APPENDIX K

GEOCHEMISTRY TECHNICAL SUPPORT DOCUMENTS

K-1.1 Static Testing Baseline Report 2021
K-1.2 Tailings ML/ARD Assessment – Static Testing Results
K-1.3 Kinetic Geochemistry Report 2023
K-1.4 Static Geochemical Characterization of Overburden and the Fish Habitat Development Area
K-1.5 Static Geochemical Characterization of Springpole Lake Sediment Samples
K-1.6 Preliminary Geochemical Assessment of CDF Quarry
K-2 Mine Site Water Quality Modelling Report

Tailings ML/ARD Assessment – Static Testing Results

Springpole Gold Project

First Mining Gold Corp.

ONS2104

Prepared by:
WSP Canada Inc.

October 2024

Tailings ML/ARD Assessment – Static Testing Results
Springpole Gold Project

Red Lake District, Northwest Ontario
Project #ONS2104

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TABLE OF CONTENTS

LIST OF TABLES

LIST OF FIGURES

LIST OF ATTACHMENTS

1.0 INTRODUCTION AND SCOPE OF WORK

First Mining Gold Corp. (FMG) proposes to develop, operate, and eventually decommission / close an open pit gold and silver mine and ore process plant with supporting facilities known as the Springpole Gold Project (the Project). The Project is located in a remote area of northwestern Ontario, approximately 110 kilometres (km) northeast of the Municipality of Red Lake and 145 km north of the Municipality of Sioux Lookout (Figure 1–1).

An environmental assessment (EA) pursuant to the Canadian Environmental Assessment Act, 2012 and the Ontario Environmental Assessment Act, is required to be completed for the Project. Geochemical studies are underway to characterize the metal leaching and acid rock drainage (ML/ARD) potential of geologic materials associated with the proposed mine development. This includes a tailings static and kinetic testing program to assess the ML/ARD potential of Project tailings.

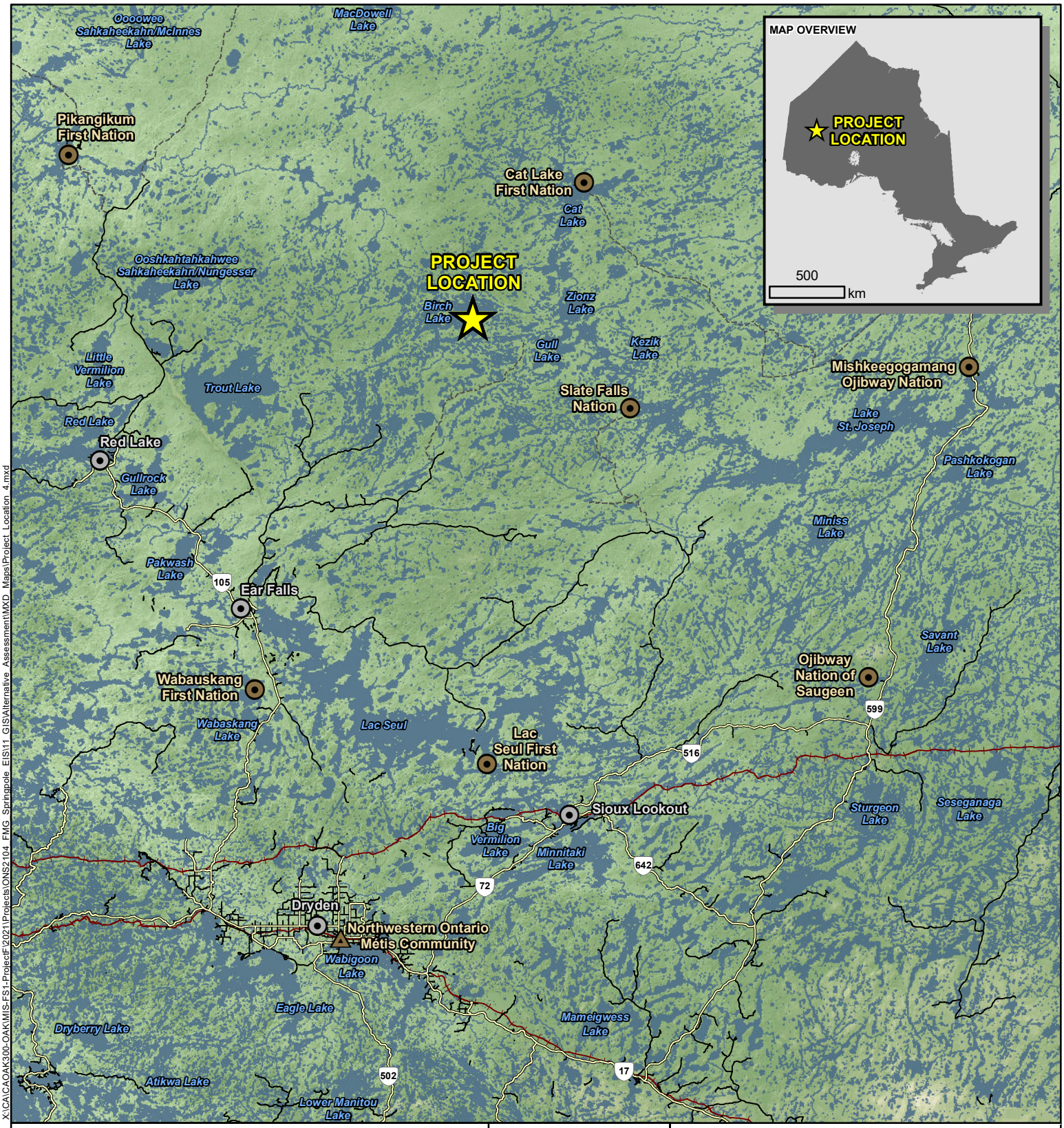
Current project plans include gold recovery via flotation and cyanidation. Two tailings streams will be generated, including a flotation tailing and sulphide concentrate tailing. In addition to supporting gold recovery, this approach will support tailings management as it will allow for the generation of a nonpotentially acid generating (NAG) tailing (i.e., a flotation tailing with a low sulphide content) and a lower volume potentially acid generating (PAG) tailing (i.e., sulphide concentrate tailing). Separate leaching circuits will be used for both tailings products and cyanide destruction will be conducted prior to tailings deposition in the Co-Disposal Facility (CDF).

This memorandum summarizes the findings of the tailings static testing program. This program utilized synthetic tailing samples produced as part of metallurgical testwork for the Project, including:

- A life of mine synthetic flotation tailing and sulphide concentrate tailing produced as part of metallurgical testing in 2021.
- Several flotation tailing and sulphide concentrate tailing samples produced in 2022. This includes samples representative of life of mine tailings (including early operations and later operations tailings), as well as samples produced via variability testing undertaken at that time.

The objective of this assessment was to evaluate the geochemical characteristics of tailings likely to be generated during mine operations. The results will support ongoing baseline and engineering studies. Tailings kinetic testing (humidity cell tests and column tests) is underway, and results will be reported under a separate cover when available.

The approach and testing methods utilized herein are based on the requirements described under the *Ontario Mining Act,* namely guidance found within the reference document 'Prediction for Drainage Chemistry for Sulphidic Geologic Materials' (MEND 2009), which represents best practice and industry-standard approaches and methodologies for ML/ARD sampling and characterization in Canada.



LEGEND

- Project Location
- Town
- First Nation Reserve
- Northwestern Ontario Métis Community
- Highway
- Secondary Road
- Resource / Winter Road
- Railway

0 12.5 25 50 75 100 Kilometres

NOTES:
- Topographic information extracted from LIO, MNRF.

Datum: NAD83
Projection: UTM Zone 15N

N W E S

First Mining Gold

WSP

SPRINGPOLE GOLD PROJECT

Project Location

PROJECT N°: ONS2104	**FIGURE: 1-1**
SCALE: 1:1,500,000	DATE: September 2024

2.0 SUMMARY OF AVAILABLE SAMPLES

A summary of the synthetic tailings samples utilized in the static testing program is provided in Table 2–1.

The tailings samples were obtained from the metallurgical testwork undertaken by Ausenco and Basemet Metallurgical Laboratories (Basemet), under the direction of FMG. As shown in Table 2–1, a total of 18 synthetic tailings samples were produced as a part of two metallurgical programs (2021 and 2022), including nine samples of flotation tailings and nine samples of sulphide concentrate tailings. Some samples represent life of mine (LOM) milling conditions and other samples were generated as part of variability testing.

The tailings were prepared by Basemet as outlined below:

- Ore composites were selected by Ausenco and Basemet. Composite samples underwent primary grinding followed by a single stage of rougher flotation, which produced a rougher tailing (i.e., flotation tailing) and a rougher concentrate (i.e., sulphide concentrate tailing).
    - The rougher concentrate was reground and cyanide leached. The pregnant leach solution was dewatered and treated by Merril Crowe. The post Merril Crowe barren solution and leached solids were combined before the concentrate tailing was advanced to cyanide destruction.
    - The rougher tailing was cyanide leached with carbon (CIL). Cyanide destruction was conducted on the slurry.
- Cyanide destruction followed the SO_2/air process using $Na_2S_2O_5$ and pure oxygen as respective sources of SO_2 and O_2. The pH was controlled to 8.1 through the addition of lime ($Ca(OH)_2$). $CuSO_4$ was added as a catalyst to the cyanide destruction process for all samples. Basemet indicated that due to limited sample availability, the reactor was operated in batch detox mode for some samples, whereas other samples utilized continuous mode detox. This influenced reagent use requirements for the cyanide destruction process, which had not been optimized at the time of testing.
- Samples were stored in slurry form before geochemical testing. The post cyanide destruction supernatant was also sampled.

Ausenco indicated that excess reagents were added to some samples based on the way that the testwork was conducted (i.e., cyanide destruction was not optimized at the time of testing, and the reactor varied between batch and continuous mode reactor operation among the samples). This can modify the supernatant water quality, specifically for parameters including sulphate, sodium, and copper.

Ausenco indicated that the following supernatant samples were not subject to excess cyanide destruction reagent addition and thus would be most representative for assessment purposes:

- Flotation tailing– LOM tailing sample (2021); and
- Sulphide concentrate tailing - LOM early operations (MC5) and LOM later operations (MC6).

Table 2–1: Summary of Synthetic Tailings Samples

Metallurgical Program	N Samples		Sample Description	Mine Plan Representation
	Flotation Tailings	Sulphide Concentrate Tailings		
2021	1	1	LOM	Life of Mine
2022	1	1	LOM, early operations (MC5)	Years 1 to 6 of mining
	1	1	LOM, later operations (MC6)	Years 6+ of mining
	3	3	Variability testwork (early operations- Zone A, Zone B, Zone C)	Years 1 to 6 of mining
	3	3	Variability testwork (later operations - Zone D, Zone E, high Cu-Zn Zone)	Years 6+ of mining
Total	**9**	**9**		

Note:
Supernatant (decant water) samples were collected from all tailings samples listed. However, Ausenco indicated that the flotation tailing LOM sample from 2021 and the sulphide concentrate tailing LOM samples from 2022 (MC5, MC6) were most representative (see text).

3.0 STATIC TESTING METHODS AND SCREENING APPROACH

Static testing was conducted at Global ARD Laboratories in Burnaby, B.C. A summary of the static tests conducted on the samples is provided in Table 3–1. Static testing methods used to assess the ML/ARD potential of the samples and the approaches to data screening are described below.

Acid Base Accounting (ABA) testing was conducted on all samples to evaluate the balance of potentially acid generating and acid neutralizing minerals in the samples.

- ABA testing included determination of paste pH, total sulphur by Leco furnace, sulphate sulphur by HCl leach, sulphide sulphur by difference (total S – sulphate S), Sobek neutralization potential (NP), total carbon by Leco furnace, and total inorganic carbon (TIC) by $HClO_4$ leach and Leco furnace. Carbonate NP (Carb NP) was calculated from TIC. Eight of the samples (i.e., the 2022 flotation tailings) were also tested by the modified NP method.
- Acid potential was calculated based on the results of sulphur speciation testing, including the calculation of acid potential (AP) based on sulphide sulphur, and maximum potential acidity (MPA) based on total sulphur.
- Test results were used to calculate the sample's neutralization potential ratio (NPR, NP/AP) to classify the ARD potential of a sample (Table 3–2).
    - An NPR value of 2 was assumed to be the threshold separating potentially acid-generating (PAG, NPR<2) and non-potentially acid-generating (NAG, NPR >2) tailings for screening purposes.
    - The NPR threshold of 2 was developed primarily for waste rock (MEND 2009) and is considered conservative for tailings. Tailings are often noted to have an NPR threshold on the order of 1.5 to 2[1], and an additional screening of the samples based on NPR 1.5 was considered for the purposes of this evaluation. However, kinetic test work is required to verify a site-specific NPR for tailings.
- NPR values were calculated from the ratio of Carb NP/AP for assessment purposes.

Net acid generation testing was conducted on the nine flotation tailing samples.

- The net acid generation test is a complementary test to ABA, which provides an assessment of the potential of a sample to generate acid (AMIRA 2002). The test uses hydrogen peroxide to rapidly oxidize sulphide minerals in a sample and determine if a sample has enough neutralization capacity to buffer the acidity generated during sulphide oxidation.
- Test results were screened against net acid generation test pH criteria for PAG and NAG materials (AMIRA 2002) and assessed in conjunction with NPR values from ABA testing. Net acid generation pH <4.5 is considered indicative of PAG material, whereas a net acid generation pH >4.5 indicates a sample that has little potential to produce net acidity in the future and may be NAG.

Solid phase elemental content analysis was conducted on all samples by aqua regia digestion and inductively coupled plasma mass spectrometry (ICP-MS) scan for environmental screening purposes. Near-total dissolution of environmentally significant metal phases is generally achieved by aqua regia digest.

[1] The ore processing that generates tailings results in homogenization of the rock material and a relatively consistent grain size. These physical changes support a practical NPR threshold for tailings that is lower than 2, often in the range of NPR 1.3 to 1.5. However, kinetic testing is required to verify that a lower threshold is suitable for the specific tailing.

- Results were compared to ten times the crustal abundance values presented in Price (1997) for screening purposes. Sample concentrations greater than the screening value were considered enriched in those elements. This approach is used to screen the samples for elemental enrichment based on standard screening values and does not provide a direct assessment of metal leaching potential or resulting water quality.

Supernatant (i.e., decant water) was analyzed following cyanide destruction for the flotation tailing (n=9) and sulphide concentrate tailing samples (n=9). Results of the supernatant test were inspected to assess process water quality that could be discharged to the CDF during operations, as outlined below.

- The tailings supernatant was analyzed for pH, conductivity, acidity, alkalinity, sulphate, chloride, fluoride, nitrogen species, cyanide species, total dissolved phosphorous, and dissolved metals (Hg, Ag, Al, As, Ba, B, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, Pb, Sb, Se, Si, Sn, Sr, Ti, Tl, U, V, W and Zn).
- Results were compared to screening values to identify parameters of potential interest. The screening analysis included comparison to Ontario Provincial Water Quality Objectives (PWQO) for the protection of aquatic life, including interim PWQO values, as well as to the Canadian water quality guidelines (CWQG) for the Protection of Aquatic Life.
- The bench scale data represent a screening assessment of potential future process water quality; bench scale cyanide destruction is not directly representative of field scale conditions.

As previously indicated, three samples were identified by Ausenco to be most representative for assessment purposes, as other samples had an excess of reagent added as part of the cyanide destruction process (see Section 2.0). Therefore, the screening assessment focussed on the three samples that Ausenco identified as representative. Results for the other samples are presented in Attachment A for completeness and discussed for comparative purposes where appropriate.

Mineralogical testing via X-Ray Diffraction with Rietveld refinement (R-XRD) was conducted on ten samples, including all of the flotation tailings samples (n=9), and the LOM sulphide concentrate tailings sample (n=1). This technique provides a semi-quantitative assessment of the mineralogical composition of sample. The reported results represent the relative amounts of crystalline mineralogical phases in the sample, normalized to 100%. R-XRD provides information on the major and minor mineral phases in a sample, which can be used to improve understanding of the forms of potentially acid generating and acid neutralizing minerals.

