8224219
Alkalinity (Total as CaCO3)	mg/L	431	0.50	8224181	156	0.50	8224181	125	0.50	8224181
Acidity (pH 8.3)	mg/L	5.36	0.50	8224219	<0.50	0.50	8224219	<0.50	0.50	8224219
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8224181	<0.50	0.50	8224181	<0.50	0.50	8224181
Bicarbonate (HCO3)	mg/L	525	0.50	8224181	191	0.50	8224181	152	0.50	8224181
Carbonate (CO3)	mg/L	<0.50	0.50	8224181	<0.50	0.50	8224181	<0.50	0.50	8224181
Hydroxide (OH)	mg/L	<0.50	0.50	8224181	<0.50	0.50	8224181	<0.50	0.50	8224181

**Anions**

Orthophosphate (P)	mg/L	0.0070 (1)	0.0010	8223471	0.0083 (1)	0.0010	8223471	0.0086 (1)	0.0010	8223471
Dissolved Sulphate (SO4)	mg/L	215 (2)	5.0	8224488	138	0.50	8224488	14.6	0.50	8224488
Dissolved Chloride (Cl)	mg/L	0.76	0.50	8224484	<0.50	0.50	8224484	0.59	0.50	8224484

**Nutrients**

Total Ammonia (N)	mg/L	0.046	0.0050	8224477	0.044	0.0050	8224477	0.048	0.0050	8224478
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.099	0.020	8221914	0.083	0.020	8221914	0.316	0.020	8221914
Nitrate plus Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8224133	0.231 (1)	0.0020	8224133	0.0673 (1)	0.0020	8224133
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8224136	<0.0020 (1)	0.0020	8224136	0.0093 (1)	0.0020	8224136
Total Nitrogen (N)	mg/L	0.099	0.020	8224630	0.313	0.020	8224630	0.384	0.020	8224630
Total Phosphorus (P)	mg/L	0.0299	0.0020	8226034	0.219	0.0020	8226034	3.71	0.020	8226034

**Physical Properties**

Conductivity	uS/cm	1100	1.0	8224184	551	1.0	8224184	265	1.0	8224184
pH	pH	8.04		8224185	8.07		8224185	8.03		8224185

RDL = Reportable Detection Limit  
N/A = Not Applicable  
(1) Sample arrived to laboratory past recommended hold time.  
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		OH9404			OH9405			OH9406		
<b>Sampling Date</b>		2016/03/14 16:15			2016/03/15 14:10			2016/03/13 13:15		
<b>COC Number</b>		488720-01-01			488720-01-01			488720-01-01		
	<b>UNITS</b>	<b>BH95-131</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-01</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-03S</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Physical Properties</b>										
Total Suspended Solids	mg/L	36.3 (1)	2.0	8223850	179 (2)	5.0	8222836	2340 (3)	20	8223850
Total Dissolved Solids	mg/L	728 (4)	1.0	8222875	370	1.0	8222875	168 (5)	1.0	8222875

RDL = Reportable Detection Limit

- (1) RDL raised due to sample matrix interference. Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.
- (2) RDL raised due to high concentration of solids in the sample.
- (3) RDL raised due to high concentration of solids in the sample. Sample arrived to laboratory past recommended hold time.
- (4) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.
- (5) Sample arrived to laboratory past recommended hold time.



Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		OH9407	OH9407			OH9409	OH9409		
<b>Sampling Date</b>		2016/03/13 13:50	2016/03/13 13:50			2016/03/13 16:30	2016/03/13 16:30		
<b>COC Number</b>		488720-01-01	488720-01-01			488720-02-01	488720-02-01		
	<b>UNITS</b>	<b>MW15-03D</b>	<b>MW15-03D Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>MW15-04S</b>	<b>MW15-04S Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Calculated Parameters</b>									
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	0.98		0.010	8222369	0.98		0.010	8222369
Nitrate (N)	mg/L	<0.0020		0.0020	8221913	0.202		0.0020	8221913
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	0.150		0.010	8223352	0.078	0.076	0.010	8223352
Dissolved Organic Carbon (C)	mg/L	1.96		0.50	8223654	1.50	1.39	0.50	8223654
Acidity (pH 4.5)	mg/L	<0.50		0.50	8224219	<0.50		0.50	8224219
Alkalinity (Total as CaCO3)	mg/L	194		0.50	8224181	117		0.50	8224181
Acidity (pH 8.3)	mg/L	<0.50		0.50	8224219	<0.50		0.50	8224219
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8224181	<0.50		0.50	8224181
Bicarbonate (HCO3)	mg/L	237		0.50	8224181	143		0.50	8224181
Carbonate (CO3)	mg/L	<0.50		0.50	8224181	<0.50		0.50	8224181
Hydroxide (OH)	mg/L	<0.50		0.50	8224181	<0.50		0.50	8224181
<b>Anions</b>									
Orthophosphate (P)	mg/L	0.0049 (1)		0.0010	8223471	0.013 (1)		0.0010	8223471
Dissolved Sulphate (SO4)	mg/L	21.3		0.50	8224488	10.0	9.90	0.50	8224488
Dissolved Chloride (Cl)	mg/L	<0.50		0.50	8224484	<0.50	<0.50	0.50	8224484
<b>Nutrients</b>									
Total Ammonia (N)	mg/L	0.088	0.090	0.0050	8224478	0.090		0.0050	8224477
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.150		0.020	8221914	0.275		0.020	8221914
Nitrate plus Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8224133	0.209 (1)	0.209	0.0020	8224133
Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8224136	0.0072 (1)	0.0045	0.0020	8224136
Total Nitrogen (N)	mg/L	0.150		0.020	8224630	0.484		0.020	8224630
Total Phosphorus (P)	mg/L	0.0123		0.0020	8226034	2.66		0.020	8226034
<b>Physical Properties</b>									
Conductivity	uS/cm	394		1.0	8224184	239		1.0	8224184
pH	pH	8.02			8224185	7.99			8224185
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	61.7 (1)		1.0	8223850	3500 (2)		20	8223850
Total Dissolved Solids	mg/L	230 (1)		1.0	8222875	160 (1)		1.0	8222875

RDL = Reportable Detection Limit  
 Lab-Dup = Laboratory Initiated Duplicate  
 (1) Sample arrived to laboratory past recommended hold time.  
 (2) RDL raised due to high concentration of solids in the sample. Sample arrived to laboratory past recommended hold time.

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		OH9410			OH9411			OH9412		
Sampling Date		2016/03/13 15:50			2016/03/13 18:40			2016/03/15 19:00		
COC Number		488720-02-01			488720-02-01			488720-02-01		
	UNITS	MW15-04D	RDL	QC Batch	MW15-05D	RDL	QC Batch	MW15-07S	RDL	QC Batch
<b>Calculated Parameters</b>										
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	0.96	0.010	8222369	0.93	0.010	8222369	0.96	0.010	8222369
Nitrate (N)	mg/L	0.0061	0.0020	8221913	0.217	0.0020	8221913	<0.0020	0.0020	8221913
<b>Misc. Inorganics</b>										
Fluoride (F)	mg/L	0.200	0.010	8223359	0.110	0.010	8223352	0.280	0.010	8223352
Dissolved Organic Carbon (C)	mg/L	<0.50 (1)	0.50	8223987	3.13	0.50	8223654	2.45	0.50	8223654
Acidity (pH 4.5)	mg/L	<0.50	0.50	8224236	<0.50	0.50	8224219	<0.50	0.50	8224219
Alkalinity (Total as CaCO3)	mg/L	137	0.50	8224199	185	0.50	8224181	177	0.50	8224181
Acidity (pH 8.3)	mg/L	<0.50	0.50	8224236	<0.50	0.50	8224219	<0.50	0.50	8224219
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8224199	<0.50	0.50	8224181	<0.50	0.50	8224181
Bicarbonate (HCO3)	mg/L	167	0.50	8224199	225	0.50	8224181	216	0.50	8224181
Carbonate (CO3)	mg/L	<0.50	0.50	8224199	<0.50	0.50	8224181	<0.50	0.50	8224181
Hydroxide (OH)	mg/L	<0.50	0.50	8224199	<0.50	0.50	8224181	<0.50	0.50	8224181
<b>Anions</b>										
Orthophosphate (P)	mg/L	0.0047	0.0010	8223471	0.0037 (1)	0.0010	8223471	0.014 (1)	0.0010	8223471
Dissolved Sulphate (SO4)	mg/L	18.8	0.50	8224503	29.2	0.50	8224488	32.5	0.50	8224488
Dissolved Chloride (Cl)	mg/L	<0.50	0.50	8224493	<0.50	0.50	8224484	<0.50	0.50	8224484
<b>Nutrients</b>										
Total Ammonia (N)	mg/L	0.048	0.0050	8224477	0.026	0.0050	8224477	0.066	0.0050	8224477
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.046	0.020	8221914	0.088	0.020	8221914	0.126	0.020	8221914
Nitrate plus Nitrite (N)	mg/L	0.0061 (1)	0.0020	8224133	0.219 (1)	0.0020	8224133	<0.0020 (1)	0.0020	8224133
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8224136	0.0020 (1)	0.0020	8224136	<0.0020 (1)	0.0020	8224136
Total Nitrogen (N)	mg/L	0.053	0.020	8224630	0.307	0.020	8224630	0.126	0.020	8224630
Total Phosphorus (P)	mg/L	0.162	0.0020	8226034	0.139	0.0020	8226034	1.97	0.020	8226034
<b>Physical Properties</b>										
Conductivity	uS/cm	292	1.0	8224198	384	1.0	8224184	389	1.0	8224184
pH	pH	8.05		8224192	7.55		8224185	8.01		8224185
<b>Physical Properties</b>										
Total Suspended Solids	mg/L	253 (2)	3.0	8223850	497 (2)	10	8223850	2940 (3)	20	8222836
Total Dissolved Solids	mg/L	182 (1)	1.0	8222875	222 (1)	1.0	8222875	226	1.0	8222875
RDL = Reportable Detection Limit										
N/A = Not Applicable										
(1) Sample arrived to laboratory past recommended hold time.										
(2) RDL raised due to high concentration of solids in the sample. Sample arrived to laboratory past recommended hold time.										
(3) RDL raised due to high concentration of solids in the sample.										

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		OH9413			OH9414			OH9414	
Sampling Date		2016/03/17 16:40			2016/03/13 13:50			2016/03/13 13:50	
COC Number		488720-02-01			488720-02-01			488720-02-01	
	UNITS	MW15-10D	RDL	QC Batch	DUP01	DUP01 Lab-Dup	RDL	QC Batch	
<b>Calculated Parameters</b>									
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE	FIELD		N/A	ONSITE	
Ion Balance	N/A	6.1	0.010	8222369	0.96		0.010	8222369	
Nitrate (N)	mg/L	0.0020	0.0020	8221913	<0.0020		0.0020	8221913	
<b>Misc. Inorganics</b>									
Fluoride (F)	mg/L	1.30	0.010	8223352	0.150		0.010	8223352	
Dissolved Organic Carbon (C)	mg/L	2.12	0.50	8223654	2.54		0.50	8223654	
Acidity (pH 4.5)	mg/L	<0.50	0.50	8224219	<0.50		0.50	8224219	
Alkalinity (Total as CaCO3)	mg/L	323	0.50	8224181	195		0.50	8224181	
Acidity (pH 8.3)	mg/L	352	0.50	8224219	<0.50		0.50	8224219	
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8224181	<0.50		0.50	8224181	
Bicarbonate (HCO3)	mg/L	394	0.50	8224181	238		0.50	8224181	
Carbonate (CO3)	mg/L	<0.50	0.50	8224181	<0.50		0.50	8224181	
Hydroxide (OH)	mg/L	<0.50	0.50	8224181	<0.50		0.50	8224181	
<b>Anions</b>									
Orthophosphate (P)	mg/L	0.0029 (1)	0.0010	8229427	0.0042 (1)		0.0010	8223471	
Dissolved Sulphate (SO4)	mg/L	5.19	0.50	8224488	21.3		0.50	8224488	
Dissolved Chloride (Cl)	mg/L	2.8	0.50	8224484	0.58		0.50	8224484	
<b>Nutrients</b>									
Total Ammonia (N)	mg/L	0.28	0.0050	8224477	0.11		0.0050	8229327	
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.274	0.020	8221914	0.138		0.020	8221914	
Nitrate plus Nitrite (N)	mg/L	0.0020 (1)	0.0020	8224133	<0.0020 (1)		0.0020	8224133	
Nitrite (N)	mg/L	<0.0020 (1)	0.0020	8224136	<0.0020 (1)		0.0020	8224136	
Total Nitrogen (N)	mg/L	0.276	0.020	8224630	0.138		0.020	8229370	
Total Phosphorus (P)	mg/L	0.252	0.0020	8226034	0.0164		0.0020	8226034	
<b>Physical Properties</b>									
Conductivity	uS/cm	2970	1.0	8224184	391		1.0	8224184	
pH	pH	5.00		8224185	8.19			8224185	
<b>Physical Properties</b>									
Total Suspended Solids	mg/L	428 (2)	7.0	8223850	15.2 (3)		2.0	8223850	
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time. (2) RDL raised due to high concentration of solids in the sample. (3) RDL raised due to sample matrix interference. Sample arrived to laboratory past recommended hold time.									