Table 3–1: ARD Classification based on ABA Testing (MEND 2009)

ARD Classification	Screening Value*	Comments
PAG	NPR < 1	Sample is likely to generate acidity
Uncertain	1 ≤ NPR ≤ 2	Sample has an uncertain acid generating potential
NAG	NPR > 2	Sample is unlikely to generated acidity

Note:
* Classification scheme as described in MEND (2009). For the purposes of this assessment, an NPR threshold of 2 was used to distinguish between PAG and NAG samples (see text).

Table 3–2: Static Testing Program Details

Analysis	Total	Flotation Tailings	Sulphide Concentrate Tailings
	N samples		
ABA Testing	18	9	9
Elemental Content	18	9	9
Net Acid Generation Test	9	9	n/a
Tailings Supernatant Analysis	18	9	9
Mineralogy (R-XRD)	10	9	1

4.0 KEY RESULTS

4.1 Acid Base Accounting

Results of the ABA analyses are presented in Tables A-1 and A-2 (Attachment A) and key results are summarized below. Overall, the tested samples of flotation tailings were NAG and the samples of sulphide concentrate tailings were PAG.

The flotation tailings samples had a low concentration of total sulphur, ranging from 0.08 to 0.26% (median 0.15%). The sulphide concentrate tailings samples had total sulphur contents ranging from 10 to 25% (median 18%).

- The relationship between total sulphur and sulphide sulphur (by difference with HCl leach sulphate sulphur) is presented in Figure 4–1 and indicated that sulphur was predominantly present as sulphide sulphur in the samples.
- Sulphate sulphur concentrations were low relative to sulphide sulphur, ranging from 0.01 to 0.08% in the flotation tailings samples and 0.04 to 0.32% in the sulphide concentrate tailings samples.

The NP content of the samples varied, consistent with the varying NP content of ore samples for the Project (Wood, 2021). The following observations were noted based on bulk NP (by the Sobek NP test):

- The flotation tailings samples had NP contents ranging from approximately 30 to 240 kg $CaCO_3$/t (median of 145 kg $CaCO_3$/t).
  - The 2021 LOM sample and later mine operations sample (MC6) had NP contents of approximately 110 and 150 kg $CaCO_3$/t respectively. The LOM early operations sample (MC5) had an NP content of 85 kg $CaCO_3$/t.
  - The NP content of the variability tailings samples for early operations ranged from approximately 30 to 240 kg $CaCO_3$/t. The NP content of LOM later operations samples ranged from approximately 70 kg $CaCO_3$/t to 170 kg $CaCO_3$/t.
- The NP content of the sulphide concentrate tailings samples ranged from approximately 20 to 150 kg $CaCO_3$/t (median of 49 kg $CaCO_3$/t).

As described in Section 2.0, some samples were also tested by the modified NP method, to support further assessment of NP speciation in the samples. Results of the modified NP test were on the order of 10 to 35% lower than the Sobek NP test (see and Table A-1, Attachment A), consistent with the more aggressive leaching procedure utilized in the standard Sobek NP test (MEND, 2009).

The relationship between Sobek NP and Carb NP, and Modified NP and Carb NP is presented in Figure 4–2 and Figure 4–3, respectively. The results indicated the following:

- Carb NP was generally similar to or slightly lower than Sobek NP in the samples (Figure 4–2). This suggests that carbonate minerals comprise most of the NP in the samples, however, some samples contain some non-carbonate NP.
- Carb NP was consistent with Modified NP (Figure 4–3) for most samples where tested[2]. This supports the observation that the majority of the NP in the samples is from carbonate minerals.
- However, two of the variability flotation tailings samples with a higher NP content (NP on the order of 200 kg $CaCO_3$/t) had higher Carb NP than Modified NP values, suggesting that these two samples contained non-net neutralizing carbonate minerals. This finding is consistent with the mineralogical

[2] Samples tested by the Modified NP method include the 2022 flotation tailings samples (see Section 3.0).

results, which identified a notable proportion of non-net neutralizing carbonate phases (dolomite-ankerite) in these samples (see Section 4.5).

- Although some of the samples appeared to contain some non-net neutralizing carbonates, consideration of the various NP results (including Carb NP, Sobek NP, and Modified NP) did not change the classification of ARD potential for the tested samples, as outlined below. However, the Modified NP values likely better represent the NP content of these samples. Additional NP testing by the Modified NP method is recommended (see Section 6.0).

ARD potential was evaluated based on the sample's neutralization potential ratio, which was calculated by two approaches, including NPR (NP/AP) and Carb NPR (Carb NP/AP).

Results are presented in Figure 4–4 and Figure 4–5 as well as Table A-1 and A-2 (Attachment A). The classification of samples as NAG and PAG was consistent among NPR and Carb NPR values:

- All of the flotation tailings samples were classified as NAG (NPR >2).
- All of the sulphide concentrate tailings samples were classified as PAG (NPR <2). NPR values for these samples were less than 1, and the samples are expected to be PAG despite a potentially lower NPR threshold for tailings (e.g., NPR 1.5 – 2; see Section 3.0).

4.2 Net Acid Generation Testing

Net acid generation pH testing (single addition) was completed on all flotation tailings samples (n=9). Results are summarized in Table A-3 (Attachment A).

All flotation tailings samples had a test pH > 4.5 and were classified as NAG. This was consistent with the classification of the samples based on ABA testing.

4.3 Solid Phase Elemental Content

Elemental content analysis is used to quantify the concentration of elements in solid phases (i.e., minerals), but does not provide a direct assessment of metal leaching potential or resulting water quality. The solid phase elemental content of the samples was compared to ten times the average crustal abundance value for a given element (Price 1997) for screening purposes. Samples with elemental concentrations greater than these screening values were considered enriched in those elements.

The information presented below focuses on elements that are of key relevance to ML/ARD. All results are provided in Tables A-4 and A-5 (Attachment A).

Results were reviewed to verify that enrichment was based on concentrations greater than the analytical detection limit, and that detection limits were lower than or equal to the ten times the crustal abundance values.

Key results for the flotation tailings samples (n=9) are summarized below:

- Arsenic concentrations were marginally greater than the screening value (18 mg/kg) in three samples, including one of the LOM samples and two of the variability samples.
- Silver concentrations were greater than the screening value (0.75 mg/kg) in most of the samples (n=7). This included all of the LOM samples (n=3) and several variability samples (n=4).
- Molybdenum concentrations were greater than the screening value (12 mg/kg) in most of the samples (n=6). This included all of the LOM samples (n=3) and several variability samples (n=3).
- Antimony concentrations were marginally greater than the screening value (2 mg/kg) in three samples, including two LOM samples and one variability sample.

Key results for the sulphide concentrate tailings samples (n=9) are summarized below. Due to the high sulphide content of these samples, numerous elements were above screening values:

- Concentrations of selenium, lead, arsenic, antimony, molybdenum, and silver were greater than their respective screening values in all of the samples (n=9).
- Some samples had concentrations of mercury (n=6), cadmium (n=8), copper (n=3), and zinc (n=7) greater than the respective screening values for these elements.

4.4 Supernatant Analysis

Post-cyanide destruction supernatant was analysed, and results were compared to screening values as a preliminary assessment of process water quality that could be discharged to the CDF during operations. As previously discussed, the flotation tailings and sulphide concentrate tailings are planned to be generated via two separate process circuits and will each independently undergo cyanide destruction.

As previously described, Ausenco identified three supernatant samples that were most representative for use in this assessment. This included:

- One flotation tailing sample (2021 LOM tailing); and
- Two sulphide concentrate tailing samples (MC5 and MC6 LOM samples).

The other 15 supernatant samples had been subject to excess reagent addition in the cyanide destruction process at the metallurgical laboratory (see Section 2.0), which influenced the resulting water quality for certain parameters (specifically sulphate, sodium, copper). Therefore, the results below focus on the above three representative samples. However, to provide additional context to these results, trace metal results are discussed below for other samples where appropriate, as these elements are not expected to be strongly influenced by excess reagent addition used for these samples.

Results for all samples are shown in Table A-6 (Attachment A).

Key results for the flotation tailing supernatant sample (n=1) are summarized below:

- The sulphate concentration in the 2021 LOM sample was approximately 3000 mg/L. The pH of the sample was 8.2. The concentration of free cyanide was slightly above the screening value (0.1 mg/L). This is due to the nature of the bench scale simulated cyanide destruction process and does not reflect field scale conditions.
- Copper concentrations were greater than the interim PWQO and PWQO screening value, attributed to reagents used in the bench scale cyanide destruction process.
- Concentrations of antimony, arsenic, cobalt, molybdenum, thallium, tungsten, and uranium were greater than the interim PWQO screening values for these elements in the 2021 LOM sample. Chromium and mercury[3] concentrations were above their respective PWQO screening values.
- Concentrations of arsenic, molybdenum, mercury[3], thallium, and uranium were greater than their respective CWQG screening values.

The same parameters of interest were identified among most of the other flotation tailing supernatant samples (n=8). In addition, among the other samples, selenium concentrations were greater than the screening value in one sample, and silver concentrations were greater than the screening value in seven samples.

[3] Mercury analyses were completed by CVAA for the flotation tailings and the sulphide concentrate tailings supernatant. Results were confirmed by ICP-MS for the flotation tailings supernatant.

Key results for the sulphide concentrate supernatant samples (n=2) are summarized below:

- The sulphate concentrations in the two representative supernatant samples (MC5 and MC6) were measured at approximately 6000 and 4600 mg/L. The pH values of the samples were 8.0 and 8.5.
- Concentrations of arsenic, antimony, cobalt, molybdenum, tungsten, phosphorus, and uranium were greater than the interim PWQO screening values for these elements in both the MC5 and MC6 samples. Arsenic concentrations were greater than the PWQO screening value in sample MC5, at approximately 0.3 mg/L (Table A-6). Zinc concentrations were marginally greater than the interim PWQO in sample MC6.
- Concentrations of silver and selenium were greater than their respective PWQO screening values in both the MC5 and MC6 samples. Selenium concentrations were notably elevated in one sample (MC6) at approximately 1.2 mg/L (Table A-6).
- Copper concentrations were greater than the PWQO screening value in both samples MC5 and MC6, attributed to reagents used in the bench scale cyanide destruction process.
- Concentrations of arsenic, molybdenum, uranium, and zinc were greater than their respective CWQG screening values.

The same parameters of interest were identified among most of the other seven sulphide concentrate tailing supernatant samples. In addition, concentrations of chromium, nickel, and thallium were greater than the respective screening values for these elements in several of the other samples. Lead concentrations were greater than the screening value in two samples, and free cyanide, mercury, and cadmium concentrations were greater than their respective screening values in one sample.

4.5 Mineralogy

Mineralogical identification using R-XRD was completed on the nine flotation tailing samples and one concentrate tailing sample to assess their mineralogical composition including the presence of acid generating and acid neutralizing minerals. Results and chemical formulae of the minerals discussed below are provided in Table A-7 (Attachment A).

Mineralogical testing of the flotation tailing samples (n=9) identified the following:

- Due to the low sulphide content of the samples, sulphide minerals were variably detected. This included pyrite (0.17 wt. %) in one sample, and sphalerite in five samples (0.12 to 0.29 wt. %).
- Sulphate minerals were detected in one sample, including 0.6 wt. % barite.
- Carbonate minerals present in the samples included calcite (magnesian), along with dolomite-ankerite and siderite.
    - Calcite was the dominant carbonate mineral in four of the nine samples, with concentrations typically ranging from 2 to approximately 10 wt. %.
    - Dolomite-ankerite concentrations were more variable, ranging from approximately 1 to 20 wt. %. Dolomite-ankerite co-occurred with calcite, but concentrations of dolomite-ankerite were greater than concentrations of calcite in five of the nine samples.
    - Trace to 0.5 wt. % siderite was detected in four of the samples.

- The following aluminosilicate phases were identified:
  - Plagioclase (albite) was identified in all samples, with concentrations ranging from approximately 3 to 26 wt. %. Potassium feldspar was identified in all samples, including microcline concentrations ranging from approximately 20 to 65 wt. %. Orthoclase was identified in four of the samples, with concentrations on the order of 5%.
  - Illite/muscovite (10 to approximately 25 wt. %) and biotite (approximately 4 to 15 wt. %) were identified in all samples.
  - Clinochlore was identified in one sample (1.2 wt. %) and chamosite (trace to 0.8 wt. %) was identified in five samples.
  - Kaolinite was identified in four samples (approximately 0.4 to 0.8 wt. %).
- Quartz was present in all nine samples, with concentrations ranging from 5 to 16 wt. %. Magnetite was present in five samples, ranging from trace concentrations up to 1%. Rutile was present in seven samples, ranging from approximately 0.6 to 1 wt. %.
- Apatite was present in three samples, at approximately 0.6 to 0.8 wt. %.

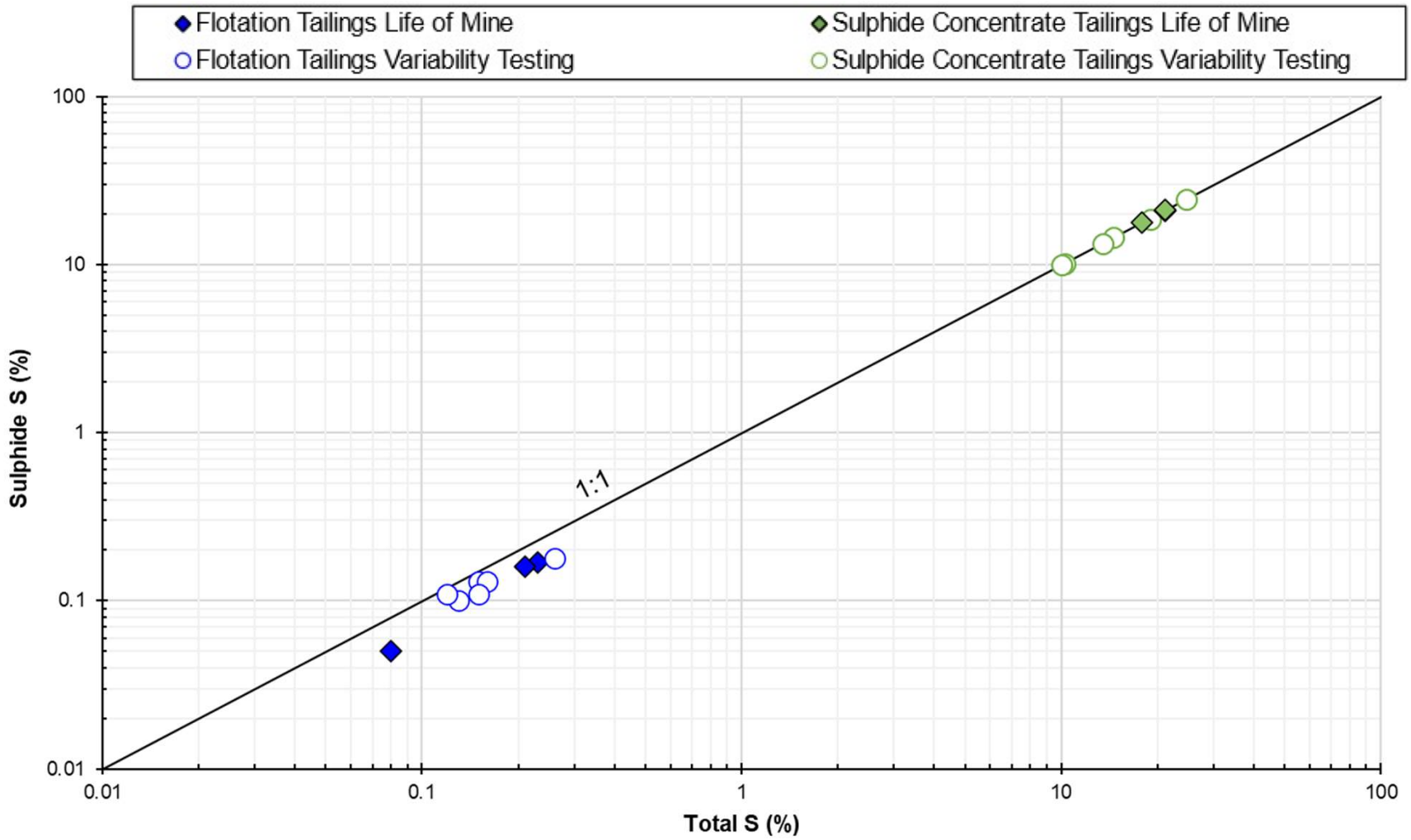
Mineralogical testing of the sulphide concentrate tailing sample identified the following:

- Pyrite was the only sulphide mineral identified, at approximately 40 wt.%. No sulphate phases were identified.
- Carbonate minerals included calcite (magnesian; 1.9 wt. %) and dolomite-ankerite (1.8 wt. %).
- Potassium feldspar (microcline; 31 wt. %), plagioclase (albite; 5 wt. %), illite/muscovite (10 wt. %), biotite (2.7 wt. %), quartz (6 wt. %) and trace apatite were also identified.

A comparison of all R-XRD results, expressed as sulphide sulphur and carbon, and ABA sulphide sulphur (by difference) and TIC results, respectively, was made. Results indicated good agreement between the two carbon datasets. Relatively poor alignment of the ABA and R-XRD sulphide sulphur was attributed to the low concentrations of sulphide in the samples, which was below R-XRD detection limits.

The R-XRD test results are supportive of the results of sulphur speciation testing, whereby sulphides represent the predominant form of sulphur in the samples, with generally no identified sulphate phases. In addition, the identification of non-net neutralizing carbonate minerals (dolomite-ankerite, siderite) was consistent with the NP test results for some of the samples (Section 4.1).

Sulphide S vs. Total S



Notes:
Total Sulphur measured by Leco furnace

Sulphide Sulphur calculated by difference (Total S measured by Leco analyzer – Sulphate S measured by HCl leach)

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Red Lake District, Ontario

TAILINGS STATIC TESTING RESULTS

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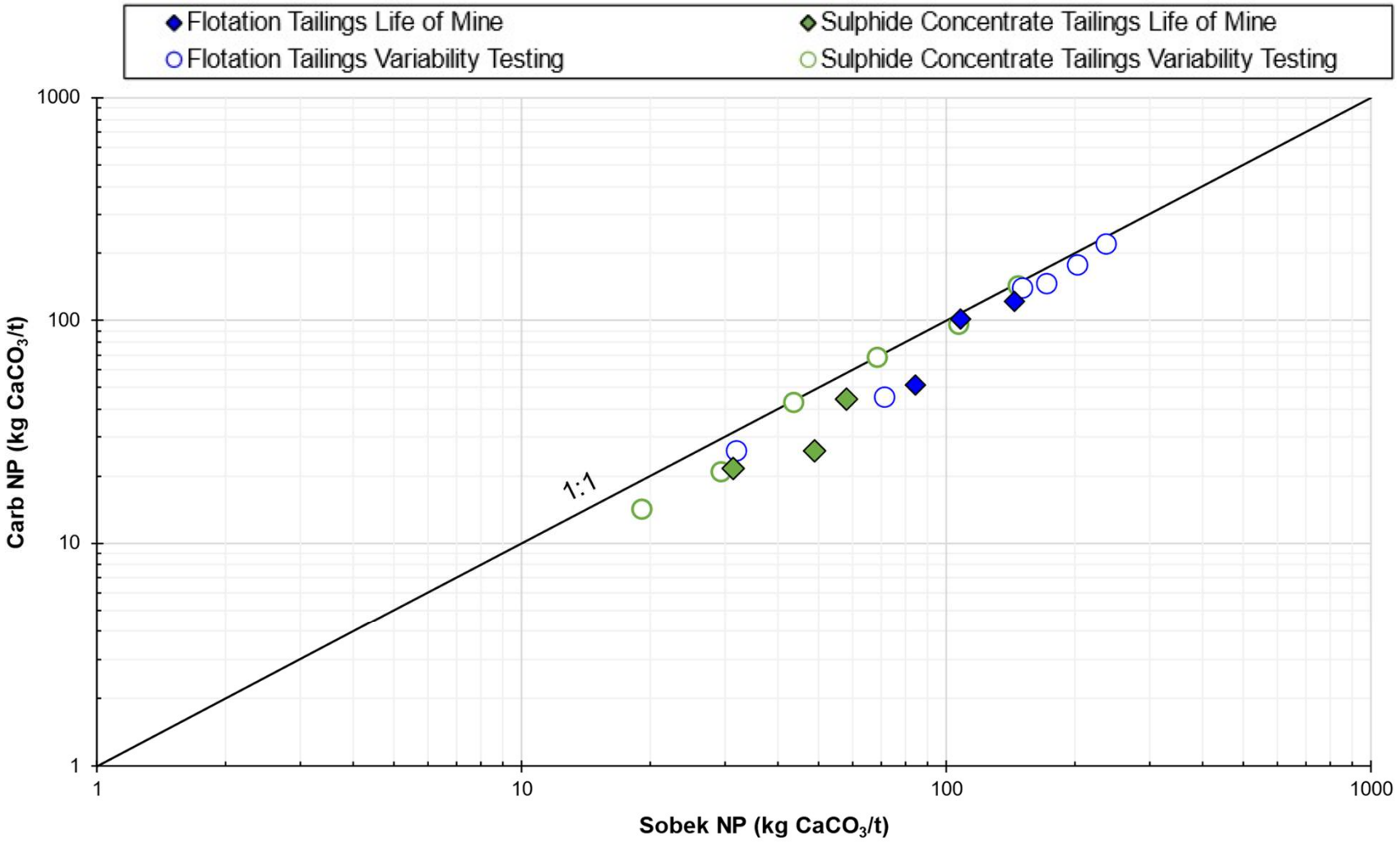
	Drawn: ET, KG	Figure 4-1

Carbonate NP vs. Sobek NP



Notes:
Neutralization potential measured by the Sobek method

Carbonate NP calculated from the total inorganic carbon measured by $HClO_4$ leach and Leco analyzer

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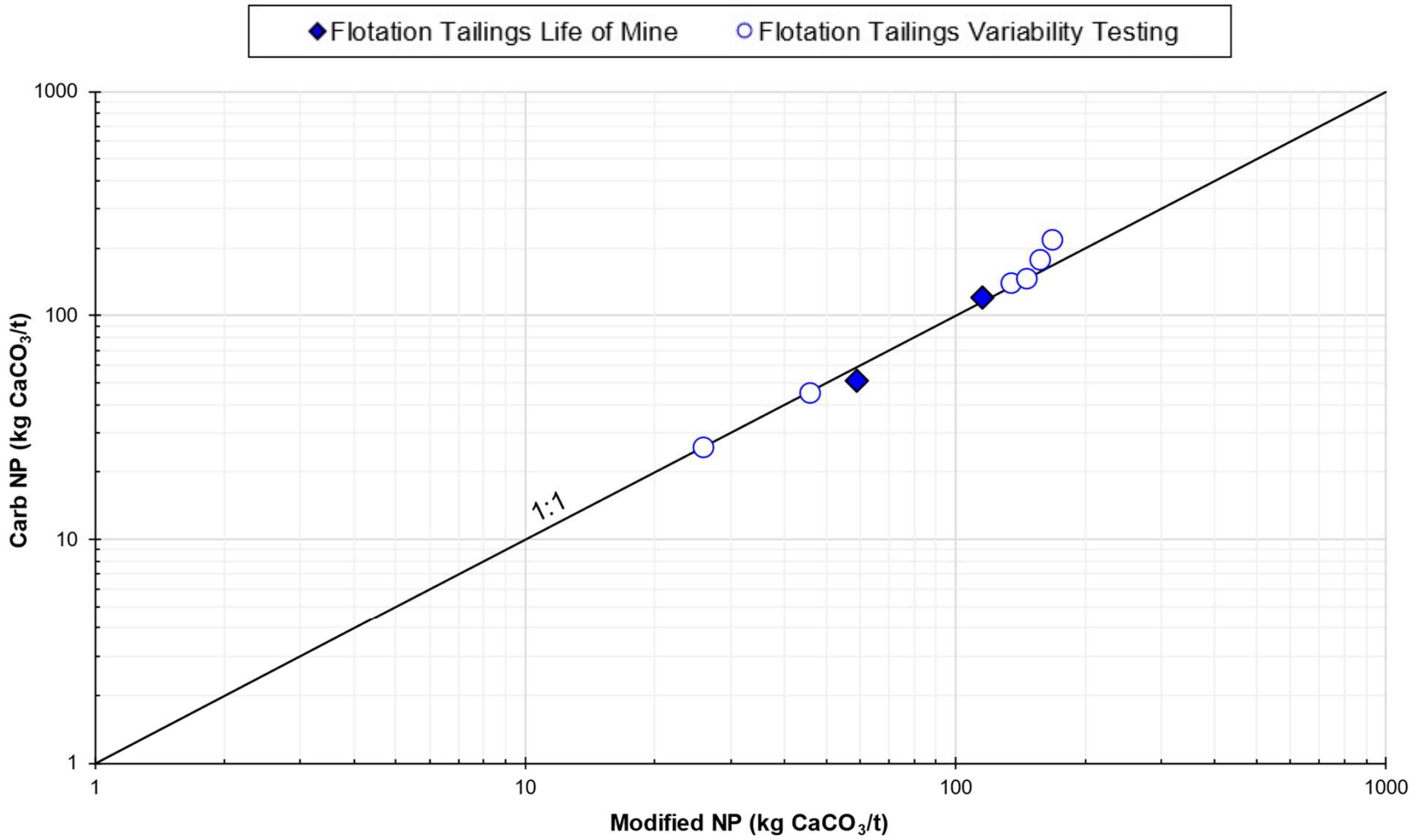
TAILINGS STATIC TESTING RESULTS

WSP	November 2023	Project ONS2104
	Drawn: ET, KG	Figure 4-2

Carbonate NP vs. Modified NP



Notes:
Neutralization potential measured by the Modified Sobek method

Carbonate NP calculated from the total inorganic carbon measured by $HClO_4$ leach and Leco analyzer

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TAILINGS STATIC TESTING RESULTS

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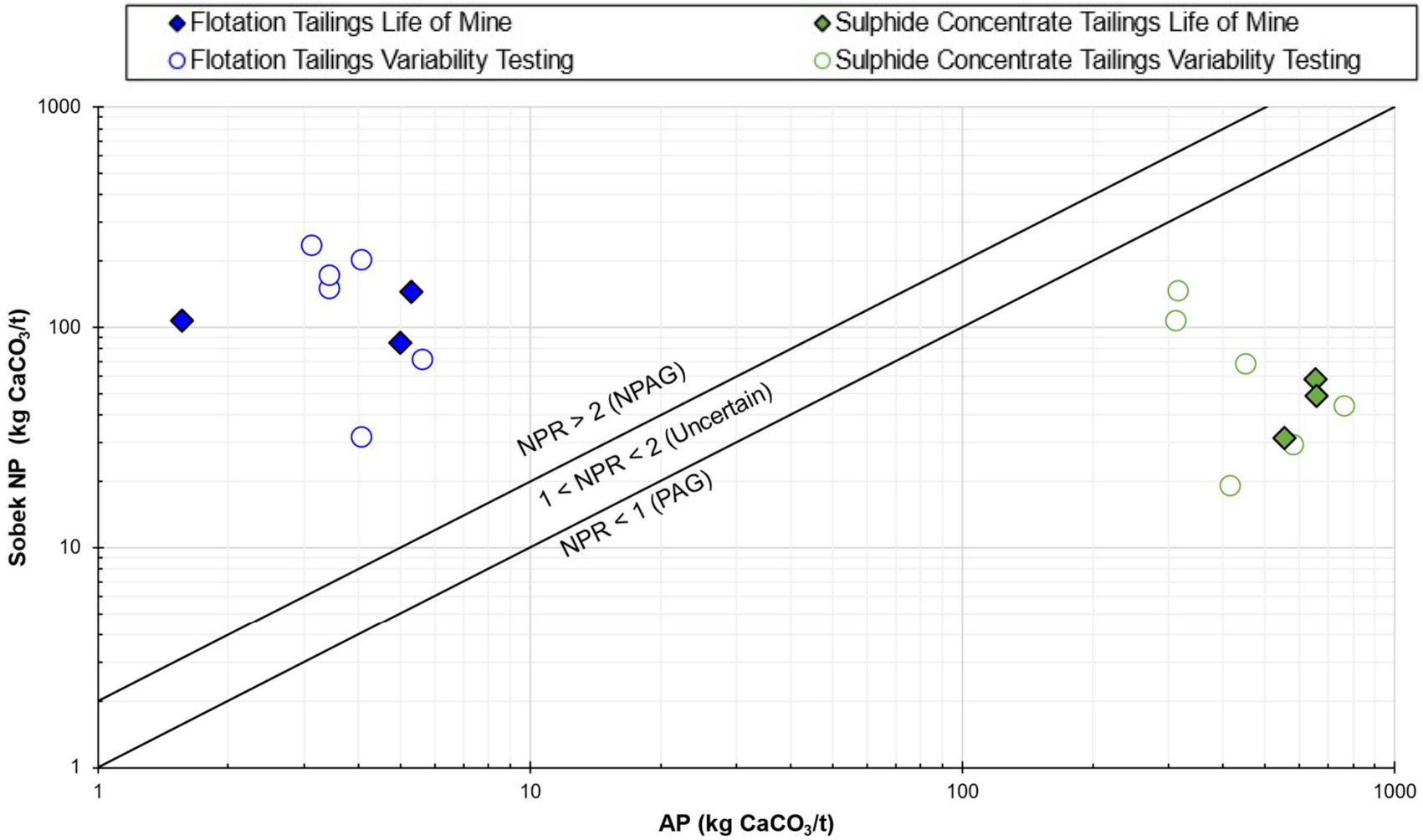
	Drawn: ET, KG	Figure 4-3

Sobek NP vs. Acid Potential



Notes:
Neutralization potential measured by the Sobek Method.