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		OH9413			OH9414		OH9414			
Sampling Date		2016/03/17 16:40			2016/03/13 13:50		2016/03/13 13:50			
COC Number		488720-02-01			488720-02-01		488720-02-01			
	UNITS	MW15-10D	RDL	QC Batch	DUP01	DUP01 Lab-Dup	RDL	QC Batch		
Total Dissolved Solids	mg/L	1960	1.0	8222875	246 (1)	232	1.0	8222875		
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate (1) Sample arrived to laboratory past recommended hold time.										

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		OH9415	OH9415			OH9417	OH9417		
<b>Sampling Date</b>		2016/03/14 16:15	2016/03/14 16:15						
<b>COC Number</b>		488720-02-01	488720-02-01			488720-03-01	488720-03-01		
	<b>UNITS</b>	<b>DUP02</b>	<b>DUP02 Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>	<b>TRIP BLANK</b>	<b>TRIP BLANK Lab-Dup</b>	<b>RDL</b>	<b>QC Batch</b>

**Calculated Parameters**

Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE	FIELD		N/A	ONSITE
Ion Balance	N/A	0.98		0.010	8222369	0.10		0.010	8222369
Nitrate (N)	mg/L	<0.0020		0.0020	8221913	<0.0020		0.0020	8221913

**Misc. Inorganics**

Fluoride (F)	mg/L	0.075		0.010	8223359	<0.010		0.010	8223359
Dissolved Organic Carbon (C)	mg/L	2.44		0.50	8223654	<0.50		0.50	8223987
Acidity (pH 4.5)	mg/L	<0.50		0.50	8224219	<0.50		0.50	8224219
Alkalinity (Total as CaCO3)	mg/L	441		0.50	8224181	0.83		0.50	8224181
Acidity (pH 8.3)	mg/L	4.55		0.50	8224219	<0.50		0.50	8224219
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8224181	<0.50		0.50	8224181
Bicarbonate (HCO3)	mg/L	538		0.50	8224181	1.01		0.50	8224181
Carbonate (CO3)	mg/L	<0.50		0.50	8224181	<0.50		0.50	8224181
Hydroxide (OH)	mg/L	<0.50		0.50	8224181	<0.50		0.50	8224181

**Anions**

Orthophosphate (P)	mg/L	0.0034 (1)		0.0010	8223471	0.0015		0.0010	8223471
Dissolved Sulphate (SO4)	mg/L	217 (2)		5.0	8224488	<0.50		0.50	8226530
Dissolved Chloride (Cl)	mg/L	0.87		0.50	8224484	<0.50		0.50	8224493

**Nutrients**

Total Ammonia (N)	mg/L	0.059		0.0050	8224478			0.0050	
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.097		0.020	8221914	<0.020		0.020	8221914
Total Ammonia (N)	mg/L					<0.0050	<0.0050	0.0050	8224479
Nitrate plus Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8224133	<0.0020		0.0020	8224133
Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8224136	<0.0020		0.0020	8224136
Total Nitrogen (N)	mg/L	0.097	0.089	0.020	8224630	<0.020		0.020	8224629
Total Phosphorus (P)	mg/L	0.0323		0.0020	8226034	<0.0020		0.0020	8228373

**Physical Properties**

Conductivity	uS/cm	1110		1.0	8224184	1.4		1.0	8224184
pH	pH	8.03			8224185	5.77			8224185

**Physical Properties**

Total Suspended Solids	mg/L	36.0 (3)		2.0	8223850	<1.0		1.0	8223850
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RDL = Reportable Detection Limit  
Lab-Dup = Laboratory Initiated Duplicate  
(1) Sample arrived to laboratory past recommended hold time.  
(2) Detection limits raised due to dilution to bring analyte within the calibrated range.  
(3) RDL raised due to sample matrix interference. Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		OH9415	OH9415			OH9417	OH9417		
Sampling Date		2016/03/14 16:15	2016/03/14 16:15						
COC Number		488720-02-01	488720-02-01			488720-03-01	488720-03-01		
	UNITS	DUP02	DUP02 Lab-Dup	RDL	QC Batch	TRIP BLANK	TRIP BLANK Lab-Dup	RDL	QC Batch
Total Dissolved Solids	mg/L	790 (1)		1.0	8222875	<1.0		1.0	8223390

RDL = Reportable Detection Limit

Lab-Dup = Laboratory Initiated Duplicate

(1) Sample analysed past hold time: sample was received on the hold time expiry date which did not allow sufficient time for preparation and analysis.

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

Maxxam ID		OH9418	OH9418			OH9419		
Sampling Date		2016/03/17 14:20	2016/03/17 14:20			2016/03/19 10:40		
COC Number		488720-03-01	488720-03-01			488720-03-01		
	UNITS	BH95-129	BH95-129 Lab-Dup	RDL	QC Batch	MW15-115	RDL	QC Batch
<b>Calculated Parameters</b>								
Filter and HNO3 Preservation	N/A	FIELD		N/A	ONSITE	FIELD	N/A	ONSITE
Ion Balance	N/A	1.0		0.010	8222369	0.97	0.010	8222369
Nitrate (N)	mg/L	<0.0020		0.0020	8221913	0.0106	0.0020	8221913
<b>Misc. Inorganics</b>								
Fluoride (F)	mg/L	0.220		0.010	8223352	0.160	0.010	8223359
Dissolved Organic Carbon (C)	mg/L	3.67		0.50	8223654	4.44	0.50	8223654
Acidity (pH 4.5)	mg/L	<0.50		0.50	8224219	<0.50	0.50	8224219
Alkalinity (Total as CaCO3)	mg/L	150		0.50	8224181	268	0.50	8224181
Acidity (pH 8.3)	mg/L	<0.50		0.50	8224219	0.89	0.50	8224219
Alkalinity (PP as CaCO3)	mg/L	<0.50		0.50	8224181	<0.50	0.50	8224181
Bicarbonate (HCO3)	mg/L	183		0.50	8224181	327	0.50	8224181
Carbonate (CO3)	mg/L	<0.50		0.50	8224181	<0.50	0.50	8224181
Hydroxide (OH)	mg/L	<0.50		0.50	8224181	<0.50	0.50	8224181
<b>Anions</b>								
Orthophosphate (P)	mg/L	0.0037 (1)		0.0010	8223471	0.0048 (1)	0.0010	8223471
Dissolved Sulphate (SO4)	mg/L	42.2		0.50	8224488	138	0.50	8226530
Dissolved Chloride (Cl)	mg/L	<0.50		0.50	8224484	0.93	0.50	8224484
<b>Nutrients</b>								
Total Ammonia (N)	mg/L	0.041		0.0050	8224477	0.054	0.0050	8224477
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.072		0.020	8221914	0.268	0.020	8221914
Nitrate plus Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8224133	0.0206	0.0020	8224133
Nitrite (N)	mg/L	<0.0020 (1)		0.0020	8224136	0.0100	0.0020	8224136
Total Nitrogen (N)	mg/L	0.072		0.020	8224630	0.289	0.020	8224630
Total Phosphorus (P)	mg/L	0.0156		0.0020	8226034	0.350	0.0020	8226034
<b>Physical Properties</b>								
Conductivity	uS/cm	363		1.0	8224184	701	1.0	8224184
pH	pH	7.96			8224185	8.03		8224185
<b>Physical Properties</b>								
Total Suspended Solids	mg/L	6.2		1.0	8223850	464 (2)	3.0	8223850
Total Dissolved Solids	mg/L	222	228	1.0	8223390	434	1.0	8223390
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time. (2) RDL raised due to high concentration of solids in the sample.								

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**RESULTS OF CHEMICAL ANALYSES OF WATER**

<b>Maxxam ID</b>		OH9500		
<b>Sampling Date</b>		2016/03/16		
<b>COC Number</b>		488720-03-01		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>				
Filter and HNO3 Preservation	N/A	FIELD	N/A	ONSITE
Ion Balance	N/A	0.95	0.010	8223418
Nitrate (N)	mg/L	0.441	0.0020	8223420
<b>Misc. Inorganics</b>				
Fluoride (F)	mg/L	0.047	0.010	8224468
Dissolved Organic Carbon (C)	mg/L	1.77	0.50	8223654
Acidity (pH 4.5)	mg/L	<0.50	0.50	8224236
Alkalinity (Total as CaCO3)	mg/L	258	0.50	8224232
Acidity (pH 8.3)	mg/L	<0.50	0.50	8224236
Alkalinity (PP as CaCO3)	mg/L	<0.50	0.50	8224232
Bicarbonate (HCO3)	mg/L	315	0.50	8224232
Carbonate (CO3)	mg/L	<0.50	0.50	8224232
Hydroxide (OH)	mg/L	<0.50	0.50	8224232
<b>Anions</b>				
Orthophosphate (P)	mg/L	0.034 (1)	0.0010	8225199
Dissolved Sulphate (SO4)	mg/L	52.1	0.50	8224503
Dissolved Chloride (Cl)	mg/L	0.63	0.50	8226524
<b>Nutrients</b>				
Total Ammonia (N)	mg/L	0.043	0.0050	8224478
Total Total Kjeldahl Nitrogen (Calc)	mg/L	0.198	0.020	8223422
Nitrate plus Nitrite (N)	mg/L	0.444 (1)	0.0020	8224619
Nitrite (N)	mg/L	0.0034 (1)	0.0020	8224620
Total Nitrogen (N)	mg/L	0.643	0.020	8224630
Total Phosphorus (P)	mg/L	1.22	0.020	8226034
<b>Physical Properties</b>				
Conductivity	uS/cm	554	1.0	8224231
pH	pH	8.18		8224222
<b>Physical Properties</b>				
Total Suspended Solids	mg/L	1230 (2)	20	8223850
Total Dissolved Solids	mg/L	358	1.0	8223390
RDL = Reportable Detection Limit N/A = Not Applicable (1) Sample arrived to laboratory past recommended hold time. (2) RDL raised due to high concentration of solids in the sample.				



Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		OH9401	OH9402	OH9403	OH9404	OH9405		
Sampling Date		2016/03/14 12:15	2016/03/15 09:40	2016/03/15 14:55	2016/03/14 16:15	2016/03/15 14:10		
COC Number		488720-01-01	488720-01-01	488720-01-01	488720-01-01	488720-01-01		
	<b>UNITS</b>	<b>BH95G-22</b>	<b>BH95G-32</b>	<b>BH95G-33D</b>	<b>BH95-131</b>	<b>MW15-01</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	176	189	235	627	296	0.50	8222227
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000020	8226589
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.00332	0.00436	0.00506	0.00352	0.00293	0.00050	8222919
Dissolved Antimony (Sb)	mg/L	0.000070	0.000045	0.000025	0.000635	0.000029	0.000020	8222919
Dissolved Arsenic (As)	mg/L	0.000055	0.000228	0.000138	0.00710	0.000098	0.000020	8222919
Dissolved Barium (Ba)	mg/L	0.101	0.186	0.0923	0.0201	0.0388	0.000020	8222919
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8222919
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8222919
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8222919
Dissolved Cadmium (Cd)	mg/L	0.000104	0.0000610	0.0000100	0.0000390	0.0000170	0.0000050	8222919
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00018	0.00019	<0.00010	0.00010	8222919
Dissolved Cobalt (Co)	mg/L	0.0000170	0.000221	0.0000150	0.0000690	0.0000690	0.0000050	8222919
Dissolved Copper (Cu)	mg/L	0.000718	0.000593	0.000226	0.000423	0.000417	0.000050	8222919
Dissolved Iron (Fe)	mg/L	0.0102	0.103	0.0014	2.15	0.108	0.0010	8222919
Dissolved Lead (Pb)	mg/L	0.0000570	0.000137	0.0000160	0.00190	0.0000150	0.0000050	8222919
Dissolved Lithium (Li)	mg/L	0.00168	0.00159	0.00133	0.0162	0.00229	0.00050	8222919
Dissolved Manganese (Mn)	mg/L	0.00302	0.0655	0.00670	0.176	0.0112	0.000050	8222919
Dissolved Molybdenum (Mo)	mg/L	0.000194	0.000762	0.00126	0.000066	0.000605	0.000050	8222919
Dissolved Nickel (Ni)	mg/L	0.000211	0.000950	0.000906	0.000348	0.000414	0.000020	8222919
Dissolved Phosphorus (P)	mg/L	0.0038	0.0030	0.0023	0.0056	0.0055	0.0020	8222919
Dissolved Selenium (Se)	mg/L	0.000698	0.000615	0.00407	<0.000040	0.000788	0.000040	8222919
Dissolved Silicon (Si)	mg/L	2.82	2.49	3.16	13.0	2.37	0.050	8222919
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	0.0000360	<0.0000050	0.0000050	8222919
Dissolved Strontium (Sr)	mg/L	0.176	0.288	0.243	0.783	0.303	0.000050	8222919
Dissolved Thallium (Tl)	mg/L	0.0000020	0.0000050	<0.0000020	0.0000030	<0.0000020	0.0000020	8222919
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	0.00043	<0.00020	<0.00020	0.00020	8222919
Dissolved Titanium (Ti)	mg/L	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	8222919
Dissolved Uranium (U)	mg/L	0.00215	0.00108	0.00428	0.0160	0.00370	0.0000020	8222919
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8222919
Dissolved Zinc (Zn)	mg/L	0.00707	0.00333	0.00123	0.00811	0.00503	0.00010	8222919
Dissolved Zirconium (Zr)	mg/L	<0.00010	<0.00010	<0.00010	0.0148	<0.00010	0.00010	8222919