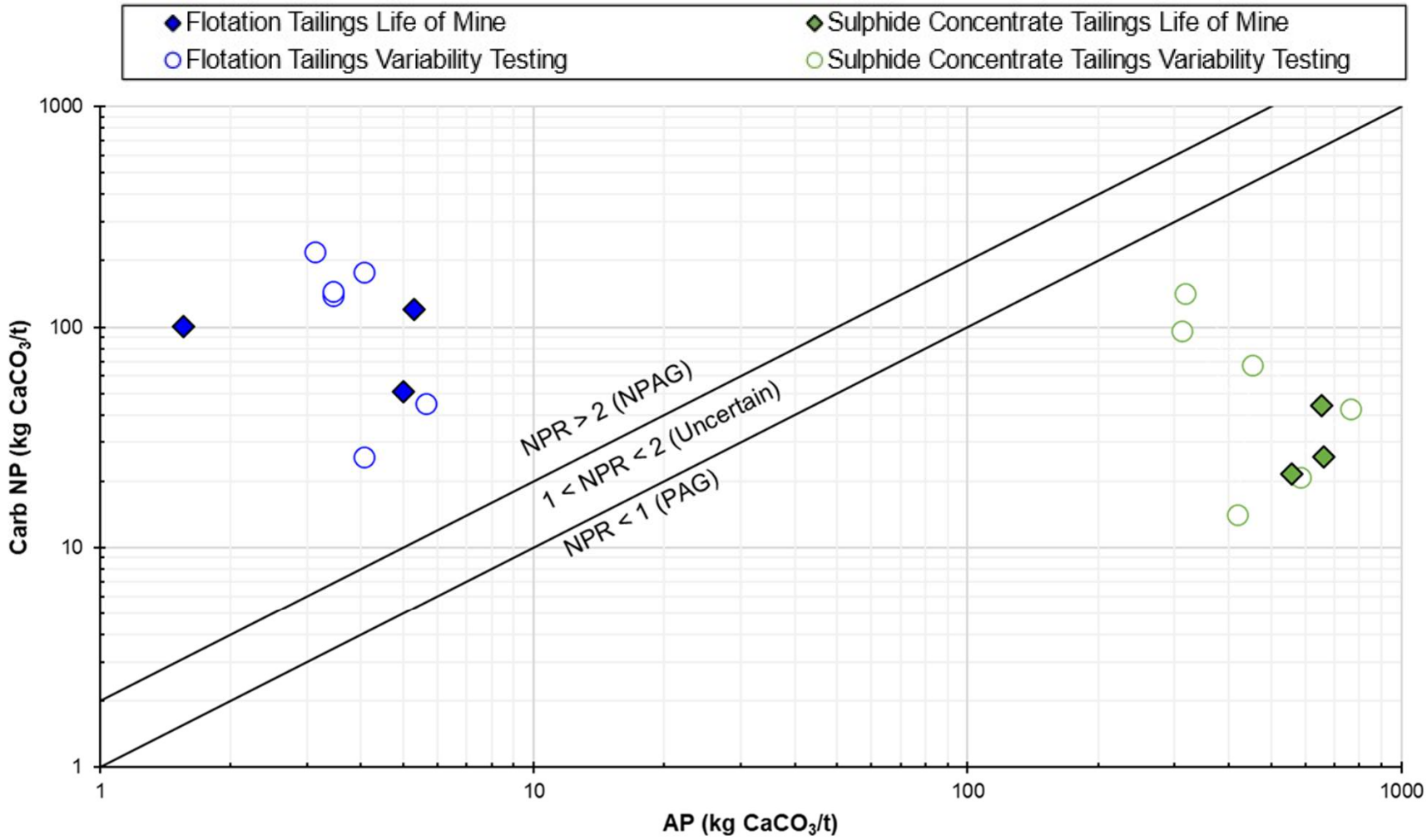
Acid Potential calculated from Sulphide S by difference

Springpole Gold Project
Red Lake District, Ontario

TAILINGS STATIC TESTING RESULTS

WSP	November 2023	Project ONS2104
	Drawn: ET, KG	Figure 4-4

Carbonate NP vs. Acid Potential



Notes:

Carbonate NP calculated from the total inorganic carbon measured by $HClO_4$ leach and Leco analyzer

Acid Potential calculated from Sulphide S by difference.

Springpole Gold Project
Red Lake District, Ontario

TAILINGS STATIC TESTING RESULTS

WSP	November 2023	Project ONS2104
	Drawn: ET, KG	Figure 4-5

5.0 SUMMARY

Key findings of the static testing program are provided below:

- The flotation tailings samples (n=9) had a low sulphur content (approximately 0.1 to 0.3%), with sulphur present as sulphide sulphur (pyrite, sphalerite). The samples generally had a high NP content (median NP of approximately 150 kg $CaCO_3$/t), although some samples had a lower of NP content (on the order of 30 kg $CaCO_3$/t). Carbonate minerals were the predominant source of NP in the samples, generally attributed to calcite/dolomite, however, some samples appeared to also contain non-net neutralizing carbonates. All flotation tailings samples were classified as NAG (Carb NPR>2, NPR >2).
- The sulphide concentrate samples contained approximately 10 to 25% sulphur, present as sulphide sulphur, with pyrite detected by mineralogical testing. The NP content of the samples varied, ranging from approximately 20 to 150 kg $CaCO_3$/t. Carbonate minerals were the predominant source of NP in the samples. All sulphide concentrate tailings samples were classified as PAG (Carb NPR <2, NPR <2).
- The elemental content of samples was screened against ten times the average crustal abundance values presented in Price (1997). Samples with elemental concentrations greater than these screening values were considered to be enriched in those elements.
  - In the flotation tailings samples, enrichment of arsenic and antimony were observed in three samples, while enrichment in molybdenum and silver was observed in six and seven of the samples, respectively.
  - Due to the high sulphide content of the sulphide concentrate tailings samples, they were enriched in numerous elements. Enrichment of selenium, lead, arsenic, antimony, molybdenum, and silver was observed in all samples. Several samples were enriched in mercury, cadmium, copper, and zinc.
- Post-cyanide destruction supernatant was analysed to support a preliminary screening assessment of process water quality. Supernatant test results indicated that antimony, arsenic, cobalt, molybdenum, thallium, tungsten, and uranium, chromium, silver, and mercury may be parameters of interest for the flotation tailings process water, as concentrations of these parameters were higher than applicable screening values in the samples. Similarly, arsenic, antimony, cobalt, molybdenum, tungsten, phosphorus, uranium, zinc, silver, selenium, chromium, nickel, and thallium were identified as potential parameters of interest for sulphide concentrate tailings process water.

6.0 CLOSING

This Tailings ML/ARD Assessment – Static Testing Results report was prepared for First Mining Gold Corp. by WSP. The quality of information, conclusions and scheduling estimates contained here is consistent with the level of effort involved in WSP's services and based on 1) information available at the time of preparation; 2) data supplied by outside sources; and 3) the assumptions, conditions and qualifications set forth in this report.

Yours sincerely,

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Attachment A
Static Testing Results

Table A-1: Acid Base Accounting Results

Sample ID	Sample Type	Sample Description	Program	Paste pH	Total S[1]	SO_4-S[2]	Sulphide-S [3]	MPA[4]	AP[5]	Sobek NP[6]	Modified Sobek NP[7]	Total Carbon[8]	TIC[9]	Carb NP (TIC)[10]	NP/AP[11]	CarbNP/AP[12]	Classification based on NPR[13]	Classification based on Carb NPR [14]
				-	%	%	%	kg $CaCO_3$/tonne	kg $CaCO_3$/tonne	kg $CaCO_3$/tonne	kg $CaCO_3$/tonne	%	%	kg $CaCO_3$/tonne	-	-	-	-
Production Composite	Flotation Tailings	2021 LOM	Ausenco 2021	8.6	0.080	0.030	0.050	2.5	1.6	108	-	1.3	1.2	101	69	65	NAG	NAG
BL1073-12		MC5, years 1-6 of mining	Ausenco 2022	8.6	0.21	0.050	0.16	6.6	5.0	85	59	0.78	0.61	51	17	10	NAG	NAG
BL1073-11		MC6, years 6+ of mining	Ausenco 2022	8.5	0.23	0.060	0.17	7.2	5.3	145	115	1.5	1.5	121	27	23	NAG	NAG
BL1073-T5B		Zone A, years 1-6 of mining	Ausenco 2022	8.6	0.13	0.030	0.10	4.1	3.1	237	168	2.7	2.6	219	76	70	NAG	NAG
BL1073-T6B		Zone B, years 1-6 of mining	Ausenco 2022	8.8	0.15	0.020	0.13	4.7	4.1	203	157	2.1	2.1	178	50	44	NAG	NAG
BL1073-T7B		Zone C, years 1-6 of mining	Ausenco 2022	8.6	0.16	0.030	0.13	5.0	4.1	32	26	0.32	0.31	26	7.9	6.4	NAG	NAG
BL1073-T8B		Zone D, years 6+ of mining	Ausenco 2022	8.1	0.15	0.040	0.11	4.7	3.4	151	135	1.7	1.7	139	44	40	NAG	NAG
BL1073-T9B		Zone E, years 6+ of mining	Ausenco 2022	8.8	0.12	0.010	0.11	3.8	3.4	172	146	2.0	1.8	146	50	42	NAG	NAG
BL1073-T10B		High Cu Zn, years 6+ of mining	Ausenco 2022	8.6	0.26	0.080	0.18	8.1	5.6	72	46	0.55	0.54	45	13	8.0	NAG	NAG
BL758-24	Sulphide Concentrate Tailings	2021 LOM	Ausenco 2021	7.8	21	0.040	21	663	661	49	-	0.55	0.31	26	0.074	0.039	PAG	PAG
BL1073-03M		MC5, years 1-6 of mining	Ausenco 2022	7.7	18	0.12	18	561	557	31	-	0.28	0.26	22	0.056	0.039	PAG	PAG
BL1073-04L		MC6, years 6+ of mining	Ausenco 2022	7.5	21	0.23	21	663	656	58	-	0.56	0.53	44	0.089	0.067	PAG	PAG
BL758-24		2021 LOM	Ausenco 2021	7.8	21	0.040	21	663	661	49	-	0.55	0.31	26	0.074	0.039	PAG	PAG
BL1073-05C		Zone A, years 1-6 of mining	Ausenco 2022	7.6	10	0.11	10	320	316	148	-	1.8	1.7	143	0.47	0.45	PAG	PAG
BL1073-06C		Zone B, years 1-6 of mining	Ausenco 2022	7.7	15	0.13	14	456	452	69	-	0.85	0.81	68	0.15	0.15	PAG	PAG
BL1073-07C		Zone C, years 1-6 of mining	Ausenco 2022	7.4	13	0.11	13	421	417	19	-	0.19	0.17	14	0.046	0.034	PAG	PAG
BL1073-08C		Zone D, years 6+ of mining	Ausenco 2022	6.8	25	0.25	24	771	763	44	-	0.55	0.51	43	0.057	0.056	PAG	PAG
BL1073-09C		Zone E, years 6+ of mining	Ausenco 2022	8.0	10	0.080	10.0	314	312	107	-	1.2	1.2	96	0.34	0.31	PAG	PAG
BL1073-10C		High Cu Zn, years 6+ of mining	Ausenco 2022	7.3	19	0.32	19	593	583	30	-	0.27	0.25	21	0.051	0.036	PAG	PAG

(1) Total sulphur determined by Leco analyser
(2) Sulphate sulphur determined by HCl leach
(3) Sulphide sulphur determined by Total sulphur - Sulphate sulphur
(4) Maximum potential acidity, calculated as 31.25 x Total sulphur
(5) Acid potential calculated as 31.25 x sulphide sulphur
(6) Sobek neutralization potential
(7) Modified Sobek neutralization potential
(8) Total carbon determined by Leco analyser
(9) Total inorganic carbon (as C) determined by Leco analyser and $HClO_4$ leach
(10) Carbonate neutralization potential, calculated as TIC x 10 x (100/12.01)
(11) Neutralization potential ratio
(12) Carbonate Neutralization potential ratio
(13) ARD classification based on the NP/AP value
(14) ARD classification based on the Carb NP/AP value

Table A-2: Acid Base Accounting Statistics

Sample Type	Statistical Parameter	Paste pH	Total S[(1)]	SO_4-S[(2)]	Sulphide-S [(3)]	MPA[(4)]	AP[(5)]	Sobek NP[(6)]	Modified Sobek NP[(7)]	Total Carbon[(8)]	TIC[(9)]	Carb NP (TIC)[(10)]	NPR[(11)]	CarbNPR[(12)]	Classification based on NPR [(13)]	Classification Based on CarbNPR [(14)]
		-	%	%	%	kg $CaCO_3$/tonne	kg $CaCO_3$/tonne	kg $CaCO_3$/tonne	kg $CaCO_3$/tonne	%	%	kg $CaCO_3$/tonne	-	-	-	-
Flotation Tailings	Count	9	10	9	9	9	9	9	8	9	9	9	9	9	NAG	
	Minimum	8.1	0.080	0.010	0.050	2.5	1.6	32	26	0.32	0.31	26	7.9	6.4		
	10th Percentile	8.4	0.11	0.018	0.090	3.5	2.8	64	40	0.50	0.49	41	12	7.7		
	Median	8.6	0.15	0.030	0.13	4.7	4.1	145	125	1.5	1.5	121	44	40		
	Average	8.6	0.17	0.039	0.13	5.2	4.0	134	106	1.4	1.4	114	34	29		
	Standard Deviation	0.20	0.054	0.020	0.038	1.7	1.2	62	51	0.75	0.73	61	23	23		
	90th Percentile	8.8	0.24	0.064	0.17	7.4	5.4	209	160	2.3	2.2	186	70	66		
	Maximum	8.8	0.26	0.080	0.18	8.1	5.6	237	168	2.7	2.6	219	76	70		
Sulphide Concentrate Tailings	Count	9	9	9	9	9	9	9	0	9	9	9	9	9	PAG	
	Minimum	6.8	10	0.040	10.0	314	312	19	-	0.19	0.17	14	0.046	0.034		
	10th Percentile	7.2	10	0.040	10	319	316	28	-	0.26	0.24	20	0.050	0.036		
	Median	7.7	18	0.12	18	577	570	49	-	0.55	0.41	34	0.074	0.047		
	Average	7.6	17	0.14	17	542	538	60	-	0.69	0.60	50	0.11	0.09		
	Standard Deviation	0.32	4.8	0.089	4.7	149	148	37	-	0.48	0.47	39	0.14	0.14		
	90th Percentile	7.8	22	0.26	21	674	671	111	-	1.3	1.2	101	0.35	0.32		
	Maximum	8.0	25	0.32	24	771	763	148	-	1.8	1.7	143	0.47	0.45		

(1) Total sulphur determined by Leco analyser

(2) Sulphate sulphur determined by HCl leach

(3) Sulphide sulphur determined by Total sulphur - Sulphate sulphur

(4) Maximum potential acidity, calculated as 31.25 x Total sulphur

(5) Acid potential calculated as 31.25 x sulphide sulphur

(6) Sobek neutralization potential

(7) Modified Sobek neutralization potential

(8) Total carbon determined by Leco analyser

(9) Total inorganic carbon (as C) determined by Leco analyser and $HClO_4$ leach

(10) Carbonate neutralization potential, calculated as TIC x 10 x (100/12.01)

(11) Neutralization potential ratio (NP/AP)

(12) Carbonate Neutralization potential ratio (Carb NP/AP)

(13) ARD classification based on the NP/AP value

(14) ARD classification based on the Carb NP/AP value

Table A-3: Single Acid Net Generating (NAG) Results

Sample ID	Sample Type	Sample Description	Program	Pulp Sample Weight	Vol. of 15% H_2O_2	NAG pH	NaOH Conc.
				(g)	(mL)	-	(N)
Production Composite	Flotation Tailings	2021 LOM	Ausenco 2021	2.5	250.0	7.6	0.1
BL1073-12		MC5, years 1-6 of mining	Ausenco 2022	2.5	250.0	8.4	0.1
BL1073-11		MC6, years 6+ of mining	Ausenco 2022	2.5	250.0	8.5	0.1
BL1073-T5B		Zone A, years 1-6 of mining	Ausenco 2022	2.5	250.0	8.6	0.1
BL1073-T6B		Zone B, years 1-6 of mining	Ausenco 2022	2.5	250.0	8.6	0.1
BL1073-T7B		Zone C, years 1-6 of mining	Ausenco 2022	2.5	250.0	8.4	0.1
BL1073-T8B		Zone D, years 6+ of mining	Ausenco 2022	2.5	250.0	8.4	0.1
BL1073-T9B		Zone E, years 6+ of mining	Ausenco 2022	2.5	250.0	8.7	0.1
BL1073-T10B		High Cu Zn, years 6+ of mining	Ausenco 2022	2.5	250.0	8.1	0.1
BL1073-12		MC5, years 1-6 of mining	Ausenco 2022	2.5	250.0	8.4	0.1
BL1073-11		MC6, years 6+ of mining	Ausenco 2022	2.5	250.0	8.5	0.1

Table A-4: Elemental Content Results - Aqua Regia Digest

Sample ID	Sample Type	Sample Information	Program	Ag	Al	As	B	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Ge
				ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm
			10x Crustal Abundance (Price, 1997)[1]:	0.75	--	18	100	4250	30	0.085	--	1.5	--	250	1020	--	600	--	190	15
Production Composite	Flotation Tailings	2021 LOM	Ausenco 2021	1.6	0.63	18	<10	264	0.41	0.33	3.5	0.27	66	4.3	174	7.8	142	2.4	3.0	0.080
BL1073-12		MC5, years 1-6 of mining	Ausenco 2022	1.4	1.1	23	11	1281	0.78	0.19	1.8	0.22	92	3.5	37	10.0	132	2.2	4.4	0.12
BL1073-11		MC6, years 6+ of mining	Ausenco 2022	1.1	1.3	9.7	<10	1071	0.61	0.15	4.1	0.47	145	2.9	40	11	107	2.2	4.3	0.13
BL1073-T5B		Zone A, years 1-6 of mining	Ausenco 2022	0.64	0.74	19	<10	89	0.47	0.090	5.1	0.25	45	6.4	38	10	62	3.1	2.2	0.060
BL1073-T6B		Zone B, years 1-6 of mining	Ausenco 2022	0.80	1.0	21	12	410	0.33	0.050	4.4	0.15	67	3.9	34	14	60	3.3	3.8	0.080
BL1073-T7B		Zone C, years 1-6 of mining	Ausenco 2022	1.2	0.71	18	<10	1504	0.51	0.14	0.89	0.23	94	2.1	31	5.6	77	1.0	3.3	0.090
BL1073-T8B		Zone D, years 6+ of mining	Ausenco 2022	0.73	1.1	8.1	<10	970	0.53	0.14	4.9	0.44	116	2.1	37	9.2	58	2.1	3.8	0.10
BL1073-T9B		Zone E, years 6+ of mining	Ausenco 2022	1.4	0.81	6.0	<10	436	0.52	0.25	4.5	0.40	55	3.0	42	7.2	68	2.7	3.3	0.080
BL1073-T10B		High Cu Zn, years 6+ of mining	Ausenco 2022	4.5	1.5	17	<10	1791	0.95	0.14	1.4	0.59	91	3.2	76	16	63	1.8	6.1	0.15
BL758-24	Sulphide Concentrate Tailings	2021 LOM	Ausenco 2021	80	0.55	964	27	10	0.39	6.9	1.5	6.6	50	172	123	4.1	552	20	2.5	0.11
BL1073-03M		MC5, years 1-6 of mining	Ausenco 2022	10	0.75	498	22	20	0.49	1.7	0.83	3.9	84	121	143	6.1	413	16	3.2	0.12
BL1073-04L		MC6, years 6+ of mining	Ausenco 2022	15	0.75	180	21	19	0.41	3.2	1.6	6.6	99	129	194	6.0	768	18	2.7	0.16
BL1073-05C		Zone A, years 1-6 of mining	Ausenco 2022	3.9	0.67	1540	19	66	0.53	2.2	3.7	4.7	35	169	152	6.7	535	11	2.1	0.080
BL1073-06C		Zone B, years 1-6 of mining	Ausenco 2022	6.6	0.84	397	22	36	0.33	0.72	2.1	1.3	102	114	210	9.0	416	14	3.4	0.11
BL1073-07C		Zone C, years 1-6 of mining	Ausenco 2022	4.1	0.63	370	19	27	0.44	1.3	0.67	7.1	88	78	182	4.1	313	12	2.8	0.11
BL1073-08C		Zone D, years 6+ of mining	Ausenco 2022	5.4	0.69	216	26	18	0.37	4.4	1.7	6.9	106	165	208	4.9	1081	22	2.6	0.15
BL1073-09C		Zone E, years 6+ of mining	Ausenco 2022	4.9	0.67	74	17	50	0.44	4.8	2.9	2.8	48	86	198	5.6	475	10	2.7	0.10
BL1073-10C		High Cu Zn, years 6+ of mining	Ausenco 2022	8.6	0.86	265	21	19	0.55	1.5	0.99	8.5	45	109	232	7.9	1673	17	3.5	0.15

(1) Based on crustal abundance values as provided in Price (1997), excluding major elements

Grey shading indicated metal concntrations greater than ten times the crustal abundance value

Table A-4: Elemental Content Results - Aqua Regia Digest

Sample ID	Sample Type	Sample Information	Program	Hf	Hg	In	K	La	Li	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Re	S
				ppm	ppm	ppm	%	ppm	ppm	%	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%
			10x Crustal Abundance (Price, 1997)[1]:	--	0.85	--	--	390	200	--	9500	12	--	--	840	10500	140	--	--	0.35
Production Composite	Flotation Tailings	2021 LOM	Ausenco 2021	2.1	0.24	0.011	0.56	35	22	1.0	1276	26	0.050	0.17	88	931	39	79	0.014	0.15
BL1073-12		MC5, years 1-6 of mining	Ausenco 2022	1.7	0.20	0.012	0.96	56	60	1.3	965	19	0.070	0.13	22	618	37	114	0.0030	0.22
BL1073-11		MC6, years 6+ of mining	Ausenco 2022	1.4	0.095	0.010	1.2	102	73	1.5	1321	22	0.080	0.090	22	823	46	135	0.013	0.23
BL1073-T5B		Zone A, years 1-6 of mining	Ausenco 2022	1.8	0.095	0.0070	0.70	23	11	1.7	1518	9.8	0.040	0.17	21	1145	25	66	<10	0.16
BL1073-T6B		Zone B, years 1-6 of mining	Ausenco 2022	1.5	0.038	0.011	0.95	43	42	1.8	1643	10	0.040	0.16	22	639	16	102	0.0030	0.18
BL1073-T7B		Zone C, years 1-6 of mining	Ausenco 2022	1.6	0.17	0.0080	0.64	56	57	0.72	490	14	0.050	0.12	11	378	44	81	0.0020	0.17
BL1073-T8B		Zone D, years 6+ of mining	Ausenco 2022	1.5	0.018	0.0080	1.1	79	99	1.3	1442	18	0.040	0.10	20	747	51	132	0.0040	0.16
BL1073-T9B		Zone E, years 6+ of mining	Ausenco 2022	1.5	0.057	0.010	0.79	32	24	1.4	1459	7.2	0.040	0.060	26	760	30	94	0.0050	0.13
BL1073-T10B		High Cu Zn, years 6+ of mining	Ausenco 2022	1.5	0.24	0.013	1.7	63	224	2.3	744	80	0.060	0.11	36	527	53	221	0.026	0.22
BL758-24	Sulphide Concentrate Tailings	2021 LOM	Ausenco 2021	2.9	2.7	0.057	0.47	27	19	0.52	565	401	0.020	0.35	180	641	860	52	0.22	>10
BL1073-03M		MC5, years 1-6 of mining	Ausenco 2022	2.5	1.8	0.039	0.68	52	38	0.74	386	304	0.040	0.31	169	478	264	76	0.042	>10
BL1073-04L		MC6, years 6+ of mining	Ausenco 2022	2.5	1.3	0.038	0.69	67	42	0.81	459	332	0.060	0.33	192	579	1130	76	0.19	>10
BL1073-05C		Zone A, years 1-6 of mining	Ausenco 2022	4.0	1.4	0.040	0.57	19	12	1.2	1163	251	0.020	0.55	347	917	297	51	0.0070	9.2
BL1073-06C		Zone B, years 1-6 of mining	Ausenco 2022	2.6	0.63	0.032	0.80	67	33	1.1	715	129	0.030	0.52	202	597	186	82	0.022	>10
BL1073-07C		Zone C, years 1-6 of mining	Ausenco 2022	3.1	3.9	0.042	0.55	52	36	0.49	276	283	0.020	0.40	169	314	570	63	0.036	>10
BL1073-08C		Zone D, years 6+ of mining	Ausenco 2022	3.2	0.60	0.040	0.63	71	55	0.63	473	447	0.020	0.45	235	422	1259	71	0.094	>10
BL1073-09C		Zone E, years 6+ of mining	Ausenco 2022	2.4	0.39	0.030	0.61	27	17	0.97	866	99	0.060	0.29	177	715	422	67	0.064	9.2
BL1073-10C		High Cu Zn, years 6+ of mining	Ausenco 2022	2.4	1.3	0.084	0.97	30	99	1.2	308	653	0.030	0.39	232	430	509	119	0.22	>10

(1) Based on crustal abundance values as provided in Price (1997), excluding major elements

Grey shading indicated metal concntrations greater than ten times the crustal abundance value

Table A-4: Elemental Content Results - Aqua Regia Digest

Sample ID	Sample Type	Sample Information	Program	Sb	Sc	Se	Sn	Sr	Ta	Te	Th	Ti	Tl	U	V	W	Y	Zn	Zr
				ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
			10x Crustal Abundance (Price, 1997)[1]:	2	220	0.5	23	3700	--	--	96	--	8.5	27	1200	12.5	330	700	1650
Production Composite	Flotation Tailings	2021 LOM	Ausenco 2021	2.6	2.7	0.30	0.50	245	<0.01	2.2	3.9	0.063	1.5	2.4	29	3.8	9.3	101	69
BL1073-12		MC5, years 1-6 of mining	Ausenco 2022	2.0	3.9	0.40	0.30	271	<0.01	2.6	5.0	0.070	2.1	3.5	41	3.0	8.3	124	66
BL1073-11		MC6, years 6+ of mining	Ausenco 2022	0.76	4.0	0.30	0.20	1232	<0.01	2.3	2.5	0.062	1.9	3.1	36	0.67	11	149	53
BL1073-T5B		Zone A, years 1-6 of mining	Ausenco 2022	2.9	2.4	<0.2	<0.2	427	<0.01	0.46	3.8	0.069	1.5	1.7	21	0.64	8.5	74	74
BL1073-T6B		Zone B, years 1-6 of mining	Ausenco 2022	0.92	4.4	<0.2	0.30	253	<0.01	0.52	2.1	0.093	2.1	1.1	45	1.2	10	76	55
BL1073-T7B		Zone C, years 1-6 of mining	Ausenco 2022	1.2	2.4	0.20	0.20	227	<0.01	2.1	5.4	0.033	1.5	3.8	23	2.0	8.0	101	61
BL1073-T8B		Zone D, years 6+ of mining	Ausenco 2022	0.68	3.5	<0.2	0.20	1012	<0.01	1.4	2.9	0.061	1.9	3.5	31	0.70	11	135	57
BL1073-T9B		Zone E, years 6+ of mining	Ausenco 2022	1.1	3.9	0.30	0.20	314	<0.01	1.4	2.7	0.061	1.4	1.9	37	1.1	9.8	107	58
BL1073-T10B		High Cu Zn, years 6+ of mining	Ausenco 2022	1.9	8.0	0.50	0.30	174	<0.01	8.5	2.3	0.081	3.4	4.3	58	2.2	10	160	58
BL758-24	Sulphide Concentrate Tailings	2021 LOM	Ausenco 2021	37	2.7	21	0.40	95	0.040	46	3.8	0.043	1.4	3.6	19	56	9.0	1178	99
BL1073-03M		MC5, years 1-6 of mining	Ausenco 2022	5.9	3.4	13	0.50	113	<0.01	21	4.4	0.045	1.8	4.2	31	8.1	9.7	817	97
BL1073-04L		MC6, years 6+ of mining	Ausenco 2022	4.3	2.9	25	0.50	232	<0.01	43	2.6	0.038	1.4	4.8	25	1.8	9.1	1154	102
BL1073-05C		Zone A, years 1-6 of mining	Ausenco 2022	32	2.2	5.0	0.90	278	0.040	8.5	4.4	0.045	1.7	3.6	17	2.6	9.8	877	145
BL1073-06C		Zone B, years 1-6 of mining	Ausenco 2022	9.6	3.9	5.2	0.60	121	0.020	8.3	3.0	0.069	2.0	2.1	34	3.3	11	380	96
BL1073-07C		Zone C, years 1-6 of mining	Ausenco 2022	5.2	2.3	10	0.70	121	0.010	19	6.4	0.026	1.3	6.0	20	13	9.5	2251	110
BL1073-08C		Zone D, years 6+ of mining	Ausenco 2022	5.0	2.6	26	0.90	218	0.010	42	3.7	0.038	1.4	7.3	20	2.7	8.8	1058	125
BL1073-09C		Zone E, years 6+ of mining	Ausenco 2022	7.5	3.3	14	0.50	156	<0.01	23	2.7	0.042	1.2	3.6	28	2.0	9.3	450	93
BL1073-10C		High Cu Zn, years 6+ of mining	Ausenco 2022	18	4.9	25	0.60	72	<0.01	99	1.8	0.044	2.1	5.2	35	10	9.6	961	96

(1) Based on crustal abundance values as provided in Price (1997), excluding major elements

Grey shading indicated metal concntrations greater than ten times the crustal abundance value

Parameter	Flotation Tailings										
	Count	Units	Count >10x Crustal Abundance (1)	Percent >10x Crustal Abundance (1)	Minimum	10th Percentile	Median	Average	Standard Deviation	90th Percentile	Maximum
Ag	9	ppm	7	78	0.64	0.71	1.2	1.5	1.1	2.1	4.5
Al	9	%	-	-	0.63	0.69	1.0	0.98	0.26	1.3	1.5
As	9	ppm	3	33	6.0	7.7	18	15	5.6	21	23
Au	9	ppm	0	0	0.013	0.014	0.051	0.056	0.042	0.12	0.13
B	9	ppm	0	0	11	11	12	12	0.50	12	12
Ba	9	ppm	0	0	89	229	970	868	562	1561	1791
Be	9	ppm	0	0	0.33	0.39	0.52	0.57	0.18	0.81	0.95
Bi	9	%	8	89	0.050	0.082	0.14	0.16	0.079	0.27	0.33
Ca	9	ppm	-	-	0.89	1.3	4.1	3.4	1.5	4.9	5.1
Cd	9	ppm	0	0	0.15	0.21	0.27	0.34	0.14	0.49	0.59
Ce	9	ppm	-	-	45	53	91	86	30	122	145
Co	9	ppm	0	0	2.1	2.1	3.2	3.5	1.2	4.7	6.4
Cr	9	ppm	0	0	31	33	38	57	43	96	174
Cs	9	ppm	-	-	5.6	6.9	10.0	10	3.1	14	16
Cu	9	%	0	0	58	59	68	85	31	134	142
Fe	9	ppm	-	-	1.0	1.6	2.2	2.3	0.63	3.1	3.3
Ga	9	ppm	0	0	2.2	2.9	3.8	3.8	1.0	4.7	6.1
Ge	9	ppm	0	0	0.060	0.076	0.090	0.099	0.027	0.13	0.15
Hf	9	ppm	-	-	1.4	1.5	1.5	1.6	0.21	1.9	2.1
Hg	9	ppm	0	0	0.018	0.034	0.095	0.13	0.080	0.24	0.24
In	9	%	-	-	0.0070	0.0078	0.010	0.010	0.0019	0.012	0.013
K	9	ppm	-	-	0.56	0.62	0.95	0.95	0.32	1.3	1.7
La	9	ppm	0	0	23	30	56	54	23	83	102
Li	9	%	1	11	11	20	57	68	61	124	224
Mg	9	ppm	-	-	0.72	0.95	1.4	1.5	0.44	1.9	2.3
Mn	9	ppm	0	0	490	693	1321	1206	367	1543	1643
Mo	9	%	6	67	7.2	9.2	18	23	21	37	80
Na	9	ppm	-	-	0.040	0.040	0.050	0.052	0.014	0.072	0.080
Nb	9	ppm	-	-	0.060	0.084	0.12	0.12	0.036	0.17	0.17
Ni	9	ppm	0	0	11	18	22	30	22	46	88
P	9	ppm	0	0	378	497	747	730	213	974	1145
Pb	9	ppm	0	0	16	23	39	38	12	52	53
Rb	9	ppm	-	-	66	77	102	114	44	153	221
Re	9	%	-	-	0.0020	0.0027	0.0045	0.0088	0.0078	0.018	0.026
S	9	ppm	0	0	0.13	0.15	0.17	0.18	0.033	0.22	0.23
Sb	9	ppm	3	33	0.68	0.74	1.2	1.6	0.77	2.6	2.9
Sc	9	ppm	0	0	2.4	2.4	3.9	3.9	1.6	5.1	8.0
Se	9	ppm	0	0	0.20	0.25	0.30	0.33	0.094	0.45	0.50
Sn	9	ppm	0	0	0.20	0.20	0.25	0.28	0.097	0.36	0.50
Sr	9	ppm	0	0	174	216	271	461	363	1056	1232
Te	9	ppm	-	-	0.46	0.51	2.1	2.4	2.3	3.8	8.5
Th	9	%	0	0	2.1	2.3	2.9	3.4	1.1	5.1	5.4
Ti	9	ppm	-	-	0.033	0.055	0.063	0.066	0.015	0.083	0.093
Tl	9	ppm	0	0	1.4	1.4	1.9	1.9	0.58	2.4	3.4
U	9	ppm	0	0	1.1	1.6	3.1	2.8	1.0	3.9	4.3
V	9	ppm	0	0	21	23	36	36	11	48	58
W	9	ppm	0	0	0.64	0.66	1.2	1.7	1.1	3.2	3.8
Y	9	ppm	0	0	8.0	8.2	9.8	9.6	1.1	11	11
Zn	9	ppm	0	0	74	76	107	114	29	151	160
Zr	9	ppm	0	0	53	55	58	61	6.6	70	74