RDL = Reportable Detection Limit

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		OH9401	OH9402	OH9403	OH9404	OH9405		
Sampling Date		2016/03/14 12:15	2016/03/15 09:40	2016/03/15 14:55	2016/03/14 16:15	2016/03/15 14:10		
COC Number		488720-01-01	488720-01-01	488720-01-01	488720-01-01	488720-01-01		
	UNITS	BH95G-22	BH95G-32	BH95G-33D	BH95-131	MW15-01	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	56.0	68.7	79.8	155	101	0.050	8221633
Dissolved Magnesium (Mg)	mg/L	8.81	4.10	8.69	58.6	10.6	0.050	8221633
Dissolved Potassium (K)	mg/L	1.43	4.33	1.02	4.07	0.841	0.050	8221633
Dissolved Sodium (Na)	mg/L	0.963	0.693	0.769	1.61	1.47	0.050	8221633
Dissolved Sulphur (S)	mg/L	15.7	10.8	22.0	74.8	48.3	3.0	8221633
RDL = Reportable Detection Limit								

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		OH9406	OH9407	OH9409	OH9410	OH9411		
Sampling Date		2016/03/13 13:15	2016/03/13 13:50	2016/03/13 16:30	2016/03/13 15:50	2016/03/13 18:40		
COC Number		488720-01-01	488720-01-01	488720-02-01	488720-02-01	488720-02-01		
	<b>UNITS</b>	<b>MW15-03S</b>	<b>MW15-03D</b>	<b>MW15-04S</b>	<b>MW15-04D</b>	<b>MW15-05D</b>	<b>RDL</b>	<b>QC Batch</b>

<b>Misc. Inorganics</b>								
Dissolved Hardness (CaCO3)	mg/L	145	201	119	143	193	0.50	8222227
<b>Elements</b>								
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	0.000028	<0.000020	<0.000020	0.000020	8226589
<b>Dissolved Metals by ICPMS</b>								
Dissolved Aluminum (Al)	mg/L	0.0114	0.00276	0.00365	0.00369	0.00211	0.00050	8222919
Dissolved Antimony (Sb)	mg/L	0.000050	0.000228	<0.000020	<0.000020	<0.000020	0.000020	8222919
Dissolved Arsenic (As)	mg/L	0.000255	0.00182	0.000206	0.00163	0.000065	0.000020	8222919
Dissolved Barium (Ba)	mg/L	0.0524	0.0471	0.0768	0.0535	0.0434	0.000020	8222919
Dissolved Beryllium (Be)	mg/L	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	0.000010	8222919
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8222919
Dissolved Boron (B)	mg/L	<0.010	<0.010	<0.010	<0.010	<0.010	0.010	8222919
Dissolved Cadmium (Cd)	mg/L	0.0000220	<0.0000050	0.0000110	<0.0000050	0.0000650	0.0000050	8222919
Dissolved Chromium (Cr)	mg/L	<0.00010	<0.00010	0.00020	<0.00010	<0.00010	0.00010	8222919
Dissolved Cobalt (Co)	mg/L	0.000370	0.0000900	0.0000320	0.000193	0.0000810	0.0000050	8222919
Dissolved Copper (Cu)	mg/L	0.00202	<0.000050	0.000500	<0.000050	0.000154	0.000050	8222919
Dissolved Iron (Fe)	mg/L	0.0472	0.911	0.0062	0.258	0.0067	0.0010	8222919
Dissolved Lead (Pb)	mg/L	0.0000550	<0.0000050	0.0000050	0.0000090	0.0000970	0.0000050	8222919
Dissolved Lithium (Li)	mg/L	0.00122	0.00654	0.00070	0.00111	0.00169	0.00050	8222919
Dissolved Manganese (Mn)	mg/L	0.107	0.0662	0.00902	0.212	0.0135	0.000050	8222919
Dissolved Molybdenum (Mo)	mg/L	0.00889	0.00396	0.00155	0.00245	0.000912	0.000050	8222919
Dissolved Nickel (Ni)	mg/L	0.00166	0.000248	0.000456	0.000180	0.000215	0.000020	8222919
Dissolved Phosphorus (P)	mg/L	0.0072	0.0076	0.0043	0.0101	0.0049	0.0020	8222919
Dissolved Selenium (Se)	mg/L	0.000297	<0.000040	0.000755	<0.000040	0.00149	0.000040	8222919
Dissolved Silicon (Si)	mg/L	2.51	4.91	3.27	2.90	2.62	0.050	8222919
Dissolved Silver (Ag)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8222919
Dissolved Strontium (Sr)	mg/L	0.163	0.269	0.165	0.208	0.298	0.000050	8222919
Dissolved Thallium (Tl)	mg/L	0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8222919
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8222919
Dissolved Titanium (Ti)	mg/L	0.00057	<0.00050	<0.00050	<0.00050	<0.00050	0.00050	8222919
Dissolved Uranium (U)	mg/L	0.000854	0.00184	0.000591	0.000749	0.00186	0.0000020	8222919
Dissolved Vanadium (V)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8222919
Dissolved Zinc (Zn)	mg/L	0.0106	0.00084	0.00163	0.00089	0.00404	0.00010	8222919
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00101	<0.00010	<0.00010	<0.00010	0.00010	8222919

RDL = Reportable Detection Limit

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		OH9406	OH9407	OH9409	OH9410	OH9411		
Sampling Date		2016/03/13 13:15	2016/03/13 13:50	2016/03/13 16:30	2016/03/13 15:50	2016/03/13 18:40		
COC Number		488720-01-01	488720-01-01	488720-02-01	488720-02-01	488720-02-01		
	UNITS	MW15-03S	MW15-03D	MW15-04S	MW15-04D	MW15-05D	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	49.9	54.8	42.1	49.1	66.4	0.050	8221633
Dissolved Magnesium (Mg)	mg/L	4.85	15.6	3.50	5.01	6.63	0.050	8221633
Dissolved Potassium (K)	mg/L	1.41	2.64	1.39	2.40	1.65	0.050	8221633
Dissolved Sodium (Na)	mg/L	2.23	2.72	2.16	1.62	2.90	0.050	8221633
Dissolved Sulphur (S)	mg/L	4.9	7.9	4.0	6.8	9.9	3.0	8221633
RDL = Reportable Detection Limit								

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		OH9412	OH9413	OH9414	OH9415		
Sampling Date		2016/03/15 19:00	2016/03/17 16:40	2016/03/13 13:50	2016/03/14 16:15		
COC Number		488720-02-01	488720-02-01	488720-02-01	488720-02-01		
	UNITS	MW15-07S	MW15-10D	DUP01	DUP02	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	192	1910	198	644	0.50	8222227
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	0.000020	8226589
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	0.00194	0.243	0.00250	0.00161	0.00050	8222919
Dissolved Antimony (Sb)	mg/L	<0.000020	0.000042	0.000221	0.000605	0.000020	8222919
Dissolved Arsenic (As)	mg/L	0.00250	0.000782	0.00183	0.00661	0.000020	8222919
Dissolved Barium (Ba)	mg/L	0.0330	0.415	0.0480	0.0200	0.000020	8222919
Dissolved Beryllium (Be)	mg/L	<0.000010	0.00103	<0.000010	<0.000010	0.000010	8222919
Dissolved Bismuth (Bi)	mg/L	<0.0000050	<0.0000050	<0.0000050	<0.0000050	0.0000050	8222919
Dissolved Boron (B)	mg/L	<0.010	0.015	<0.010	<0.010	0.010	8222919
Dissolved Cadmium (Cd)	mg/L	<0.0000050	0.000135	<0.0000050	0.0000380	0.0000050	8222919
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00113	<0.00010	0.00019	0.00010	8222919
Dissolved Cobalt (Co)	mg/L	0.000177	0.000503	0.0000890	0.0000610	0.0000050	8222919
Dissolved Copper (Cu)	mg/L	0.000093	0.000151	0.000052	0.000200	0.000050	8222919
Dissolved Iron (Fe)	mg/L	0.592	26.5	0.934	2.21	0.0010	8222919
Dissolved Lead (Pb)	mg/L	0.0000100	0.000346	<0.0000050	0.00184	0.0000050	8222919
Dissolved Lithium (Li)	mg/L	0.00720	0.235	0.00610	0.0164	0.00050	8222919
Dissolved Manganese (Mn)	mg/L	0.161	4.69	0.0667	0.171	0.000050	8222919
Dissolved Molybdenum (Mo)	mg/L	0.000339	0.000488	0.00392	0.000061	0.000050	8222919
Dissolved Nickel (Ni)	mg/L	0.000631	0.000994	0.000255	0.000204	0.000020	8222919
Dissolved Phosphorus (P)	mg/L	0.0031	0.0120	0.0057	0.0107	0.0020	8222919
Dissolved Selenium (Se)	mg/L	<0.000040	<0.000040	<0.000040	<0.000040	0.000040	8222919
Dissolved Silicon (Si)	mg/L	6.89	36.5	4.83	13.2	0.050	8222919
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000100	<0.0000050	0.0000350	0.0000050	8222919
Dissolved Strontium (Sr)	mg/L	0.277	2.74	0.266	0.794	0.000050	8222919
Dissolved Thallium (Tl)	mg/L	<0.0000020	0.0000030	<0.0000020	0.0000020	0.0000020	8222919
Dissolved Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	<0.00020	0.00020	8222919
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00111	<0.00050	<0.00050	0.00050	8222919
Dissolved Uranium (U)	mg/L	0.00149	0.000984	0.00183	0.0151	0.0000020	8222919
Dissolved Vanadium (V)	mg/L	<0.00020	0.00155	<0.00020	<0.00020	0.00020	8222919
Dissolved Zinc (Zn)	mg/L	0.00128	0.00957	0.00057	0.00703	0.00010	8222919
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00155	0.00095	0.0151	0.00010	8222919
RDL = Reportable Detection Limit							

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		OH9412	OH9413	OH9414	OH9415		
Sampling Date		2016/03/15 19:00	2016/03/17 16:40	2016/03/13 13:50	2016/03/14 16:15		
COC Number		488720-02-01	488720-02-01	488720-02-01	488720-02-01		
	UNITS	MW15-07S	MW15-10D	DUP01	DUP02	RDL	QC Batch
Dissolved Calcium (Ca)	mg/L	60.7	641	53.4	163	0.050	8221633
Dissolved Magnesium (Mg)	mg/L	9.87	75.8	15.8	57.9	0.050	8221633
Dissolved Potassium (K)	mg/L	1.46	8.71	2.70	3.86	0.050	8221633
Dissolved Sodium (Na)	mg/L	3.41	25.1	2.74	1.61	0.050	8221633
Dissolved Sulphur (S)	mg/L	11.1	4.6	7.7	80.3	3.0	8221633
RDL = Reportable Detection Limit							

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		OH9417	OH9417	OH9418	OH9419		
Sampling Date				2016/03/17 14:20	2016/03/19 10:40		
COC Number		488720-03-01	488720-03-01	488720-03-01	488720-03-01		
	UNITS	TRIP BLANK	TRIP BLANK Lab-Dup	BH95-129	MW15-11S	RDL	QC Batch
<b>Misc. Inorganics</b>							
Dissolved Hardness (CaCO3)	mg/L	<0.50		187	368	0.50	8222227
<b>Elements</b>							
Dissolved Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8226589
<b>Dissolved Metals by ICPMS</b>							
Dissolved Aluminum (Al)	mg/L	<0.00050		0.00250	0.00302	0.00050	8224347
Dissolved Antimony (Sb)	mg/L	<0.000020		0.000233	0.000412	0.000020	8224347
Dissolved Arsenic (As)	mg/L	<0.000020		0.00678	0.00284	0.000020	8224347
Dissolved Barium (Ba)	mg/L	<0.000020		0.0447	0.143	0.000020	8224347
Dissolved Beryllium (Be)	mg/L	<0.000010		<0.000010	<0.000010	0.000010	8224347
Dissolved Bismuth (Bi)	mg/L	<0.0000050		<0.0000050	<0.0000050	0.0000050	8224347
Dissolved Boron (B)	mg/L	<0.010		<0.010	<0.010	0.010	8224347
Dissolved Cadmium (Cd)	mg/L	<0.0000050		0.0000510	0.0000450	0.0000050	8224347
Dissolved Chromium (Cr)	mg/L	<0.00010		<0.00010	<0.00010	0.00010	8224347
Dissolved Cobalt (Co)	mg/L	<0.0000050		0.000105	0.00123	0.0000050	8224347
Dissolved Copper (Cu)	mg/L	<0.000050		0.000202	0.000684	0.000050	8224347
Dissolved Iron (Fe)	mg/L	<0.0010		0.475	3.24	0.0010	8224347
Dissolved Lead (Pb)	mg/L	<0.0000050		0.0000440	0.0000210	0.0000050	8224347
Dissolved Lithium (Li)	mg/L	<0.00050		0.00689	0.00965	0.00050	8224347
Dissolved Manganese (Mn)	mg/L	<0.000050		0.117	3.85	0.000050	8224347
Dissolved Molybdenum (Mo)	mg/L	<0.000050		0.00112	0.00661	0.000050	8224347
Dissolved Nickel (Ni)	mg/L	<0.000020		0.000285	0.00422	0.000020	8224347
Dissolved Phosphorus (P)	mg/L	<0.0020		0.0083	0.0142	0.0020	8224347
Dissolved Selenium (Se)	mg/L	<0.000040		<0.000040	0.000045	0.000040	8224347
Dissolved Silicon (Si)	mg/L	<0.050		4.59	4.34	0.050	8224347
Dissolved Silver (Ag)	mg/L	<0.0000050		<0.0000050	<0.0000050	0.0000050	8224347
Dissolved Strontium (Sr)	mg/L	<0.000050		0.195	0.534	0.000050	8224347
Dissolved Thallium (Tl)	mg/L	<0.0000020		<0.0000020	<0.0000020	0.0000020	8224347
Dissolved Tin (Sn)	mg/L	<0.00020		<0.00020	<0.00020	0.00020	8224347
Dissolved Titanium (Ti)	mg/L	<0.00050		<0.00050	<0.00050	0.00050	8224347
Dissolved Uranium (U)	mg/L	<0.0000020		0.00993	0.00832	0.0000020	8224347
Dissolved Vanadium (V)	mg/L	<0.00020		<0.00020	<0.00020	0.00020	8224347
Dissolved Zinc (Zn)	mg/L	<0.00010		0.00528	0.0135	0.00010	8224347
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate							