(1) Based on crustal abundance values as provided in Price (1997), excluding major elements

Parameter	Sulphide Concentrate Tailings										
	Count	Units	Count >10x Crustal Abundance [1]	Percent >10x Crustal Abundance [1]	Minimum	10th Percentile	Median	Average	Standard Deviation	90th Percentile	Maximum
Ag	9	ppm	9	100	3.9	4.1	6.6	15	23	28	80
Al	9	%	-	-	0.55	0.61	0.69	0.71	0.093	0.84	0.86
As	9	ppm	9	100	74	159	370	500	440	1079	1540
Au	9	ppm	0	0	0.25	0.48	0.64	1.7	2.7	3.5	9.2
B	9	ppm	0	0	17	19	21	22	3.1	26	27
Ba	9	ppm	0	0	10	16	20	29	17	53	66
Be	9	ppm	0	0	0.33	0.36	0.44	0.44	0.069	0.53	0.55
Bi	9	%	9	100	0.72	1.2	2.2	3.0	1.9	5.2	6.9
Ca	9	ppm	-	-	0.67	0.80	1.6	1.8	0.92	3.0	3.7
Cd	9	ppm	8	89	1.3	2.5	6.6	5.4	2.2	7.4	8.5
Ce	9	ppm	-	-	35	43	84	73	27	103	106
Co	9	ppm	0	0	78	85	121	127	33	170	172
Cr	9	ppm	0	0	123	139	194	182	34	214	232
Cs	9	ppm	-	-	4.1	4.1	6.0	6.0	1.6	8.1	9.0
Cu	9	%	3	33	313	393	535	692	409	1200	1673
Fe	9	ppm	-	-	10	11	16	16	3.9	20	22
Ga	9	ppm	0	0	2.1	2.4	2.7	2.8	0.42	3.4	3.5
Ge	9	ppm	0	0	0.080	0.096	0.11	0.12	0.025	0.15	0.16
Hf	9	ppm	-	-	2.4	2.4	2.6	2.8	0.49	3.4	4.0
Hg	9	ppm	6	67	0.39	0.56	1.3	1.6	1.1	3.0	3.9
In	9	%	-	-	0.030	0.032	0.040	0.045	0.016	0.062	0.084
K	9	ppm	-	-	0.47	0.53	0.63	0.66	0.14	0.83	0.97
La	9	ppm	0	0	19	25	52	46	19	68	71
Li	9	%	0	0	12	16	36	39	25	64	99
Mg	9	ppm	-	-	0.49	0.51	0.81	0.84	0.24	1.2	1.2
Mn	9	ppm	0	0	276	302	473	579	273	925	1163
Mo	9	%	9	100	99	123	304	322	158	488	653
Na	9	ppm	-	-	0.020	0.020	0.030	0.033	0.016	0.060	0.060
Nb	9	ppm	-	-	0.29	0.31	0.39	0.40	0.086	0.53	0.55
Ni	9	ppm	0	0	169	169	192	211	53	257	347
P	9	ppm	0	0	314	400	579	566	171	755	917
Pb	9	ppm	9	100	186	248	509	611	365	1156	1259
Rb	9	ppm	-	-	51	52	71	73	19	89	119
Re	9	%	-	-	0.0070	0.019	0.064	0.100	0.082	0.22	0.22
S	9	ppm	2	22	9.2	9.2	9.2	9.2	0.0100	9.2	9.2
Sb	9	ppm	9	100	4.3	4.9	7.5	14	12	33	37
Sc	9	ppm	0	0	2.2	2.3	2.9	3.1	0.81	4.1	4.9
Se	9	ppm	9	100	5.0	5.2	14	16	8.0	25	26
Sn	9	ppm	0	0	0.40	0.48	0.60	0.62	0.17	0.90	0.90
Sr	9	ppm	0	0	72	91	121	156	66	241	278
Te	9	ppm	-	-	8.3	8.4	23	34	27	57	99
Th	9	%	0	0	1.8	2.4	3.7	3.6	1.3	4.8	6.4
Ti	9	ppm	-	-	0.026	0.036	0.043	0.043	0.011	0.050	0.069
Tl	9	ppm	0	0	1.2	1.3	1.4	1.6	0.31	2.0	2.1
U	9	ppm	0	0	2.1	3.3	4.2	4.5	1.5	6.3	7.3
V	9	ppm	0	0	17	19	25	25	6.4	34	35
W	9	ppm	2	22	1.8	2.0	3.3	11	16	21	56
Y	9	ppm	0	0	8.8	9.0	9.5	9.5	0.55	10.0	11
Zn	9	ppm	7	78	380	436	961	1014	512	1393	2251
Zr	9	ppm	0	0	93	95	99	107	16	129	145

(1) Based on crustal abundance values as provided in Price (1997), excluding major elements

Table A-6 - Supernatant Results

Sample ID		PWQO Screening Value	Interim PWQO Screening Value	CWQG (CCME) Screening Value	Production Composite	BL1073-11	BL1073-12	BL1073-T5B	BL1073-T6B	BL1073-T7B	BL1073-T8B	BL1073-T9B	BL1073-T10B
Sample Type					Flotation Tailings								
Sample Description					2021 LOM	MC6, years 6+ of mining	MC5, years 1-6 of mining	Zone A, years 1-6 of mining	Zone B, years 1-6 of mining	Zone C, years 1-6 of mining	Zone D, years 6+ of mining	Zone E, years 6+ of mining	High Cu Zn, years 6+ of mining
Ausenco Comments[1]:					Representative Sample	Supplemental							
pH	pH units	6.5-8.5	-	-	8.2	7.5	8.1	8.0	8.0	8.2	8.1	7.7	7.9
EC	µS/cm	-	-	-	6550	7630	8260	8560	8080	8480	8350	8060	8070
Acidity (to pH 8.3)	mg $CaCO_3$/L	-	-	-	5.6	22	5.8	7.9	8.2	5.2	5.6	17	12
Alkalinity (to pH 4.5)	mg $CaCO_3$/L	-	-	-	175	104	173	144	116	149	128	98	119
Sulphate	mg/L	-	-	-	3100	4671	5505	5338	4910	5052	4814	4719	4910
Nitrate	mg/L	-	-	13	0.16	<1	<1	<1	<1	<1	<1	<1	<1
Nitrite	mg/L	-	-	-	<0.1	21	<1	10	23	21	25	21	13
Ammonia	mg/L	-	-	-	160	67	105	60	124	114	132	122	113
Total Dissolved Phosphorus	mg/L	-	0.02	-	0.015	**0.031**	**0.026**	0.015	0.012	0.0099	0.0088	0.012	0.016
Total Cyanide	mg/L	1	-	-	0.66	0.062	0.091	0.034	0.45	0.34	0.66	0.30	0.63
Cyanide WAD	mg/L	-	-	-	0.22	0.020	0.061	0.0054	0.13	0.12	0.027	0.14	0.13
Thiocyanate	mg/L	-	-	-	259	17	23	5.0	7.0	6.0	8.0	4.0	3.0
Cyanate	mg/L	-	-	-	244	105	152	114	246	213	239	164	167
Free Cyanide	mg/L	0.005	-	-	0.11	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Hardness ($CaCO_3$)	mg/L	-	-	-	1240	1470	1610	1560	1200	1210	1390	1200	1920
Aluminum Dissolved	mg/L	-	0.075	-	0.017	0.0050	0.0098	0.016	0.011	0.013	0.0073	0.012	0.017
Antimony Dissolved	mg/L	-	0.02	-	**0.100**	**0.023**	**0.042**	**0.13**	**0.057**	**0.049**	**0.026**	**0.049**	**0.10**
Arsenic Dissolved	mg/L	0.1	0.005	0.005	**0.026**	**0.021**	**0.047**	**0.049**	**0.053**	**0.042**	**0.027**	**0.013**	**0.078**
Barium Dissolved	mg/L	-	-	-	0.032	<0.00005	0.040	0.029	0.024	0.033	0.034	0.027	0.030
Beryllium Dissolved	mg/L	0.011	-	-	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Bismuth Dissolved	mg/L	-	-	-	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005
Boron Dissolved	mg/L	-	0.2	1.5	<0.05	0.017	0.028	0.042	0.022	0.019	0.014	0.018	0.011
Cadmium Dissolved	mg/L	0.0002	0.0001	0.00053	0.000081	<0.00011	<0.00008	<0.00007	<0.00004	<0.00004	<0.00012	<0.00003	<0.00006
Calcium Dissolved	mg/L	-	-	-	470	514	593	561	427	427	507	426	725
Chromium Dissolved	mg/L	0.001	-	-	0.0041	0.0025	0.0018	0.0031	0.0024	0.0057	0.0038	0.0099	0.0040
Cobalt Dissolved	mg/L	-	0.0009	-	**0.028**	**0.16**	**0.24**	**0.13**	**0.057**	**0.081**	**0.060**	**0.025**	**0.048**
Copper Dissolved	mg/L	0.005	0.005	-	**0.27**	**0.085**	**0.20**	**0.10**	**0.14**	**0.12**	**0.035**	**0.086**	**0.031**
Iron Dissolved	mg/L	0.3	-	-	<0.01	<0.01	<0.01	<0.01	0.042	0.025	0.15	0.039	0.17
Lead Dissolved	mg/L	0.005	0.001	-	<0.0002	0.00027	<0.00025	0.00044	0.00030	0.00028	<0.00025	0.00026	0.00028
Lithium Dissolved	mg/L	-	-	-	0.045	0.031	0.026	0.020	0.016	0.015	0.036	0.011	0.027
Magnesium Dissolved	mg/L	-	-	-	16	45	31	38	33	34	29	32	27
Manganese Dissolved	mg/L	-	-	0.43	0.25	0.17	0.14	0.17	0.030	0.019	0.029	0.056	0.026
Mercury Dissolved[2]	mg/L	0.0002	-	0.000026	0.00021	0.016	0.00020	0.00019	0.0017	0.0016	0.00026	0.0068	0.012
Mercury Dissolved[3]	mg/L	0.0002		0.000026	-	0.021	0.00070	0.00022	0.0014	0.0012	0.00017	0.0047	0.010
Molybdenum Dissolved	mg/L	-	0.04	0.073	**0.32**	**0.34**	**0.24**	**0.081**	**0.11**	**0.23**	**0.33**	**0.11**	**0.20**
Nickel Dissolved	mg/L	0.025	-	0.025	0.0043	0.012	0.010	0.0048	0.0079	0.0080	0.0053	0.0027	0.0019
Potassium Dissolved	mg/L	-	-	-	118	98	107	98	61	60	80	71	40
Selenium Dissolved	mg/L	0.1	-	-	0.0051	0.040	0.18	0.0058	0.0059	0.018	0.016	0.020	0.025
Silicon Dissolved	mg/L	-	-	-	6.0	9.9	5.0	6.0	7.5	8.9	13	8.9	8.1
Silver Dissolved	mg/L	0.0001	-	0.00025	<0.0001	0.0013	0.00058	<0.00005	0.0099	0.013	0.0024	0.041	0.016
Sodium Dissolved	mg/L	-	-	-	1270	1890	2060	1970	1930	2230	2030	2040	1890
Strontium Dissolved	mg/L	-	-	-	14	34	11	2.6	4.2	12	28	9.1	7.5
Sulphur Dissolved	mg/L	-	-	-	1240	2000	2100	2050	1830	2110	1980	1970	2100
Tellurium Dissolved	mg/L	-	-	-	<0.0005	0.00030	0.00053	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	0.00029
Thallium Dissolved	mg/L	-	0.0003	0.0008	**0.00088**	**0.0011**	**0.0016**	**0.00087**	**0.00068**	**0.00078**	**0.00060**	**0.00071**	**0.00053**
Thorium Dissolved	mg/L	-	-	-	0.00010	0.00012	0.00020	0.00015	0.00014	0.00015	0.00015	0.00010	0.00011
Tin Dissolved	mg/L	-	-	-	0.00053	0.00033	<0.00025	0.00079	0.00037	<0.00025	0.00059	0.00028	0.00059
Titanium Dissolved	mg/L	-	-	-	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001	<0.001
Tungsten Dissolved	mg/L	-	0.03	-	**0.27**	0.016	**0.077**	0.010	0.017	**0.087**	0.013	0.016	**0.087**
Uranium Dissolved	mg/L	-	0.005	0.015	**0.019**	**0.023**	**0.11**	**0.014**	**0.019**	**0.081**	0.0039	**0.026**	**0.042**
Vanadium Dissolved	mg/L	-	0.006	-	<0.001	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005	<0.005
Zinc Dissolved	mg/L	0.03	0.02	0.02	<0.004	<0.005	<0.005	0.0059	<0.005	<0.005	<0.005	<0.005	0.0051
Zirconium Dissolved	mg/L	-	-	-	<0.0001	<0.0001	0.00012	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001

Grey shading indicates metal concentrations greater than the PWQO screening value

Bolded text indicates metal concentrations greater than the interim PWQO screening value

Double underlined text indicates concentrations greater than the Canadian Water Quality Guidelines (long-term) for the protection fo aquatic life screening value (after CCME)

Screening values are for qualitatiive assessment only and hold no regulatory significance

(1) Ausenco indicated that some samples had excess CND reagent added during the bench scale process. Ausenco identified selected samples as representative for assessment purposes (see text).