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

Maxxam ID		OH9417	OH9417	OH9418	OH9419		
Sampling Date				2016/03/17 14:20	2016/03/19 10:40		
COC Number		488720-03-01	488720-03-01	488720-03-01	488720-03-01		
	UNITS	TRIP BLANK	TRIP BLANK Lab-Dup	BH95-129	MW15-11S	RDL	QC Batch
Dissolved Zirconium (Zr)	mg/L	<0.00010		0.00024	0.00040	0.00010	8224347
Dissolved Calcium (Ca)	mg/L	<0.050		56.4	100	0.050	8221633
Dissolved Magnesium (Mg)	mg/L	<0.050		11.1	28.5	0.050	8221633
Dissolved Potassium (K)	mg/L	<0.050		2.18	4.86	0.050	8221633
Dissolved Sodium (Na)	mg/L	<0.050		1.57	5.89	0.050	8221633
Dissolved Sulphur (S)	mg/L	<3.0		16.5	43.4	3.0	8221633
RDL = Reportable Detection Limit Lab-Dup = Laboratory Initiated Duplicate							



Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		OH9500		
<b>Sampling Date</b>		2016/03/16		
<b>COC Number</b>		488720-03-01		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Misc. Inorganics</b>				
Dissolved Hardness (CaCO3)	mg/L	297	0.50	8222638
<b>Elements</b>				
Dissolved Mercury (Hg)	mg/L	<0.0000020	0.0000020	8226589
<b>Dissolved Metals by ICPMS</b>				
Dissolved Aluminum (Al)	mg/L	0.00149	0.00050	8224347
Dissolved Antimony (Sb)	mg/L	<0.000020	0.000020	8224347
Dissolved Arsenic (As)	mg/L	0.000066	0.000020	8224347
Dissolved Barium (Ba)	mg/L	0.0283	0.000020	8224347
Dissolved Beryllium (Be)	mg/L	<0.000010	0.000010	8224347
Dissolved Bismuth (Bi)	mg/L	<0.0000050	0.0000050	8224347
Dissolved Boron (B)	mg/L	<0.010	0.010	8224347
Dissolved Cadmium (Cd)	mg/L	0.00156	0.0000050	8224347
Dissolved Chromium (Cr)	mg/L	<0.00010	0.00010	8224347
Dissolved Cobalt (Co)	mg/L	0.0000080	0.0000050	8224347
Dissolved Copper (Cu)	mg/L	0.000567	0.000050	8224347
Dissolved Iron (Fe)	mg/L	0.0244	0.0010	8224347
Dissolved Lead (Pb)	mg/L	0.0000340	0.0000050	8224347
Dissolved Lithium (Li)	mg/L	0.00155	0.00050	8224347
Dissolved Manganese (Mn)	mg/L	0.000475	0.000050	8224347
Dissolved Molybdenum (Mo)	mg/L	0.00189	0.000050	8224347
Dissolved Nickel (Ni)	mg/L	0.000491	0.000020	8224347
Dissolved Phosphorus (P)	mg/L	0.0070	0.0020	8224347
Dissolved Selenium (Se)	mg/L	0.00485	0.000040	8224347
Dissolved Silicon (Si)	mg/L	2.21	0.050	8224347
Dissolved Silver (Ag)	mg/L	<0.0000050	0.0000050	8224347
Dissolved Strontium (Sr)	mg/L	0.239	0.000050	8224347
Dissolved Thallium (Tl)	mg/L	<0.0000020	0.0000020	8224347
Dissolved Tin (Sn)	mg/L	<0.00020	0.00020	8224347
Dissolved Titanium (Ti)	mg/L	<0.00050	0.00050	8224347
Dissolved Uranium (U)	mg/L	0.00293	0.0000020	8224347
Dissolved Vanadium (V)	mg/L	<0.00020	0.00020	8224347
Dissolved Zinc (Zn)	mg/L	0.0249	0.00010	8224347
Dissolved Zirconium (Zr)	mg/L	<0.00010	0.00010	8224347
RDL = Reportable Detection Limit				

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL DISSOLVED METALS WITH CV HG (WATER)**

<b>Maxxam ID</b>		OH9500		
<b>Sampling Date</b>		2016/03/16		
<b>COC Number</b>		488720-03-01		
	<b>UNITS</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>
Dissolved Calcium (Ca)	mg/L	70.5	0.050	8222632
Dissolved Magnesium (Mg)	mg/L	29.3	0.050	8222632
Dissolved Potassium (K)	mg/L	0.445	0.050	8222632
Dissolved Sodium (Na)	mg/L	0.738	0.050	8222632
Dissolved Sulphur (S)	mg/L	17.6	3.0	8222632
RDL = Reportable Detection Limit				

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		OH9417	OH9417		
Sampling Date					
COC Number		488720-03-01	488720-03-01		
	UNITS	TRIP BLANK	TRIP BLANK Lab-Dup	RDL	QC Batch
<b>Calculated Parameters</b>					
Total Hardness (CaCO3)	mg/L	<0.50		0.50	8221587
<b>Elements</b>					
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	0.0000020	8226945
<b>Total Metals by ICPMS</b>					
Total Aluminum (Al)	mg/L	<0.00050		0.00050	8224358
Total Antimony (Sb)	mg/L	<0.000020		0.000020	8224358
Total Arsenic (As)	mg/L	<0.000020		0.000020	8224358
Total Barium (Ba)	mg/L	<0.000020		0.000020	8224358
Total Beryllium (Be)	mg/L	<0.000010		0.000010	8224358
Total Bismuth (Bi)	mg/L	<0.0000050		0.0000050	8224358
Total Boron (B)	mg/L	<0.010		0.010	8224358
Total Cadmium (Cd)	mg/L	<0.0000050		0.0000050	8224358
Total Chromium (Cr)	mg/L	<0.00010		0.00010	8224358
Total Cobalt (Co)	mg/L	<0.0000050		0.0000050	8224358
Total Copper (Cu)	mg/L	<0.000050		0.000050	8224358
Total Iron (Fe)	mg/L	<0.0010		0.0010	8224358
Total Lead (Pb)	mg/L	<0.0000050		0.0000050	8224358
Total Lithium (Li)	mg/L	<0.00050		0.00050	8224358
Total Manganese (Mn)	mg/L	0.000054		0.000050	8224358
Total Molybdenum (Mo)	mg/L	<0.000050		0.000050	8224358
Total Nickel (Ni)	mg/L	<0.000020		0.000020	8224358
Total Phosphorus (P)	mg/L	<0.0020		0.0020	8224358
Total Selenium (Se)	mg/L	<0.000040		0.000040	8224358
Total Silicon (Si)	mg/L	<0.050		0.050	8224358
Total Silver (Ag)	mg/L	<0.0000050		0.0000050	8224358
Total Strontium (Sr)	mg/L	<0.000050		0.000050	8224358
Total Thallium (Tl)	mg/L	<0.0000020		0.0000020	8224358
Total Tin (Sn)	mg/L	<0.00020		0.00020	8224358
Total Titanium (Ti)	mg/L	<0.00050		0.00050	8224358
Total Uranium (U)	mg/L	<0.0000020		0.0000020	8224358
Total Vanadium (V)	mg/L	<0.00020		0.00020	8224358
Total Zinc (Zn)	mg/L	<0.00010		0.00010	8224358
Total Zirconium (Zr)	mg/L	<0.00010		0.00010	8224358
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LOW LEVEL TOTAL METALS WITH CV HG (WATER)**

Maxxam ID		OH9417	OH9417		
Sampling Date					
COC Number		488720-03-01	488720-03-01		
	UNITS	TRIP BLANK	TRIP BLANK Lab-Dup	RDL	QC Batch
Total Calcium (Ca)	mg/L	<0.050		0.050	8221634
Total Magnesium (Mg)	mg/L	<0.050		0.050	8221634
Total Potassium (K)	mg/L	<0.050		0.050	8221634
Total Sodium (Na)	mg/L	<0.050		0.050	8221634
Total Sulphur (S)	mg/L	<3.0		3.0	8221634
RDL = Reportable Detection Limit					
Lab-Dup = Laboratory Initiated Duplicate					

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		OH9401	OH9402	OH9403	OH9404	OH9405		
Sampling Date		2016/03/14 12:15	2016/03/15 09:40	2016/03/15 14:55	2016/03/14 16:15	2016/03/15 14:10		
COC Number		488720-01-01	488720-01-01	488720-01-01	488720-01-01	488720-01-01		
	<b>UNITS</b>	<b>BH95G-22</b>	<b>BH95G-32</b>	<b>BH95G-33D</b>	<b>BH95-131</b>	<b>MW15-01</b>	<b>RDL</b>	<b>QC Batch</b>
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	183	265	275	654	323	0.50	8221587
<b>Elements</b>								
Total Mercury (Hg)	mg/L	0.0000057	<0.0000020	0.0000026	<0.0000020	<0.0000020	0.0000020	8226945
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	4.63	15.5	9.44	0.309	2.27	0.0030	8223164
Total Antimony (Sb)	mg/L	0.00104	0.000562	0.000215	0.0106	0.000280	0.000050	8223164
Total Arsenic (As)	mg/L	0.0299	0.0133	0.0257	0.0319	0.00363	0.000020	8223164
Total Barium (Ba)	mg/L	0.246	0.869	0.256	0.0293	0.106	0.00010	8223164
Total Beryllium (Be)	mg/L	0.000242	0.00108	0.000467	0.000044	0.000140	0.000010	8223164
Total Bismuth (Bi)	mg/L	0.000545	0.000666	0.000170	0.000055	0.000051	0.000020	8223164
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8223164
Total Cadmium (Cd)	mg/L	0.00236	0.00166	0.000208	0.000320	0.000265	0.000050	8223164
Total Chromium (Cr)	mg/L	0.00916	0.0434	0.0158	0.00076	0.00990	0.00050	8223164
Total Cobalt (Co)	mg/L	0.0110	0.0206	0.0280	0.000236	0.00454	0.000010	8223164
Total Copper (Cu)	mg/L	0.107	0.0759	0.0665	0.00256	0.0175	0.00020	8223164
Total Iron (Fe)	mg/L	25.5	40.5	30.4	5.27	13.0	0.0050	8223164
Total Lead (Pb)	mg/L	0.0676	0.0776	0.0148	0.136	0.00621	0.000050	8223164
Total Lithium (Li)	mg/L	0.00566	0.00890	0.00755	0.0157	0.00366	0.00050	8223164
Total Manganese (Mn)	mg/L	0.824	1.10	1.55	0.181	0.161	0.00010	8223164
Total Molybdenum (Mo)	mg/L	0.00113	0.00146	0.00295	0.000109	0.00245	0.000050	8223164
Total Nickel (Ni)	mg/L	0.0186	0.0311	0.0899	0.00065	0.0122	0.00010	8223164
Total Phosphorus (P)	mg/L	0.252	0.781	1.97	0.029	0.234	0.010	8223164
Total Selenium (Se)	mg/L	0.000810	0.00298	0.00391	0.000078	0.00139	0.000040	8223164
Total Silicon (Si)	mg/L	10.2	24.5	15.4	13.7	5.59	0.10	8223164
Total Silver (Ag)	mg/L	0.00165	0.000445	0.000376	0.000258	0.00114	0.000050	8223164
Total Strontium (Sr)	mg/L	0.175	0.367	0.278	0.735	0.336	0.000050	8223164
Total Thallium (Tl)	mg/L	0.0000870	0.000173	0.000104	0.0000260	0.0000370	0.0000020	8223164
Total Tin (Sn)	mg/L	0.00128	0.00078	0.00055	0.00043	0.00028	0.00020	8223164
Total Titanium (Ti)	mg/L	0.182	1.79	0.228	0.0160	0.139	0.0050	8223164
Total Uranium (U)	mg/L	0.00356	0.00344	0.00620	0.0173	0.00485	0.0000050	8223164
Total Vanadium (V)	mg/L	0.0142	0.110	0.0365	0.00094	0.0130	0.00050	8223164
Total Zinc (Zn)	mg/L	0.327	0.175	0.137	0.0526	0.0835	0.0010	8223164
Total Zirconium (Zr)	mg/L	0.00189	0.00476	0.00574	0.0410	0.00546	0.00010	8223164
Total Calcium (Ca)	mg/L	55.7	86.7	88.2	166	108	0.25	8221634
RDL = Reportable Detection Limit								

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		OH9401	OH9402	OH9403	OH9404	OH9405		
Sampling Date		2016/03/14 12:15	2016/03/15 09:40	2016/03/15 14:55	2016/03/14 16:15	2016/03/15 14:10		
COC Number		488720-01-01	488720-01-01	488720-01-01	488720-01-01	488720-01-01		
	UNITS	BH95G-22	BH95G-32	BH95G-33D	BH95-131	MW15-01	RDL	QC Batch
Total Magnesium (Mg)	mg/L	10.6	11.7	13.4	58.2	12.8	0.25	8221634
Total Potassium (K)	mg/L	2.48	7.44	2.11	4.00	1.44	0.25	8221634
Total Sodium (Na)	mg/L	0.99	1.19	0.96	1.63	1.73	0.25	8221634
Total Sulphur (S)	mg/L	<15	<15	21	79	54	15	8221634
RDL = Reportable Detection Limit								

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		OH9406	OH9407	OH9409	OH9410	OH9411		
Sampling Date		2016/03/13 13:15	2016/03/13 13:50	2016/03/13 16:30	2016/03/13 15:50	2016/03/13 18:40		
COC Number		488720-01-01	488720-01-01	488720-02-01	488720-02-01	488720-02-01		
	UNITS	MW15-03S	MW15-03D	MW15-04S	MW15-04D	MW15-05D	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	378	199	308	147	222	0.50	8221587
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.0000020	<0.0000020	<0.0000020	<0.0000020	<0.0000020	0.0000020	8226945
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	42.4	0.0285	43.5	0.938	3.27	0.0030	8223164
Total Antimony (Sb)	mg/L	0.000752	0.000265	0.000310	<0.000050	0.000054	0.000050	8223164
Total Arsenic (As)	mg/L	0.0553	0.00181	0.0315	0.00589	0.00143	0.000020	8223164
Total Barium (Ba)	mg/L	0.597	0.0479	0.800	0.0877	0.112	0.00010	8223164
Total Beryllium (Be)	mg/L	0.00168	0.000011	0.00173	0.000094	0.000858	0.000010	8223164
Total Bismuth (Bi)	mg/L	0.000936	<0.000020	0.00110	0.000030	0.000213	0.000020	8223164
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8223164
Total Cadmium (Cd)	mg/L	0.00250	0.000090	0.00194	0.0000740	0.000594	0.000050	8223164
Total Chromium (Cr)	mg/L	0.254	0.00156	0.128	0.00449	0.00259	0.00050	8223164
Total Cobalt (Co)	mg/L	0.0655	0.000165	0.0603	0.00316	0.00335	0.000010	8223164
Total Copper (Cu)	mg/L	0.353	0.00070	0.343	0.00602	0.0139	0.00020	8223164
Total Iron (Fe)	mg/L	134	1.14	94.9	2.79	3.55	0.0050	8223164
Total Lead (Pb)	mg/L	0.125	0.000229	0.0923	0.00202	0.0428	0.000050	8223164
Total Lithium (Li)	mg/L	0.0426	0.00591	0.0300	0.00143	0.00313	0.00050	8223164
Total Manganese (Mn)	mg/L	2.27	0.0678	2.16	0.245	0.264	0.00010	8223164
Total Molybdenum (Mo)	mg/L	0.0210	0.00412	0.00397	0.00242	0.000320	0.000050	8223164
Total Nickel (Ni)	mg/L	0.184	0.00053	0.134	0.00609	0.00322	0.00010	8223164
Total Phosphorus (P)	mg/L	4.08	0.016	2.00	0.093	0.100	0.010	8223164
Total Selenium (Se)	mg/L	0.000697	<0.000040	0.000972	0.000117	0.00141	0.000040	8223164
Total Silicon (Si)	mg/L	58.4	4.51	59.3	4.06	7.12	0.10	8223164
Total Silver (Ag)	mg/L	0.0235	0.0000380	0.00643	0.000161	0.000796	0.000050	8223164
Total Strontium (Sr)	mg/L	0.311	0.235	0.336	0.205	0.319	0.000050	8223164
Total Thallium (Tl)	mg/L	0.000584	0.0000080	0.000730	0.0000180	0.0000450	0.000020	8223164
Total Tin (Sn)	mg/L	0.00265	<0.00020	0.00176	0.00021	<0.00020	0.00020	8223164
Total Titanium (Ti)	mg/L	1.58	<0.0050	1.18	0.0194	<0.0050	0.0050	8223164
Total Uranium (U)	mg/L	0.00557	0.00193	0.00418	0.00109	0.00344	0.000050	8223164
Total Vanadium (V)	mg/L	0.152	<0.00050	0.147	0.00143	0.00329	0.00050	8223164
Total Zinc (Zn)	mg/L	0.464	0.0013	0.414	0.0084	0.0464	0.0010	8223164
Total Zirconium (Zr)	mg/L	0.00901	0.00094	0.00411	0.00114	0.00018	0.00010	8223164
Total Calcium (Ca)	mg/L	91.2	54.4	75.6	50.1	75.6	0.25	8221634
RDL = Reportable Detection Limit								

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		OH9406	OH9407	OH9409	OH9410	OH9411		
Sampling Date		2016/03/13 13:15	2016/03/13 13:50	2016/03/13 16:30	2016/03/13 15:50	2016/03/13 18:40		
COC Number		488720-01-01	488720-01-01	488720-02-01	488720-02-01	488720-02-01		
	UNITS	MW15-03S	MW15-03D	MW15-04S	MW15-04D	MW15-05D	RDL	QC Batch
Total Magnesium (Mg)	mg/L	36.5	15.4	28.9	5.24	8.14	0.25	8221634
Total Potassium (K)	mg/L	9.16	2.44	10.5	2.41	2.10	0.25	8221634
Total Sodium (Na)	mg/L	3.42	2.43	2.73	1.62	3.11	0.25	8221634
Total Sulphur (S)	mg/L	<15	<15	<15	<15	<15	15	8221634
RDL = Reportable Detection Limit								



Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		OH9412	OH9413	OH9414	OH9415	OH9418		
Sampling Date		2016/03/15 19:00	2016/03/17 16:40	2016/03/13 13:50	2016/03/14 16:15	2016/03/17 14:20		
COC Number		488720-02-01	488720-02-01	488720-02-01	488720-02-01	488720-03-01		
	UNITS	MW15-07S	MW15-10D	DUP01	DUP02	BH95-129	RDL	QC Batch
<b>Calculated Parameters</b>								
Total Hardness (CaCO3)	mg/L	419	1760	199	643	182	0.50	8221587
<b>Elements</b>								
Total Mercury (Hg)	mg/L	<0.000020	<0.000020	<0.000020	<0.000020	<0.000020	0.000020	8226945
<b>Total Metals by ICPMS</b>								
Total Aluminum (Al)	mg/L	10.8	3.01	0.0285	0.252	0.0186	0.0030	8223164
Total Antimony (Sb)	mg/L	<0.000050	0.000058	0.000267	0.0101	0.000404	0.000050	8223164
Total Arsenic (As)	mg/L	0.0121	0.00248	0.00183	0.0307	0.00736	0.000020	8223164
Total Barium (Ba)	mg/L	0.264	0.423	0.0490	0.0282	0.0463	0.00010	8223164
Total Beryllium (Be)	mg/L	0.000733	0.00111	<0.000010	0.000040	<0.000010	0.000010	8223164
Total Bismuth (Bi)	mg/L	0.000035	0.000220	<0.000020	0.000050	0.000028	0.000020	8223164
Total Boron (B)	mg/L	<0.050	<0.050	<0.050	<0.050	<0.050	0.050	8223164
Total Cadmium (Cd)	mg/L	0.000486	0.00430	0.000060	0.000298	0.000245	0.000050	8223164
Total Chromium (Cr)	mg/L	0.0528	0.0134	<0.00050	0.00064	<0.00050	0.00050	8223164
Total Cobalt (Co)	mg/L	0.0274	0.00412	0.000145	0.000210	0.000173	0.000010	8223164
Total Copper (Cu)	mg/L	0.139	0.0171	0.00112	0.00222	0.00149	0.00020	8223164
Total Iron (Fe)	mg/L	30.9	28.2	1.04	4.87	0.661	0.0050	8223164
Total Lead (Pb)	mg/L	0.0191	0.0296	0.000303	0.128	0.00660	0.000050	8223164
Total Lithium (Li)	mg/L	0.0166	0.216	0.00642	0.0157	0.00709	0.00050	8223164
Total Manganese (Mn)	mg/L	1.33	4.32	0.0677	0.179	0.107	0.00010	8223164
Total Molybdenum (Mo)	mg/L	0.000396	0.00257	0.00384	0.000094	0.00108	0.000050	8223164
Total Nickel (Ni)	mg/L	0.0630	0.00569	0.00045	0.00058	0.00041	0.00010	8223164
Total Phosphorus (P)	mg/L	2.20	0.241	0.011	0.028	<0.010	0.010	8223164
Total Selenium (Se)	mg/L	0.000432	0.000218	<0.000040	0.000051	<0.000040	0.000040	8223164
Total Silicon (Si)	mg/L	20.5	36.8	4.75	13.7	4.80	0.10	8223164
Total Silver (Ag)	mg/L	0.000771	0.000657	0.0000310	0.000167	0.0000200	0.000050	8223164
Total Strontium (Sr)	mg/L	0.433	2.50	0.254	0.744	0.177	0.000050	8223164
Total Thallium (Tl)	mg/L	0.0000980	0.0000360	0.0000060	0.0000150	0.0000030	0.000020	8223164
Total Tin (Sn)	mg/L	<0.00020	<0.00020	<0.00020	0.00037	<0.00020	0.00020	8223164
Total Titanium (Ti)	mg/L	0.0600	0.119	<0.0050	0.0132	<0.0050	0.0050	8223164
Total Uranium (U)	mg/L	0.00595	0.00180	0.00187	0.0155	0.00994	0.000050	8223164
Total Vanadium (V)	mg/L	0.0425	0.00950	<0.00050	0.00061	<0.00050	0.00050	8223164
Total Zinc (Zn)	mg/L	0.116	0.0192	0.0031	0.0483	0.0271	0.0010	8223164
Total Zirconium (Zr)	mg/L	0.00070	0.00073	0.00089	0.0319	0.00055	0.00010	8223164
Total Calcium (Ca)	mg/L	133	587	54.3	161	56.4	0.25	8221634
RDL = Reportable Detection Limit								

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		OH9412	OH9413	OH9414	OH9415	OH9418		
Sampling Date		2016/03/15 19:00	2016/03/17 16:40	2016/03/13 13:50	2016/03/14 16:15	2016/03/17 14:20		
COC Number		488720-02-01	488720-02-01	488720-02-01	488720-02-01	488720-03-01		
	UNITS	MW15-07S	MW15-10D	DUP01	DUP02	BH95-129	RDL	QC Batch
Total Magnesium (Mg)	mg/L	21.1	70.4	15.4	58.4	9.95	0.25	8221634
Total Potassium (K)	mg/L	3.42	8.43	2.53	4.11	2.08	0.25	8221634
Total Sodium (Na)	mg/L	3.96	24.0	2.42	1.61	1.45	0.25	8221634
Total Sulphur (S)	mg/L	<15	<15	<15	80	<15	15	8221634
RDL = Reportable Detection Limit								

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

Maxxam ID		OH9419		OH9500		
Sampling Date		2016/03/19 10:40		2016/03/16		
COC Number		488720-03-01		488720-03-01		
	UNITS	MW15-11S	QC Batch	BH95G-2	RDL	QC Batch
<b>Calculated Parameters</b>						
Total Hardness (CaCO3)	mg/L	364	8221587	381	0.50	8222667
<b>Elements</b>						
Total Mercury (Hg)	mg/L	<0.0000020	8226945	0.0000025	0.0000020	8226945
<b>Total Metals by ICPMS</b>						
Total Aluminum (Al)	mg/L	1.05	8223164	3.93	0.0030	8225141
Total Antimony (Sb)	mg/L	0.000495	8223164	0.000502	0.000050	8225141
Total Arsenic (As)	mg/L	0.00422	8223164	0.0125	0.000020	8225141
Total Barium (Ba)	mg/L	0.213	8223164	0.100	0.00010	8225141
Total Beryllium (Be)	mg/L	0.000086	8223164	0.000263	0.000010	8225141
Total Bismuth (Bi)	mg/L	0.000036	8223164	0.000110	0.000020	8225141
Total Boron (B)	mg/L	<0.050	8223164	<0.050	0.050	8225141
Total Cadmium (Cd)	mg/L	0.000998	8223164	0.0113	0.0000050	8225141
Total Chromium (Cr)	mg/L	0.00423	8223164	0.0124	0.00050	8225141
Total Cobalt (Co)	mg/L	0.00318	8223164	0.0117	0.000010	8225141
Total Copper (Cu)	mg/L	0.0143	8223164	0.120	0.00020	8225141
Total Iron (Fe)	mg/L	7.45	8223164	18.5	0.0050	8225141
Total Lead (Pb)	mg/L	0.00696	8223164	0.0588	0.000050	8225141
Total Lithium (Li)	mg/L	0.00980	8223164	0.00569	0.00050	8225141
Total Manganese (Mn)	mg/L	4.03	8223164	0.251	0.00010	8225141
Total Molybdenum (Mo)	mg/L	0.00835	8223164	0.00550	0.000050	8225141
Total Nickel (Ni)	mg/L	0.00799	8223164	0.0686	0.00010	8225141
Total Phosphorus (P)	mg/L	0.286	8223164	1.42	0.010	8225141
Total Selenium (Se)	mg/L	0.000061	8223164	0.00595	0.000040	8225141
Total Silicon (Si)	mg/L	5.67	8223164	8.20	0.10	8225141
Total Silver (Ag)	mg/L	0.00345	8223164	0.000521	0.0000050	8225141
Total Strontium (Sr)	mg/L	0.529	8223164	0.269	0.000050	8225141
Total Thallium (Tl)	mg/L	0.0000450	8223164	0.0000810	0.0000020	8225141
Total Tin (Sn)	mg/L	<0.00020	8223164	0.00158	0.00020	8225141
Total Titanium (Ti)	mg/L	0.0552	8223164	0.0866	0.0050	8225141
Total Uranium (U)	mg/L	0.00946	8223164	0.00438	0.0000050	8225141
Total Vanadium (V)	mg/L	0.00361	8223164	0.0215	0.00050	8225141
Total Zinc (Zn)	mg/L	0.0282	8223164	1.09	0.0010	8225141
Total Zirconium (Zr)	mg/L	0.00161	8223164	0.00489	0.00010	8225141
Total Calcium (Ca)	mg/L	99.5	8221634	87.0	0.25	8222633
RDL = Reportable Detection Limit						