*-Analysed using Cold Vapour Atomic Absorption Spectroscopy (CVAA); preferred method
**-Analysed using Inductively Coupled Plasma Mass Spectrometry (ICP-MS); where available

Table A-6 - Supernatant Results

Sample ID		PWQO Screening Value	Interim PWQO Screening Value	CWQG (CCME) Screening Value	BL1073-03M	BL1073-04L	BL758-24	BL1073-05C	BL1073-06C	BL1073-07C	BL1073-08C	BL1073-09C	BL1073-10C
Sample Type					Sulphide Concentrate Tailings								
Sample Description					MC5, years 1-6 of mining	MC6, years 6+ of mining	2021 LOM	Zone A, years 1-6 of mining	Zone B, years 1-6 of mining	Zone C, years 1-6 of mining	Zone D, years 6+ of mining	Zone E, years 6+ of mining	High Cu Zn, years 6+ of mining
Ausenco Comments[1]:					Representative Sample		Supplemental						
pH	pH units	6.5-8.5	-	-	8.0	8.5	8.1	7.9	8.2	8.2	7.6	8.1	8.2
EC	µS/cm	-	-	-	10890	10130	6560	6220	9360	7850	7160	8510	11840
Acidity (to pH 8.3)	mg $CaCO_3$/L	-	-	-	28	-	5.9	30	6.4	8.0	29	6.8	6.5
Alkalinity (to pH 4.5)	mg $CaCO_3$/L	-	-	-	169	210	190	100	216	183	138	146	236
Sulphate	mg/L	-	-	-	5910	4624	2900	1839	5433	4671	3950	4814	7100
Nitrate	mg/L	-	-	13	<1	<1	<0.1	<1	<1	<1	<1	<1	<1
Nitrite	mg/L	-	-	-	1.2	49	<0.1	6.1	13	12	<1	20	43
Ammonia	mg/L	-	-	-	215	234	162	47	110	88	85	114	204
Total Dissolved Phosphorus	mg/L	-	0.02	-	**0.10**	**0.061**	**0.029**	**0.19**	**0.025**	**0.025**	**0.075**	**0.032**	**0.12**
Total Cyanide	mg/L	1	-	-	0.49	0.37	0.60	0.098	0.30	0.13	0.25	0.14	0.33
Cyanide WAD	mg/L	-	-	-	0.067	0.079	0.11	0.0073	0.033	0.029	0.072	0.059	0.072
Thiocyanate	mg/L	-	-	-	775	859	17	102	285	209	292	211	331
Cyanate	mg/L	-	-	-	12	410	17	77	131	161	82	225	444
Free Cyanide	mg/L	0.005	-	-	<0.1	<0.1	0.087	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Hardness ($CaCO_3$)	mg/L	-	-	-	838	1280	1160	1060	1140	1280	1380	1280	1560
Aluminum Dissolved	mg/L	-	0.075	-	0.019	0.015	0.042	0.015	0.018	0.023	0.019	0.021	**0.18**
Antimony Dissolved	mg/L	-	0.02	-	**0.61**	**0.22**	**0.12**	**0.33**	**0.28**	**0.19**	**0.028**	**0.20**	**0.42**
Arsenic Dissolved	mg/L	0.1	0.005	0.005	**0.28**	**0.021**	**0.050**	**0.043**	**0.078**	**0.045**	**0.0052**	**0.017**	**0.055**
Barium Dissolved	mg/L	-	-	-	0.0034	0.019	0.11	0.037	0.024	0.035	0.030	0.045	0.049
Beryllium Dissolved	mg/L	0.011	-	-	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	<0.00005	<0.00005	<0.00005	<0.0001
Bismuth Dissolved	mg/L	-	-	-	<0.0001	<0.0001	<0.0001	<0.00005	<0.00005	0.000052	<0.00005	<0.00005	<0.0001
Boron Dissolved	mg/L	-	0.2	1.5	0.031	0.032	<0.05	0.052	0.023	0.054	0.028	0.034	0.031
Cadmium Dissolved	mg/L	0.0002	0.0001	0.00053	<0.00024	<0.0006	**0.00020**	<0.00005	<0.00003	<0.0001	<0.00018	<0.0001	<0.00120
Calcium Dissolved	mg/L	-	-	-	305	481	449	385	402	477	479	452	550
Chromium Dissolved	mg/L	0.001	-	-	<0.0001	<0.0001	0.0053	0.0011	0.0012	0.00075	0.0017	0.0012	<0.0001
Cobalt Dissolved	mg/L	-	0.0009	-	**0.59**	**0.46**	**0.028**	**0.34**	**0.19**	**0.14**	**0.18**	**0.16**	**0.18**
Copper Dissolved	mg/L	0.005	0.005	-	**0.069**	**0.29**	**0.82**	**0.080**	**0.072**	**0.10**	**0.093**	**0.17**	**1.4**
Iron Dissolved	mg/L	0.3	-	-	0.024	<0.02	0.042	<0.01	0.053	<0.01	0.016	0.015	<0.02
Lead Dissolved	mg/L	0.005	0.001	-	<0.0005	0.00052	**0.0088**	<0.00025	<0.00025	<0.00025	0.00036	0.00028	**0.0010**
Lithium Dissolved	mg/L	-	-	-	0.030	0.044	0.034	0.0097	0.020	0.018	0.029	0.017	0.041
Magnesium Dissolved	mg/L	-	-	-	18	20	10	24	33	22	43	36	46
Manganese Dissolved	mg/L	-	-	0.43	<0.0005	0.025	0.17	0.097	0.020	0.019	0.022	0.20	0.22
Mercury Dissolved[2]	mg/L	0.0002	-	0.000026	0.0030	0.00020	0.00019	0.000027	0.000041	0.0000050	0.0000092	0.000054	0.00065
Mercury Dissolved[3]	mg/L	0.0002		0.000026	0.0041	0.0013	-	-	-	-	-	-	-
Molybdenum Dissolved	mg/L	-	0.04	0.073	**1.3**	**3.0**	**0.30**	**0.24**	**0.22**	**0.49**	**0.85**	**0.29**	**1.3**
Nickel Dissolved	mg/L	0.025	-	0.025	0.0091	0.021	0.0089	0.15	0.022	0.012	0.032	0.055	0.0057
Potassium Dissolved	mg/L	-	-	-	189	176	106	29	70	94	62	73	120
Selenium Dissolved	mg/L	0.1	-	-	0.50	1.2	0.013	0.031	0.037	0.053	0.23	0.18	0.59
Silicon Dissolved	mg/L	-	-	-	5.6	3.4	7.4	2.7	4.7	4.4	2.4	4.5	2.9
Silver Dissolved	mg/L	0.0001	-	0.00025	0.025	0.024	<0.0001	0.0025	0.0043	0.00017	0.0033	0.0013	0.0024
Sodium Dissolved	mg/L	-	-	-	2560	2460	1170	382	2340	1800	1420	2100	3130
Strontium Dissolved	mg/L	-	-	-	5.0	14	14	1.7	2.0	3.7	7.0	2.7	4.2
Sulphur Dissolved	mg/L	-	-	-	2700	2340	1160	620	2360	1870	1790	2100	2900
Tellurium Dissolved	mg/L	-	-	-	<0.0005	<0.0005	<0.0005	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	<0.0005
Thallium Dissolved	mg/L	-	0.0003	0.0008	0.00027	0.00018	**0.00074**	**0.0014**	**0.00052**	**0.00031**	**0.00076**	**0.00054**	**0.00066**
Thorium Dissolved	mg/L	-	-	-	0.00035	0.00031	0.00010	0.000054	0.00013	0.000085	0.000074	0.000083	0.00049
Tin Dissolved	mg/L	-	-	-	0.00065	<0.0005	0.00071	<0.00025	<0.00025	<0.00025	<0.00025	<0.00025	0.0011
Titanium Dissolved	mg/L	-	-	-	<0.002	0.0028	<0.005	<0.001	<0.001	<0.001	<0.001	<0.001	<0.002
Tungsten Dissolved	mg/L	-	0.03	-	**0.34**	**0.037**	**0.31**	0.0075	0.029	**0.84**	0.0047	0.014	**0.42**
Uranium Dissolved	mg/L	-	0.005	0.015	**0.020**	**0.016**	**0.013**	0.0015	**0.0095**	**0.011**	**0.013**	**0.0059**	**0.0060**
Vanadium Dissolved	mg/L	-	0.006	-	<0.01	<0.01	0.0017	<0.005	<0.005	<0.005	<0.005	<0.005	<0.01
Zinc Dissolved	mg/L	0.03	0.02	0.02	<0.01	**0.021**	**0.047**	0.0060	<0.005	<0.005	<0.005	**0.028**	**0.10**
Zirconium Dissolved	mg/L	-	-	-	<0.0002	<0.0002	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0001	<0.0002

Grey shading indicates metal concentrations greater than the PWQO screening value

Bolded text indicates metal concentrations greater than the interim PWQO screening value

Double underlined text indicates concentrations greater than the Canadian Water Quality Guidelines (long-term) for the protection fo aquatic life screening value (after CCME)

Screening values are for qualitatiive assessment only and hold no regulatory significance

(1) Ausenco indicated that some samples had excess CND reagent added during the bench scale process. Ausenco identified selected samples as representative for assessment purposes (see text).

*-Analysed using Cold Vapour Atomic Absorption Spectroscopy (CVAA); preferred method
**-Analysed using Inductively Coupled Plasma Mass Spectrometry (ICP-MS); where available

Group	Sample ID:		Production Composite	BL1073-11	BL1073-12	BL1073-T5B	BL1073-T6B	BL1073-T7B	BL1073-T8B	BL1073-T9B	BL1073-T10B	BL758-24
	Sample Type:		Flotation Tailings									Sulphide Concentrate Tailings
	Sample Description:		2021 LOM	MC6, years 6+ of mining	MC5, years 1-6 of mining	Zone A, years 1-6 of mining	Zone B, years 1-6 of mining	Zone C, years 1-6 of mining	Zone D, years 6+ of mining	Zone E, years 6+ of mining	High Cu Zn, years 6+ of mining	2021 LOM
	Phase	Formula										
Sulphides	Pyrite	FeS_2	-	-	-	-	-	0.17	-	-	-	42
	Sphalerite	$(Zn,Fe)S$	-	0.17	0.13	-	-	0.12	0.15	-	0.29	-
Sulphates	Barite	$BaSO_4$	-	-	-	-	-	-	-	-	0.59	-
Carbonates	Dolomite - Ankerite	$CaMg(CO_3)_2$ - $Ca(Fe^{2+},Mg,Mn)(CO_3)_2$	5.7	3.3	4.3	20	12	1.1	0.83	9.0	1.7	1.8
	Calcite, magnesian	$(Ca,Mg)CO_3$	4.8	8.9	2.2	4.6	6.3	1.8	13	8.1	2.4	1.9
	Siderite	$Fe^{2+}CO_3$	0.50	-	-	-	-	-	0.43	0.50	0.28	-
Feldspars	K-feldspar (microcline)	$KAlSi_3O_8$	40	37	51	21	23	65	43	26	51	31
	K-feldspar (orthoclase)	$KAlSi_3O_8$	-	-	4.4	4.7	-	6.0	-	-	4.3	-
	Plagioclase (albite)	$NaAlSi_3O_8$ - $CaAl_2Si_2O_8$	11	14	7.9	3.1	14	3.4	8.0	26	3.1	5.0
Phyllosilicates	Clinochlore	$(Mg,Fe^{2+})_5Al(Si_3Al)O_{10}(OH)_8$	1.2	-	-	-	-	-	-	-	-	-
	Illite/Muscovite	$K_{0.65}Al_{2.0}Al_{0.65}Si_{3.35}O_{10}(OH)_2$/$KAl_2AlSi_3O_{10}(OH)_2$	18	18	14	26	20	11	18	17	12	9.8
	Kaolinite	$Al_2Si_2O_5(OH)_4$	0.80	-	0.64	-	-	0.62	-	-	0.38	-
	Biotite	$K(Mg,Fe^{2+})_3AlSi_3O_{10}(OH)_2$	4.2	8.1	6.6	3.9	6.3	4.5	7.8	5.1	15	2.7
	Chamosite	$(Fe^{2+},Mg,Fe^{3+})_5Al(Si_3Al)O_{10}(OH,O)_8$	-	0.34	0.22	-	0.83	-	0.40	0.27	-	-
Oxides	Quartz	SiO_2	12	7.5	6.9	16	16	5.0	7.5	7.2	7.5	6.0
	Rutile	TiO_2	0.6 (?)	0.96	0.78	-	-	0.64	0.69	0.63	1.1	-
	Magnetite	Fe_3O_4	0.80	0.35	-	-	0.97	-	0.34	0.62	-	-
Phosphates	Apatite	$Ca_5(PO_4)_3(OH,F,Cl)$	-	0.76	0.58	0.79	-	-	-	-	-	0.1 (?)

(?) symbol indicates that the presence of the given mineral could not be fully resolved by the analyst

All phases included in spectra refinement are shown, even if not identified

Attachment B
Certificates of Analysis

QUANTITATIVE PHASE ANALYSIS OF TWO POWDER SAMPLES USING THE RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA.

Global Project #: 1956 (B13)
PO#: GL21-1352

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December 7, 2021

EXPERIMENTAL METHOD

The 2 samples of **Project 1956 (B13)** were reduced to the optimum grain-size range for quantitative X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone XRD Mill (Retsch GmbH, Germany) for 10 minutes. Continuous-scan X-ray powder-diffraction data were collected over a range 3-80°2θ with CoKα radiation on a Bruker D8 Advance Bragg-Brentano diffractometer equipped with an Fe filter foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye-XE detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6°.

RESULTS

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4 and Search-Match software by Bruker. X-ray powder-diffraction data of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1. These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figures 1 -2.

Table 1. Results of quantitative phase analysis (wt.%)

Mineral	**Ideal Formula**	**BL758-24 Rough Concentrate**	**Production Composite Floatation Tailings**
Ankerite-Dolomite	$Ca(Fe^{2+},Mg,Mn)(CO_3)_2$-$CaMg(CO_3)_2$	1.8	5.7
Biotite	$K(Mg,Fe^{2+})_3AlSi_3O_{10}(OH)_2$	2.7	4.2
Calcite	$CaCO_3$	1.9	4.8
Clinochlore	$(Mg,Fe^{2+})_5Al(Si_3Al)O_{10}(OH)_8$		1.2
Kaolinite	$Al_2Si_2O_5(OH)_4$		0.8
K-feldspar (microcline int.)	$KAlSi_3O_8$	31.2	39.9
Magnetite	$Fe^{2+}Fe^{3+}{}_2O_4$		0.8
Molybdenite	MoS_2	0.1 (?)	
Muscovite 2M1	$KAl_2AlSi_3O_{10}(OH)_2$	9.8	18.3
Plagioclase (albite)	$NaAlSi_3O_8$-$CaAl_2Si_2O_8$	5.0	10.9
Pyrite	FeS_2	41.5	
Quartz	SiO_2	6.0	12.3
Rutile	TiO_2		0.6 (?)
Siderite	$Fe^{2+}CO_3$		0.5
Total		**100.0**	**100.0**

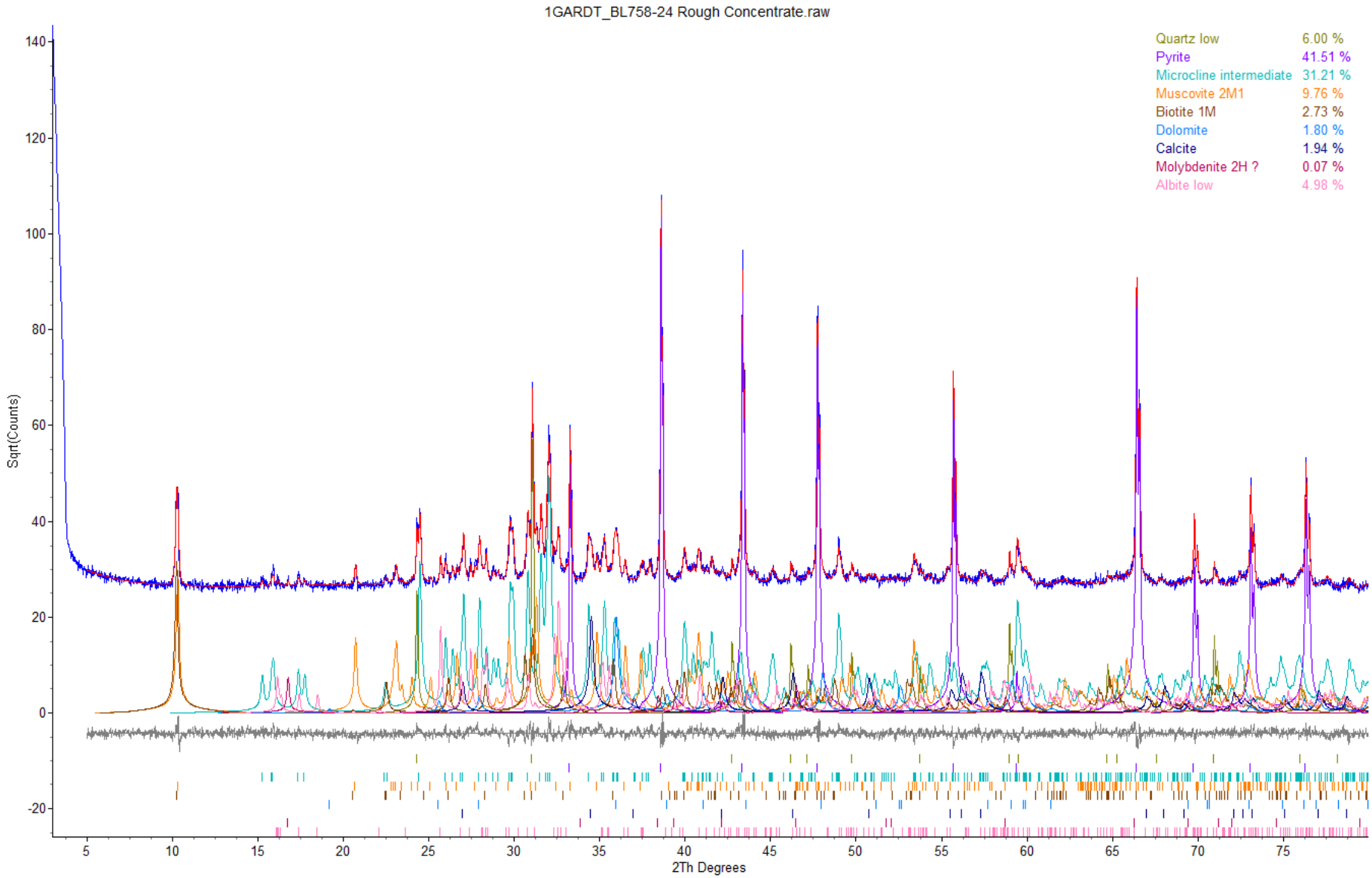

Figure 1. Rietveld refinement plot of sample **Global ARD Testing – 1_BL758-24 Rough Concentrate** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