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

**LL TOTAL METALS (DIGESTED) WITH CV HG**

<b>Maxxam ID</b>		OH9419		OH9500		
<b>Sampling Date</b>		2016/03/19 10:40		2016/03/16		
<b>COC Number</b>		488720-03-01		488720-03-01		
	<b>UNITS</b>	<b>MW15-11S</b>	<b>QC Batch</b>	<b>BH95G-2</b>	<b>RDL</b>	<b>QC Batch</b>
Total Magnesium (Mg)	mg/L	28.2	8221634	39.7	0.25	8222633
Total Potassium (K)	mg/L	5.27	8221634	1.43	0.25	8222633
Total Sodium (Na)	mg/L	5.62	8221634	0.87	0.25	8222633
Total Sulphur (S)	mg/L	43	8221634	22	15	8222633
RDL = Reportable Detection Limit						

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### GENERAL COMMENTS

Each temperature is the average of up to three cooler temperatures taken at receipt

Package 1	4.7°C
Package 2	4.3°C
Package 3	5.7°C

Sample OH9401-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9402-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9403-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9404-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9405-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9406-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9407-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9409-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9410-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9411-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9412-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9413-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9414-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9415-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9418-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Sample OH9419-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

Maxxam Job #: B621096  
Report Date: 2016/03/31

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

### GENERAL COMMENTS

Sample OH9500-01 : Sample analyzed for digested low level metals due to sediment in sample. This results in an increased reportable detection limit for Al B Ba Bi Cr Co Cu Fe Mn Ni P Pb Sb Si Ti U V and Zn.

**Results relate only to the items tested.**

Maxxam Job #: B621096  
Report Date: 2016/03/31

**QUALITY ASSURANCE REPORT**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8222836	Total Suspended Solids	2016/03/23			100	80 - 120	<1.0	mg/L		
8222875	Total Dissolved Solids	2016/03/24	NC	80 - 120	92	80 - 120	1.2, RDL=1.0	mg/L	5.9	20
8222919	Dissolved Aluminum (Al)	2016/03/23	NC	80 - 120	103	80 - 120	<0.00050	mg/L	1.4	20
8222919	Dissolved Antimony (Sb)	2016/03/23	93	80 - 120	101	80 - 120	<0.000020	mg/L	NC	20
8222919	Dissolved Arsenic (As)	2016/03/23	93	80 - 120	97	80 - 120	<0.000020	mg/L	NC	20
8222919	Dissolved Barium (Ba)	2016/03/23	96	80 - 120	103	80 - 120	<0.000020	mg/L	0.54	20
8222919	Dissolved Beryllium (Be)	2016/03/23	89	80 - 120	99	80 - 120	<0.000010	mg/L	NC	20
8222919	Dissolved Bismuth (Bi)	2016/03/23	89	80 - 120	98	80 - 120	<0.0000050	mg/L	NC	20
8222919	Dissolved Boron (B)	2016/03/23	91	80 - 120	103	80 - 120	<0.010	mg/L	NC	20
8222919	Dissolved Cadmium (Cd)	2016/03/23	98	80 - 120	97	80 - 120	<0.0000050	mg/L	0	20
8222919	Dissolved Chromium (Cr)	2016/03/23	94	80 - 120	101	80 - 120	<0.00010	mg/L	NC	20
8222919	Dissolved Cobalt (Co)	2016/03/23	93	80 - 120	102	80 - 120	<0.0000050	mg/L	1.8	20
8222919	Dissolved Copper (Cu)	2016/03/23	NC	80 - 120	101	80 - 120	<0.000050	mg/L	0.32	20
8222919	Dissolved Iron (Fe)	2016/03/23	NC	80 - 120	101	80 - 120	<0.0010	mg/L	4.0	20
8222919	Dissolved Lead (Pb)	2016/03/23	92	80 - 120	101	80 - 120	<0.0000050	mg/L	1.6	20
8222919	Dissolved Lithium (Li)	2016/03/23	92	80 - 120	102	80 - 120	<0.00050	mg/L	NC	20
8222919	Dissolved Manganese (Mn)	2016/03/23	NC	80 - 120	100	80 - 120	<0.000050	mg/L	1.1	20
8222919	Dissolved Molybdenum (Mo)	2016/03/23	88	80 - 120	97	80 - 120	<0.000050	mg/L	NC	20
8222919	Dissolved Nickel (Ni)	2016/03/23	93	80 - 120	101	80 - 120	<0.000020	mg/L	2.0	20
8222919	Dissolved Phosphorus (P)	2016/03/23					<0.0020	mg/L	NC	20
8222919	Dissolved Selenium (Se)	2016/03/23	90	80 - 120	94	80 - 120	<0.000040	mg/L	NC	20
8222919	Dissolved Silicon (Si)	2016/03/23					<0.050	mg/L	1.2	20
8222919	Dissolved Silver (Ag)	2016/03/23	75 (1)	80 - 120	92	80 - 120	<0.0000050	mg/L	NC	20
8222919	Dissolved Strontium (Sr)	2016/03/23	NC	80 - 120	94	80 - 120	<0.000050	mg/L	0.56	20
8222919	Dissolved Thallium (Tl)	2016/03/23	91	80 - 120	98	80 - 120	<0.0000020	mg/L	NC	20
8222919	Dissolved Tin (Sn)	2016/03/23	95	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8222919	Dissolved Titanium (Ti)	2016/03/23	91	80 - 120	99	80 - 120	<0.00050	mg/L	NC	20
8222919	Dissolved Uranium (U)	2016/03/23	90	80 - 120	101	80 - 120	<0.0000020	mg/L	NC	20
8222919	Dissolved Vanadium (V)	2016/03/23	97	80 - 120	99	80 - 120	<0.00020	mg/L	NC	20
8222919	Dissolved Zinc (Zn)	2016/03/23	95	80 - 120	101	80 - 120	<0.00010	mg/L	1.8	20
8222919	Dissolved Zirconium (Zr)	2016/03/23					<0.00010	mg/L	NC	20

Maxxam Job #: B621096  
Report Date: 2016/03/31

**QUALITY ASSURANCE REPORT(CONT'D)**

TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8223164	Total Aluminum (Al)	2016/03/25	98	80 - 120	107	80 - 120	<0.0030	mg/L	2.4	20
8223164	Total Antimony (Sb)	2016/03/25	99	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8223164	Total Arsenic (As)	2016/03/25	94	80 - 120	97	80 - 120	<0.000020	mg/L	1.4	20
8223164	Total Barium (Ba)	2016/03/25	NC	80 - 120	105	80 - 120	<0.00010	mg/L	0.88	20
8223164	Total Beryllium (Be)	2016/03/25	99	80 - 120	98	80 - 120	<0.000010	mg/L	NC	20
8223164	Total Bismuth (Bi)	2016/03/25	94	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8223164	Total Boron (B)	2016/03/25	108	80 - 120	99	80 - 120	<0.050	mg/L	NC	20
8223164	Total Cadmium (Cd)	2016/03/25	92	80 - 120	97	80 - 120	<0.0000050	mg/L	NC	20
8223164	Total Chromium (Cr)	2016/03/25	98	80 - 120	99	80 - 120	<0.00050	mg/L	NC	20
8223164	Total Cobalt (Co)	2016/03/25	94	80 - 120	100	80 - 120	<0.000010	mg/L	0.10	20
8223164	Total Copper (Cu)	2016/03/25	90	80 - 120	100	80 - 120	<0.00020	mg/L	NC	20
8223164	Total Iron (Fe)	2016/03/25	NC	80 - 120	107	80 - 120	<0.0050	mg/L	0.098	20
8223164	Total Lead (Pb)	2016/03/25	101	80 - 120	105	80 - 120	<0.000050	mg/L	NC	20
8223164	Total Lithium (Li)	2016/03/25	93	80 - 120	99	80 - 120	<0.00050	mg/L	0.16	20
8223164	Total Manganese (Mn)	2016/03/25	NC	80 - 120	97	80 - 120	<0.00010	mg/L	1.6	20
8223164	Total Molybdenum (Mo)	2016/03/25	102	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8223164	Total Nickel (Ni)	2016/03/25	91	80 - 120	97	80 - 120	<0.00010	mg/L	NC	20
8223164	Total Phosphorus (P)	2016/03/25					<0.010	mg/L		
8223164	Total Selenium (Se)	2016/03/25	88	80 - 120	92	80 - 120	<0.000040	mg/L	NC	20
8223164	Total Silicon (Si)	2016/03/25					<0.10	mg/L	0.24	20
8223164	Total Silver (Ag)	2016/03/25	106	80 - 120	93	80 - 120	<0.0000050	mg/L	NC	20
8223164	Total Strontium (Sr)	2016/03/25	NC	80 - 120	100	80 - 120	<0.000050	mg/L	0.62	20
8223164	Total Thallium (Tl)	2016/03/25	100	80 - 120	85	80 - 120	<0.0000020	mg/L	NC	20
8223164	Total Tin (Sn)	2016/03/25	99	80 - 120	103	80 - 120	<0.00020	mg/L	NC	20
8223164	Total Titanium (Ti)	2016/03/25	92	80 - 120	97	80 - 120	<0.0050	mg/L	NC	20
8223164	Total Uranium (U)	2016/03/25	103	80 - 120	103	80 - 120	<0.0000050	mg/L	2.2	20
8223164	Total Vanadium (V)	2016/03/25	103	80 - 120	96	80 - 120	<0.00050	mg/L	NC	20
8223164	Total Zinc (Zn)	2016/03/25	NC	80 - 120	98	80 - 120	<0.0010	mg/L	3.3	20
8223164	Total Zirconium (Zr)	2016/03/25					<0.00010	mg/L	NC	20
8223352	Fluoride (F)	2016/03/22	99	80 - 120	102	80 - 120	0.012, RDL=0.010	mg/L	2.6	20



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TETRATECH EBA  
Client Project #: ENVMIN03071-01  
Site Location: KUDZ ZE KAYAH  
Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8223359	Fluoride (F)	2016/03/22	NC	80 - 120	102	80 - 120	0.011, RDL=0.010	mg/L	0	20
8223390	Total Dissolved Solids	2016/03/24	106	80 - 120	82	80 - 120	<1.0	mg/L	2.7	20
8223471	Orthophosphate (P)	2016/03/22	151 (1)	80 - 120	107	80 - 120	0.0019, RDL=0.0010	mg/L	6.7	20
8223654	Dissolved Organic Carbon (C)	2016/03/23	102	80 - 120	105	80 - 120	<0.50	mg/L	NC	20
8223850	Total Suspended Solids	2016/03/24			98	80 - 120	<1.0	mg/L		
8223987	Dissolved Organic Carbon (C)	2016/03/23	98	80 - 120	98	80 - 120	<0.50	mg/L	NC	20
8224133	Nitrate plus Nitrite (N)	2016/03/22	NC	80 - 120	97	80 - 120	<0.0020	mg/L	0.048	25
8224136	Nitrite (N)	2016/03/22	100	80 - 120	96	80 - 120	<0.0020	mg/L	NC	25
8224181	Alkalinity (PP as CaCO3)	2016/03/23					<0.50	mg/L	NC	20
8224181	Alkalinity (Total as CaCO3)	2016/03/23	NC	80 - 120	97	80 - 120	<0.50	mg/L	0.36	20
8224181	Bicarbonate (HCO3)	2016/03/23					<0.50	mg/L	0.36	20
8224181	Carbonate (CO3)	2016/03/23					<0.50	mg/L	NC	20
8224181	Hydroxide (OH)	2016/03/23					<0.50	mg/L	NC	20
8224184	Conductivity	2016/03/23			98	80 - 120	<1.0	uS/cm		
8224185	pH	2016/03/23			101	97 - 103				
8224192	pH	2016/03/23			101	97 - 103				
8224198	Conductivity	2016/03/23			100	80 - 120	<1.0	uS/cm		
8224199	Alkalinity (PP as CaCO3)	2016/03/23					<0.50	mg/L		
8224199	Alkalinity (Total as CaCO3)	2016/03/23	96	80 - 120	96	80 - 120	<0.50	mg/L		
8224199	Bicarbonate (HCO3)	2016/03/23					<0.50	mg/L		
8224199	Carbonate (CO3)	2016/03/23					<0.50	mg/L		
8224199	Hydroxide (OH)	2016/03/23					<0.50	mg/L		
8224219	Acidity (pH 4.5)	2016/03/23					<0.50	mg/L	NC	20
8224219	Acidity (pH 8.3)	2016/03/23			99	80 - 120	<0.50	mg/L	NC	20
8224222	pH	2016/03/23			101	97 - 103			0.26	N/A
8224231	Conductivity	2016/03/23			100	80 - 120	1.1, RDL=1.0	uS/cm		
8224232	Alkalinity (PP as CaCO3)	2016/03/24					<0.50	mg/L	NC	20
8224232	Alkalinity (Total as CaCO3)	2016/03/24	96	80 - 120	99	80 - 120	<0.50	mg/L	NC	20
8224232	Bicarbonate (HCO3)	2016/03/24					<0.50	mg/L	NC	20

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8224232	Carbonate (CO3)	2016/03/24					<0.50	mg/L	NC	20
8224232	Hydroxide (OH)	2016/03/24					<0.50	mg/L	NC	20
8224236	Acidity (pH 4.5)	2016/03/23					<0.50	mg/L	NC	20
8224236	Acidity (pH 8.3)	2016/03/23			96	80 - 120	<0.50	mg/L	2.4	20
8224347	Dissolved Aluminum (Al)	2016/03/25	99	80 - 120	103	80 - 120	<0.00050	mg/L	NC	20
8224347	Dissolved Antimony (Sb)	2016/03/25	100	80 - 120	104	80 - 120	<0.000020	mg/L	NC	20
8224347	Dissolved Arsenic (As)	2016/03/25	101	80 - 120	100	80 - 120	<0.000020	mg/L	NC	20
8224347	Dissolved Barium (Ba)	2016/03/25	100	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8224347	Dissolved Beryllium (Be)	2016/03/25	100	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8224347	Dissolved Bismuth (Bi)	2016/03/25	97	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8224347	Dissolved Boron (B)	2016/03/25	108	80 - 120	102	80 - 120	<0.010	mg/L	NC	20
8224347	Dissolved Cadmium (Cd)	2016/03/25	98	80 - 120	99	80 - 120	<0.0000050	mg/L	NC	20
8224347	Dissolved Chromium (Cr)	2016/03/25	100	80 - 120	103	80 - 120	<0.00010	mg/L	NC	20
8224347	Dissolved Cobalt (Co)	2016/03/25	101	80 - 120	104	80 - 120	<0.0000050	mg/L	NC	20
8224347	Dissolved Copper (Cu)	2016/03/25	101	80 - 120	102	80 - 120	<0.000050	mg/L	NC	20
8224347	Dissolved Iron (Fe)	2016/03/25	98	80 - 120	105	80 - 120	<0.0010	mg/L	NC	20
8224347	Dissolved Lead (Pb)	2016/03/25	98	80 - 120	104	80 - 120	<0.0000050	mg/L	NC	20
8224347	Dissolved Lithium (Li)	2016/03/25	94	80 - 120	101	80 - 120	<0.00050	mg/L	NC	20
8224347	Dissolved Manganese (Mn)	2016/03/25	99	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8224347	Dissolved Molybdenum (Mo)	2016/03/25	96	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8224347	Dissolved Nickel (Ni)	2016/03/25	99	80 - 120	102	80 - 120	<0.000020	mg/L	NC	20
8224347	Dissolved Phosphorus (P)	2016/03/25					<0.0020	mg/L		
8224347	Dissolved Selenium (Se)	2016/03/25	98	80 - 120	97	80 - 120	<0.000040	mg/L	NC	20
8224347	Dissolved Silicon (Si)	2016/03/25					<0.050	mg/L	NC	20
8224347	Dissolved Silver (Ag)	2016/03/25	96	80 - 120	89	80 - 120	<0.0000050	mg/L	NC	20
8224347	Dissolved Strontium (Sr)	2016/03/25	98	80 - 120	102	80 - 120	<0.000050	mg/L	NC	20
8224347	Dissolved Thallium (Tl)	2016/03/25	101	80 - 120	92	80 - 120	<0.0000020	mg/L	NC	20
8224347	Dissolved Tin (Sn)	2016/03/25	98	80 - 120	101	80 - 120	<0.00020	mg/L	NC	20
8224347	Dissolved Titanium (Ti)	2016/03/25	101	80 - 120	99	80 - 120	<0.00050	mg/L	NC	20
8224347	Dissolved Uranium (U)	2016/03/25	96	80 - 120	102	80 - 120	<0.0000020	mg/L	NC	20
8224347	Dissolved Vanadium (V)	2016/03/25	101	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20

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Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8224347	Dissolved Zinc (Zn)	2016/03/25	106	80 - 120	100	80 - 120	<0.00010	mg/L	NC	20
8224347	Dissolved Zirconium (Zr)	2016/03/25					<0.00010	mg/L	NC	20
8224358	Total Aluminum (Al)	2016/03/24	92	80 - 120	103	80 - 120	<0.00050	mg/L	NC	20
8224358	Total Antimony (Sb)	2016/03/24	92	80 - 120	105	80 - 120	<0.000020	mg/L	NC	20
8224358	Total Arsenic (As)	2016/03/24	93	80 - 120	94	80 - 120	<0.000020	mg/L	NC	20
8224358	Total Barium (Ba)	2016/03/24	95	80 - 120	103	80 - 120	<0.000020	mg/L	NC	20
8224358	Total Beryllium (Be)	2016/03/24	91	80 - 120	100	80 - 120	<0.000010	mg/L	NC	20
8224358	Total Bismuth (Bi)	2016/03/24	92	80 - 120	102	80 - 120	<0.0000050	mg/L	NC	20
8224358	Total Boron (B)	2016/03/24	93	80 - 120	101	80 - 120	<0.010	mg/L	NC	20
8224358	Total Cadmium (Cd)	2016/03/24	93	80 - 120	101	80 - 120	<0.0000050	mg/L	NC	20
8224358	Total Chromium (Cr)	2016/03/24	94	80 - 120	95	80 - 120	<0.00010	mg/L	NC	20
8224358	Total Cobalt (Co)	2016/03/24	95	80 - 120	96	80 - 120	<0.0000050	mg/L	NC	20
8224358	Total Copper (Cu)	2016/03/24	94	80 - 120	95	80 - 120	<0.000050	mg/L	NC	20
8224358	Total Iron (Fe)	2016/03/24	93	80 - 120	107	80 - 120	<0.0010	mg/L	NC	20
8224358	Total Lead (Pb)	2016/03/24	95	80 - 120	105	80 - 120	<0.0000050	mg/L	NC	20
8224358	Total Lithium (Li)	2016/03/24	84	80 - 120	100	80 - 120	<0.00050	mg/L	NC	20
8224358	Total Manganese (Mn)	2016/03/24	94	80 - 120	96	80 - 120	0.000063, RDL=0.000050	mg/L	NC	20
8224358	Total Molybdenum (Mo)	2016/03/24	92	80 - 120	101	80 - 120	<0.000050	mg/L	NC	20
8224358	Total Nickel (Ni)	2016/03/24	94	80 - 120	95	80 - 120	<0.000020	mg/L	NC	20
8224358	Total Phosphorus (P)	2016/03/24					<0.0020	mg/L		
8224358	Total Selenium (Se)	2016/03/24	87	80 - 120	93	80 - 120	<0.000040	mg/L	NC	20
8224358	Total Silicon (Si)	2016/03/24					<0.050	mg/L	NC	20
8224358	Total Silver (Ag)	2016/03/24	89	80 - 120	90	80 - 120	<0.0000050	mg/L	NC	20
8224358	Total Strontium (Sr)	2016/03/24	95	80 - 120	96	80 - 120	<0.000050	mg/L	NC	20
8224358	Total Thallium (Tl)	2016/03/24	98	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8224358	Total Tin (Sn)	2016/03/24	93	80 - 120	102	80 - 120	<0.00020	mg/L	NC	20
8224358	Total Titanium (Ti)	2016/03/24	90	80 - 120	91	80 - 120	<0.00050	mg/L	NC	20
8224358	Total Uranium (U)	2016/03/24	93	80 - 120	102	80 - 120	<0.0000020	mg/L	NC	20
8224358	Total Vanadium (V)	2016/03/24	93	80 - 120	93	80 - 120	<0.00020	mg/L	NC	20
8224358	Total Zinc (Zn)	2016/03/24	97	80 - 120	96	80 - 120	<0.00010	mg/L	NC	20

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Sampler Initials: ER

QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8224358	Total Zirconium (Zr)	2016/03/24					<0.00010	mg/L	NC	20
8224468	Fluoride (F)	2016/03/23	NC	80 - 120	100	80 - 120	<0.010	mg/L	2.5	20
8224477	Total Ammonia (N)	2016/03/23	NC	80 - 120	102	80 - 120	<0.0050	mg/L	1.9	20
8224478	Total Ammonia (N)	2016/03/23	NC	80 - 120	104	80 - 120	<0.0050	mg/L	2.4	20
8224479	Total Ammonia (N)	2016/03/23	112	80 - 120	105	80 - 120	<0.0050	mg/L	NC	20
8224484	Dissolved Chloride (Cl)	2016/03/23	104	80 - 120	104	80 - 120	<0.50	mg/L	NC	20
8224488	Dissolved Sulphate (SO4)	2016/03/23	NC	80 - 120	96	80 - 120	<0.50	mg/L	1.2	20
8224493	Dissolved Chloride (Cl)	2016/03/23	108	80 - 120	96	80 - 120	<0.50	mg/L	NC	20
8224503	Dissolved Sulphate (SO4)	2016/03/23	102	80 - 120	92	80 - 120	0.97, RDL=0.50	mg/L	NC	20
8224619	Nitrate plus Nitrite (N)	2016/03/23	NC	80 - 120	106	80 - 120	<0.0020	mg/L	0.21	25
8224620	Nitrite (N)	2016/03/23	98	80 - 120	103	80 - 120	<0.0020	mg/L	NC	25
8224629	Total Nitrogen (N)	2016/03/24	NC	80 - 120	94	80 - 120	<0.020	mg/L	0.75	20
8224630	Total Nitrogen (N)	2016/03/24	95	80 - 120	97	80 - 120	<0.020	mg/L	NC	20
8225141	Total Aluminum (Al)	2016/03/24	NC	80 - 120	107	80 - 120	<0.0030	mg/L		
8225141	Total Antimony (Sb)	2016/03/24	107	80 - 120	103	80 - 120	<0.000050	mg/L		
8225141	Total Arsenic (As)	2016/03/24	104	80 - 120	98	80 - 120	<0.000020	mg/L		
8225141	Total Barium (Ba)	2016/03/24	NC	80 - 120	106	80 - 120	<0.00010	mg/L		
8225141	Total Beryllium (Be)	2016/03/24	104	80 - 120	100	80 - 120	<0.000010	mg/L		
8225141	Total Bismuth (Bi)	2016/03/24	104	80 - 120	99	80 - 120	<0.000020	mg/L	NC	20
8225141	Total Boron (B)	2016/03/24	110	80 - 120	106	80 - 120	<0.050	mg/L		
8225141	Total Cadmium (Cd)	2016/03/24	98	80 - 120	98	80 - 120	<0.0000050	mg/L		
8225141	Total Chromium (Cr)	2016/03/24	103	80 - 120	102	80 - 120	<0.00050	mg/L		
8225141	Total Cobalt (Co)	2016/03/24	101	80 - 120	102	80 - 120	<0.000010	mg/L		
8225141	Total Copper (Cu)	2016/03/24	97	80 - 120	104	80 - 120	<0.00020	mg/L		
8225141	Total Iron (Fe)	2016/03/24	NC	80 - 120	102	80 - 120	<0.0050	mg/L		
8225141	Total Lead (Pb)	2016/03/24	110	80 - 120	103	80 - 120	<0.000050	mg/L		
8225141	Total Lithium (Li)	2016/03/24	NC	80 - 120	101	80 - 120	<0.00050	mg/L		
8225141	Total Manganese (Mn)	2016/03/24	NC	80 - 120	101	80 - 120	<0.00010	mg/L		
8225141	Total Molybdenum (Mo)	2016/03/24	NC	80 - 120	96	80 - 120	<0.000050	mg/L		
8225141	Total Nickel (Ni)	2016/03/24	98	80 - 120	99	80 - 120	<0.00010	mg/L		
8225141	Total Phosphorus (P)	2016/03/24					<0.010	mg/L		

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QC Batch	Parameter	Date	Matrix Spike		Spiked Blank		Method Blank		RPD	
			% Recovery	QC Limits	% Recovery	QC Limits	Value	UNITS	Value (%)	QC Limits
8225141	Total Selenium (Se)	2016/03/24	93	80 - 120	96	80 - 120	<0.000040	mg/L		
8225141	Total Silicon (Si)	2016/03/24					<0.10	mg/L		
8225141	Total Silver (Ag)	2016/03/24	109	80 - 120	95	80 - 120	<0.0000050	mg/L		
8225141	Total Strontium (Sr)	2016/03/24	NC	80 - 120	101	80 - 120	<0.000050	mg/L		
8225141	Total Thallium (Tl)	2016/03/24	98	80 - 120	88	80 - 120	<0.0000020	mg/L		
8225141	Total Tin (Sn)	2016/03/24	106	80 - 120	104	80 - 120	<0.00020	mg/L		
8225141	Total Titanium (Ti)	2016/03/24	105	80 - 120	95	80 - 120	<0.0050	mg/L		
8225141	Total Uranium (U)	2016/03/24	108	80 - 120	101	80 - 120	<0.0000050	mg/L		
8225141	Total Vanadium (V)	2016/03/24	107	80 - 120	102	80 - 120	<0.00050	mg/L		
8225141	Total Zinc (Zn)	2016/03/24	98	80 - 120	103	80 - 120	<0.0010	mg/L		
8225141	Total Zirconium (Zr)	2016/03/24					<0.00010	mg/L		
8225199	Orthophosphate (P)	2016/03/24	102	80 - 120	96	80 - 120	<0.0010	mg/L	NC	20
8226034	Total Phosphorus (P)	2016/03/24	95	80 - 120	101	80 - 120	<0.0020	mg/L	NC	20
8226524	Dissolved Chloride (Cl)	2016/03/24			99	80 - 120	<0.50	mg/L		
8226530	Dissolved Sulphate (SO4)	2016/03/24	113	80 - 120	94	80 - 120	<0.50	mg/L		
8226589	Dissolved Mercury (Hg)	2016/03/28	105	80 - 120	99	80 - 120	<0.0000020	mg/L	NC	20
8226945	Total Mercury (Hg)	2016/03/28	104	80 - 120	106	80 - 120	<0.0000020	mg/L	NC	20
8228373	Total Phosphorus (P)	2016/03/29	95	80 - 120	87	80 - 120	<0.0020	mg/L	NC	20
8229327	Total Ammonia (N)	2016/03/30	103	80 - 120	100	80 - 120	<0.0050	mg/L	NC	20
8229370	Total Nitrogen (N)	2016/03/31			97	80 - 120	<0.020	mg/L		
8229427	Orthophosphate (P)	2016/03/30	NC	Email REDACTED						

N/A = Not Applicable

measurement.

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TETRATECH EBA  
Client Project #: ENVMIN03071-01  
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### VALIDATION SIGNATURE PAGE

The analytical data and all QC contained in this report were reviewed and validated by the following individual(s).



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Name REDACTED Data Validation Coordinator

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Maxxam has procedures in place to guard against improper use of the electronic signature and have the required "signatories", as per section 5.10.2 of ISO/IEC 17025:2005(E), signing the reports. For Service Group specific validation please refer to the Validation Signature Page.

<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>		<b>Laboratory Use Only</b>	
Company Name	#11954 BMC MINERAL (NO. 1) LTD.	Company Name	#31161 TETRATECH EBA	Quotation #	B50743	Maxxam Job #	B621096
Contact Name	ACCOUNTS PAYABLE	Contact Name	Name REDACTED	P.O. #		Bottle Order #:	488720
Address	530-1130 West Pender Street, Vancouver BC V6E 4A4	Address	61 WASSON PL WHITEHORSE YT	Project #	ENVMIN03071-01	Chain Of Custody Record	Project Manager
Phone	Email REDACTED	Phone	(867) 668-9224	Project Name	KUOZ ZE KAYAH	Site #	Name REDACTED
Email		Email	Email REDACTED	Site #	Name REDACTED	Site #	Name REDACTED

<b>Regulatory Criteria:</b> <input checked="" type="checkbox"/> Yukon CSR <input checked="" type="checkbox"/> CCME <input type="checkbox"/> BC Water Quality <input checked="" type="checkbox"/> Other <u>Fed Interim</u>	<b>Special Ins</b> No turbidity analysis needed.	<b>ANALYSIS REQUESTED (PLEASE BE SPECIFIC)</b>	<b>Turnaround Time (TAT) Required:</b> Please provide advance notice for rush projects
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SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Filtered? (Y/N)	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (incl. NO3, NO2, Total P)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus-P (LL Tot, dissolved) - FF/FP	DOC	TSS	# of Bottles	Comments
1	BH95G-22	March 14	12h15	GW		X	X	X	X	X	X	α	α	13	
2	<del>BH95G-24</del>					X	X	X	X	X	X				
3	<del>BH95G-25S</del>					X	X	X	X	X	X				
4	BG95G-32	March 15	9h40	GW		X	X	X	X	X	X	α	α	13	
5	BH95G-33D	March 15	14h55	GW		X	X	X	X	X	X	α	α	13	
6	BH95-131	March 14	16h15	GW		X	X	X	X	X	X	α	α	13	
7	<del>BH95-146</del>					X	X	X	X	X	X				
8	MW15-01	March 15	14h10	GW		X	X	X	X	X	X	α	α	13	
9	MW15-03S	March 13	13h15	GW		X	X	X	X	X	X	α	α	13	
10	MW15-03D	March 13	13h50	GW		X	X	X	X	X	X	α	α	13	

<b>RELINQUISHED BY: (Signature/Print)</b> Name REDACTED	<b>Date: (YY/MM/DD)</b> 16/03/18	<b>Time</b> 17h	<b>RECEIVED BY: (Signature/Print)</b> Name REDACTED	<b>Date: (YY/MM/DD)</b> 16/03/21	<b>Time</b> 11:40	<b># jars used and not submitted</b> <input type="checkbox"/>	<b>Lab Use Only</b>
<b>Time Sensitive</b> <input type="checkbox"/>	<b>Temperature (°C) on Receipt</b> 36.5 / 44.5 / 16.4	<b>Custody Seal Intact on Cooler?</b> <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No	White: Maxxam Yellow: Client				

THE ACCURACY OF THE CHAIN OF CUSTODY RECORD, AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.



<b>INVOICE TO:</b>		<b>Report Information</b>		<b>Project Information</b>		<b>Laboratory Use Only</b>	
Company Name #11954 BMC MINERAL (NO. 1) LTD.		Company Name #31161 TETRA TECH ERA		Quotation # B50743		Maxxam Job #	
Contact Name ACCOUNTS PAYABLE		Contact Name <b>Name REDACTED</b>		P.O. #		Bottle Order #	
Address 530-1130 West Pender Street, Vancouver BC V6E 4A4		Address 61 WASSON PL WHITEHORSE Y		Project # ENVMIN03071-01		488720	
Phone Email <b>Email REDACTED</b>		Phone (867) 668-9273 Email <b>Email REDACTED</b>		Project Name <b>KUDZ 75 KAYAH</b>		Chain Of Custody Record	
				Site # <b>Name REDACTED</b>		Project Manager	
				Sampled By		Morgan Melnychuk	

Regulatory Criteria: <input checked="" type="checkbox"/> <b>As Taken</b> CSR <input checked="" type="checkbox"/> CCME <input type="checkbox"/> BC Water Quality <input checked="" type="checkbox"/> Other <b>Fed. Interim</b>		Special Instructions No turbidity analysis required.		ANALYSIS REQUESTED (PLEASE BE SPECIFIC)						Turnaround Time (TAT) Required: Please provide advance notice for rush projects							
				ROUTINE (incl. TDS)		MAJOR IONS		NUTRIENTS (incl. NO3, NO2, Total P)		Low Level Dissolved Metals with CV Hg		Low Level Total Metals with CV Hg		Phosphorus-P (LL Tot, dissolved) - FF/FP		Regular (Standard) TAT: (will be applied if Rush TAT is not specified): Standard TAT = 5-7 Working days for most tests. Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 5 days - contact your Project Manager for details.	
										Job Specific Rush TAT (if applies to entire submission) 1 DAY <input type="checkbox"/> 2 Day <input type="checkbox"/> 3 Day <input type="checkbox"/> Date Required: _____		DOC		TSS		Rush Confirmation Number: _____ (call lab for #)	

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Filtered ? (Y/N)	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (incl. NO3, NO2, Total P)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus-P (LL Tot, dissolved) - FF/FP	DOC	TSS	# of Bottles	Comments
1	MW15-04S	March 13	16h30	GW		X	X	X	X	X	X	X	X	13	
2	MW15-04D	March 13	15h50	GW		X	X	X	X	X	X	X	X	13	
3	MW15-05D	March 13	18h40	GW		X	X	X	X	X	X	X	X	13	
4	MW15-07S	March 15	19h00	GW		X	X	X	X	X	X	X	X	13	
5	<del>MW15-88B</del>					X	X	X	X	X	X				
6	<del>MW15-10S</del>					X	X	X	X	X	X				
7	MW15-10D	March 17	16h40	GW		X	X	X	X	X	X	X	X	13	
8	<del>MW15-11S</del>					X	X	X	X	X	X				
9	Dup01	March 13	13h50	GW		X	X	X	X	X	X	X	X	13	
10	Dup02	March 14	16h15	GW		X	X	X	X	X	X	X	X	13	



* * RELINQUISHED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	RECEIVED BY: (Signature/Print)		Date: (YY/MM/DD)	Time	# Jars used and not submitted	Lab Use Only		
<b>Name REDACTED</b>		16/03/19	17h	<b>Name REDACTED</b>		16/03/21	11:40		Time Sensitive <input type="checkbox"/>	Temperature (°C) on Receipt: 36.5/44.5/76.4	Custody Seal Intact on Cooler? <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.





COA  
 CO2  
 Address  
 Phone  
 Email

**INVOICE TO:**  
 #11954 BMC MINERAL (NO. 1) LTD.  
 ACCOUNTS PAYABLE  
 530-1130 West Pender Street,  
 Vancouver BC V6E 4A4  
 Email REDACTED

**Report Information**  
 Company Name #31161 TETRATECH EBA  
 Contact Name [REDACTED] Name REDACTED  
 Address 61 WASSON PLAZA  
 WHITEHORSE YD  
 Phone (867) 668-9224  
 Email [REDACTED]

**Project Information**  
 Quotation # B50743  
 O. #  
 Project # ENVMIN03071-01  
 Project Name KUDZ ZE KANAH  
 Name REDACTED  
 Site #  
 Sampled By

**Laboratory Use Only**  
 Maxxam Job # B621096  
 Bottle Order #: 488720  
 Chain Of Custody Record  
 Project Manager Morgan Melnychuk  
 C0488720-03-01

**Criteria:**  
 Turbidity  
 Water Quality  
 Feed Intaim.

**Special Instructions**  
 No turbidity analysis required.

**ANALYSIS REQUESTED (PLEASE BI**

ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (incl. NO3, NO2, Total P)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus-P (LL Tot. dissolved) - FF/FP
X	X	X	X	X	X
X	X	X	X	X	X
α	α	α	α	α	α
α	α	α	α	α	α

DOC TSS

**Turnaround Time (TAT) Required:**  
 Please provide advance notice for rush projects  
 Regular (Standard) TAT:   
 (will be applied if Rush TAT is not specified)  
 Standard TAT = 5-7 Working days for most tests.  
 Please note: Standard TAT for certain tests such as BOD and Dioxins/Furans are > 6 days - contact your Project Manager for details.  
 Job Specific Rush TAT (if applies to entire submission)  
 1 DAY  2 Day  3 Day  Date Required:   
 Rush Confirmation Number: \_\_\_\_\_ (call lab for #)

SAMPLES MUST BE KEPT COOL (< 10°C) FROM TIME OF SAMPLING UNTIL DELIVERY TO MAXXAM

Sample Barcode Label	Sample (Location) Identification	Date Sampled	Time Sampled	Matrix	Metals Field Filtered? (Y/N)	ROUTINE (incl. TDS)	MAJOR IONS	NUTRIENTS (incl. NO3, NO2, Total P)	Low Level Dissolved Metals with CV Hg	Low Level Total Metals with CV Hg	Phosphorus-P (LL Tot. dissolved) - FF/FP
	Dup03					X	X	X	X	X	X
	TRIP BLANK			DI		X	X	X	X	X	X
	BH95-129	March 17	14h20	GW		α	α	α	α	α	α
	MWLS-118	March 19	10h40	GW		α	α	α	α	α	α

Was last in transit to camp & found a few days later... FREEZ



21-Mar-16 13:36  
 Name REDACTED  
 B621096  
 APT SO131

**RELINQUISHED BY: (Signature/Print)** Name REDACTED **Date: (YY/MM/DD)** 16/03/18 **Time** 13h

**RECEIVED BY: (Signature/Print)** Name REDACTED **Date: (YY/MM/DD)** 20/6/03/21 **Time** 15:40

**# jars used and not submitted**  **Time Sensitive**  **Temperature (°C) on Receipt** 36.5/44.5/76.4 **Custody Seal Intact on Cooler?**  Yes  No

\* IT IS THE RESPONSIBILITY OF THE RELINQUISHER TO ENSURE THE ACCURACY OF THE CHAIN OF CUSTODY RECORD. AN INCOMPLETE CHAIN OF CUSTODY MAY RESULT IN ANALYTICAL TAT DELAYS.  
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