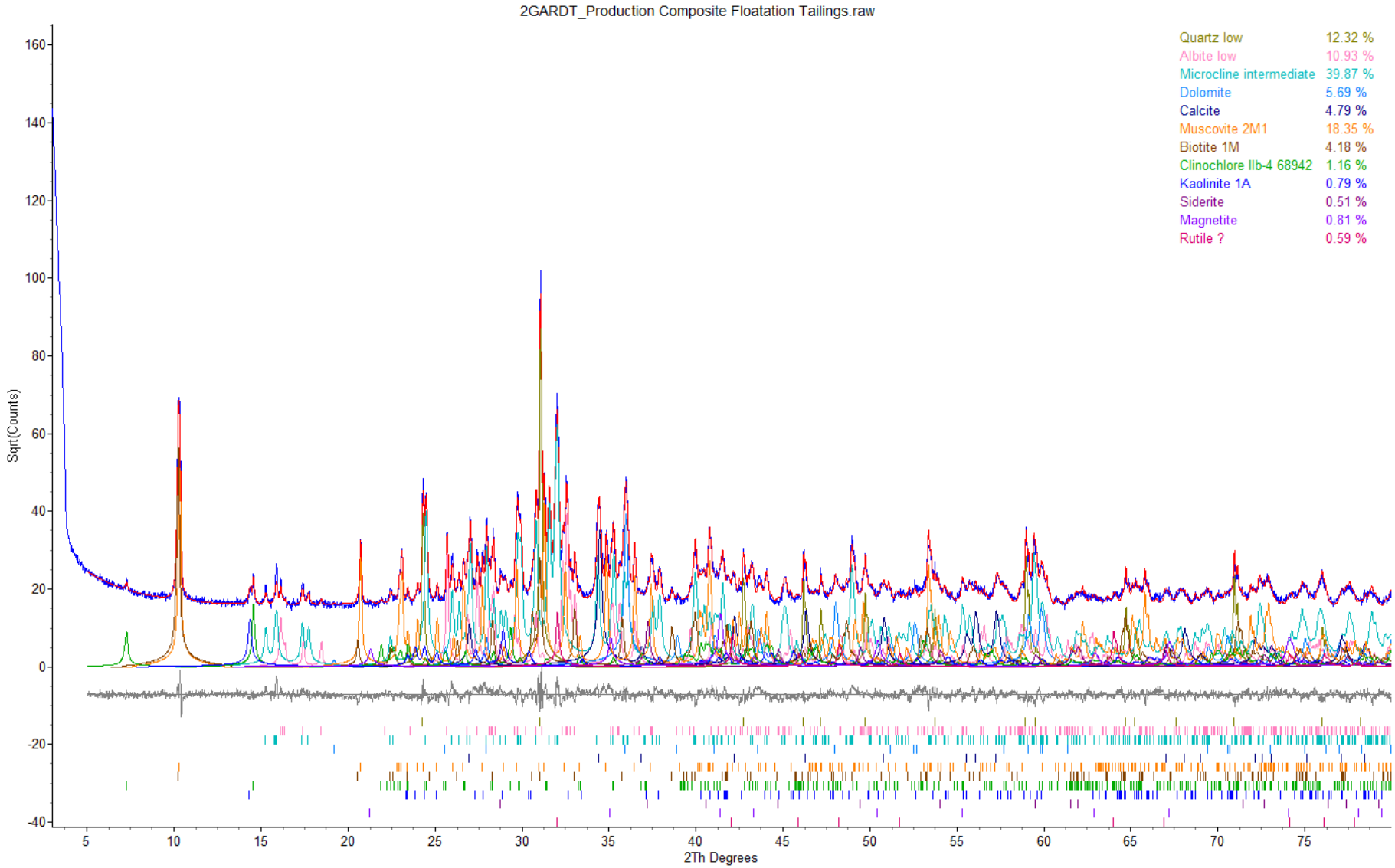

Figure 2. Rietveld refinement plot of sample **Global ARD Testing – 2_Production Composite Floatation Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below – difference between observed and calculated intensities; vertical bars, positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

QUANTITATIVE PHASE ANALYSIS OF 8 POWDER SAMPLES USING THE RIETVELD METHOD AND X-RAY POWDER DIFFRACTION DATA

Project: 1956 (B22)
PO#: GL23-309

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April 18, 2023

EXPERIMENTAL METHOD

The eight samples of **Project 1956 (B22)** were reduced to the optimum grain-size range for quantitative X-ray analysis (<10 μm) by grinding under ethanol in a vibratory McCrone XRD Mill (Retsch GmbH, Germany) for 10 minutes. Continuous-scan X-ray powder-diffraction data were collected over a range of 3-80°2θ with CoKα radiation on a Bruker D8 Advance Bragg-Brentano diffractometer equipped with an Fe filter foil, 0.6 mm (0.3°) divergence slit, incident- and diffracted-beam Soller slits and a LynxEye-XE detector. The long fine-focus Co X-ray tube was operated at 35 kV and 40 mA, using a take-off angle of 6°.

RESULTS

The X-ray diffractograms were analyzed using the International Centre for Diffraction Database PDF-4+ and Search-Match software by Bruker. X-ray powder-diffraction data of the samples were refined with Rietveld program Topas 4.2 (Bruker AXS). The results of quantitative phase analysis by Rietveld refinements are given in Table 1 (separate file, ***GARDT Results Apr 18 2023 – Proj 1956 (B22) PO GL23-309 – 8 samples.xlsx***). These amounts represent the relative amounts of crystalline phases normalized to 100%. The Rietveld refinement plots are shown in Figures 1 to 8. Ideal formulae of the minerals are shown in Table 2.

Table 2. Ideal formulae of the present minerals

Mineral	**Ideal Formula**
Apatite	$Ca_5(PO_4)_3(OH,F,Cl)$
Barite	$BaSO_4$
Biotite	$K(Mg,Fe^{2+})_3AlSi_3O_{10}(OH)_2$
Calcite	$CaCO_3$
Chamosite	$(Fe^{2+},Mg,Fe^{3+})_5Al(Si_3Al)O_{10}(OH,O)_8$
Dolomite - Ankerite	$CaMg(CO_3)_2$ - $Ca(Fe^{2+},Mg,Mn)(CO_3)_2$
Illite/Muscovite 2M	$\sim K_{0.65}Al_{2.0}(Al_{0.65}Si_{3.35}O_{10})(OH)_2/KAl_2(AlSi_3O_{10})(OH)_2$
Kaolinite	$Al_2Si_2O_5(OH)_4$
K-feldspar (microcline; orthoclase)	$KAlSi_3O_8$
Magnetite	Fe_3O_4
Plagioclase (albite)	$NaAlSi_3O_8 – CaAl_2Si_2O_8$
Pyrite	FeS_2
Quartz	SiO_2
Rutile	TiO_2
Siderite	$Fe^{2+}CO_3$
Sphalerite	(Zn,Fe)S

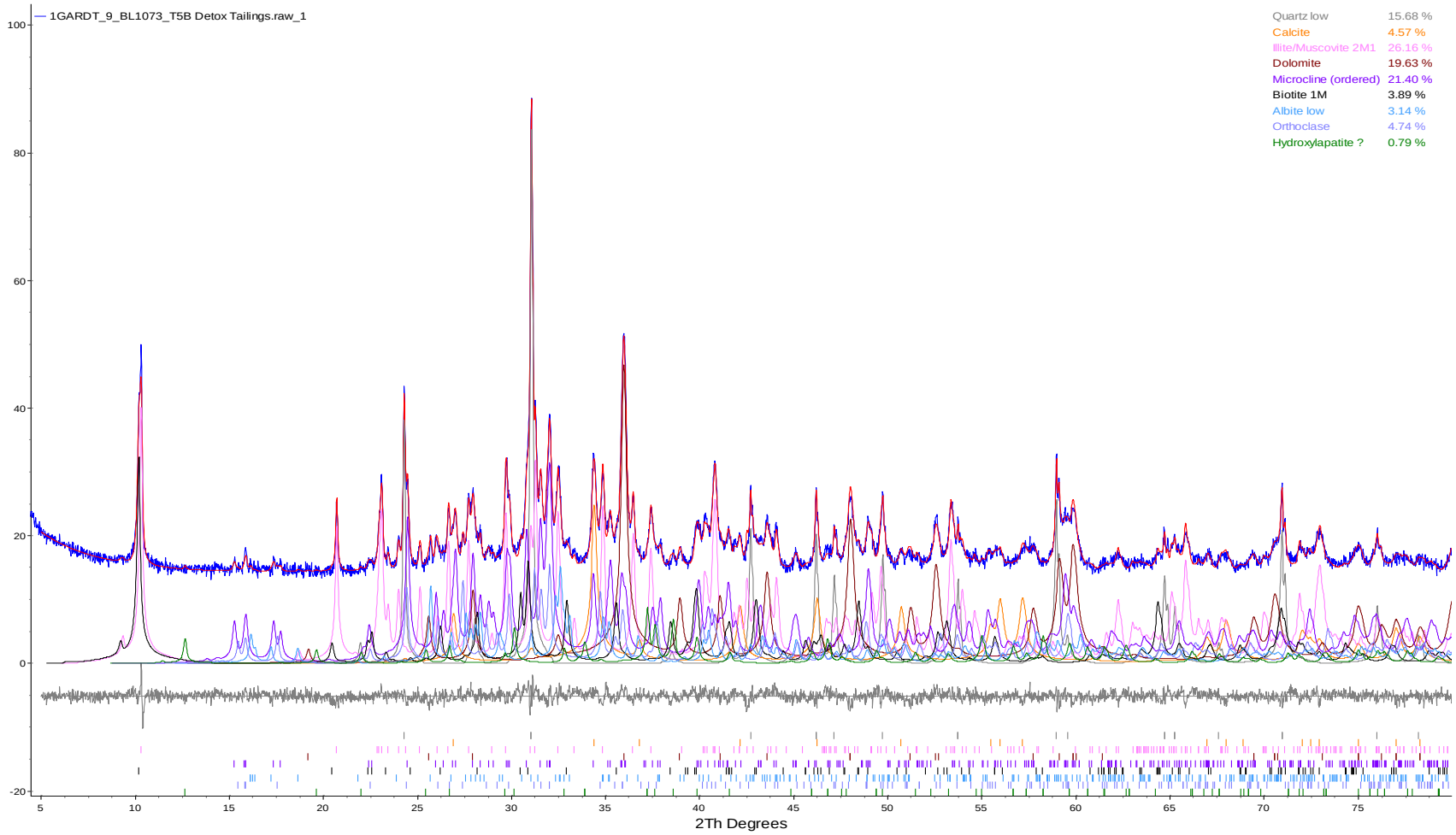

Figure 1. Rietveld refinement plot of sample **Global ARD Testing Services #9: BL1073_T5B Detox Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

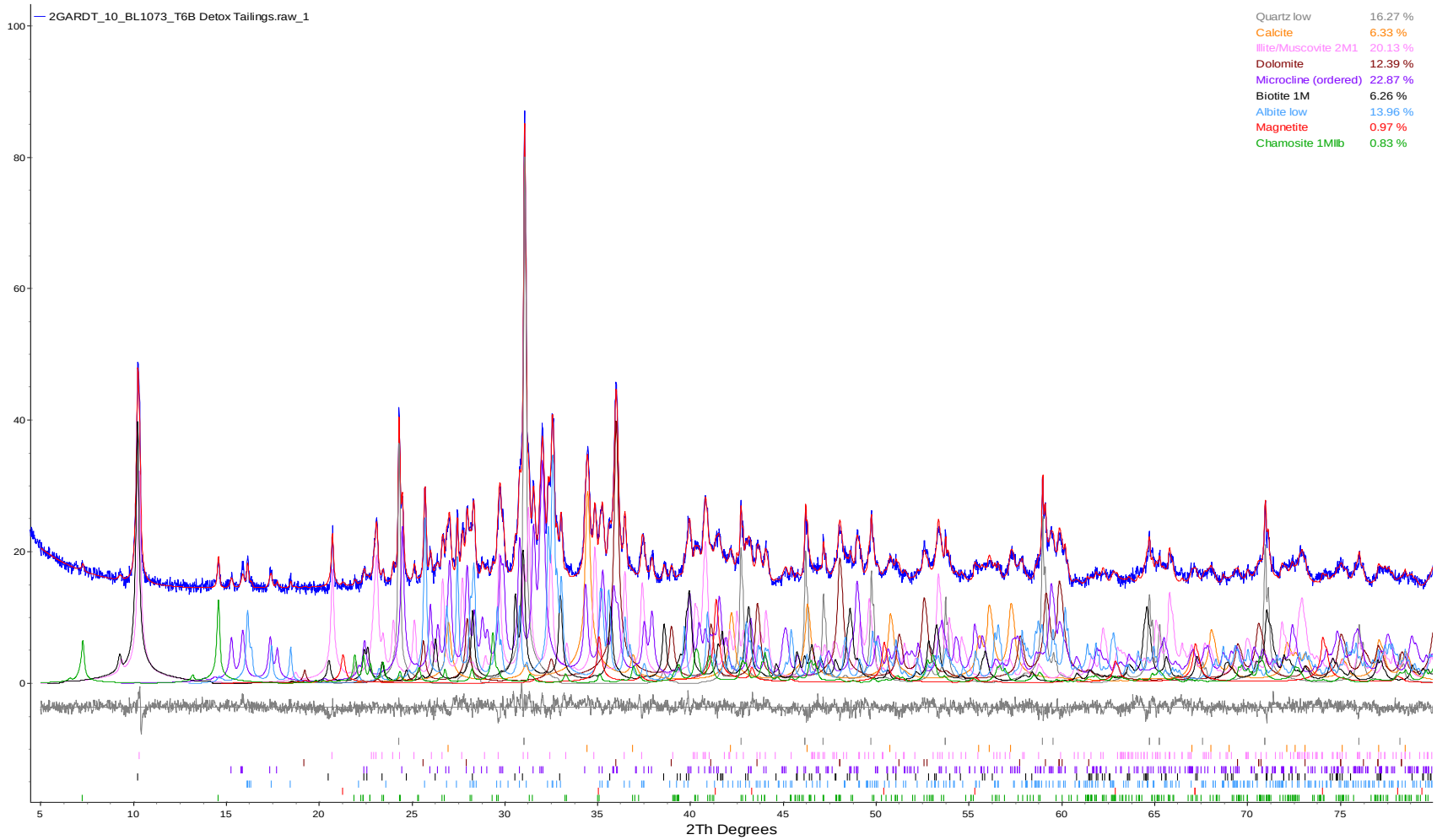

Figure 2. Rietveld refinement plot of sample **Global ARD Testing Services #10: BL1073_T6B Detox Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

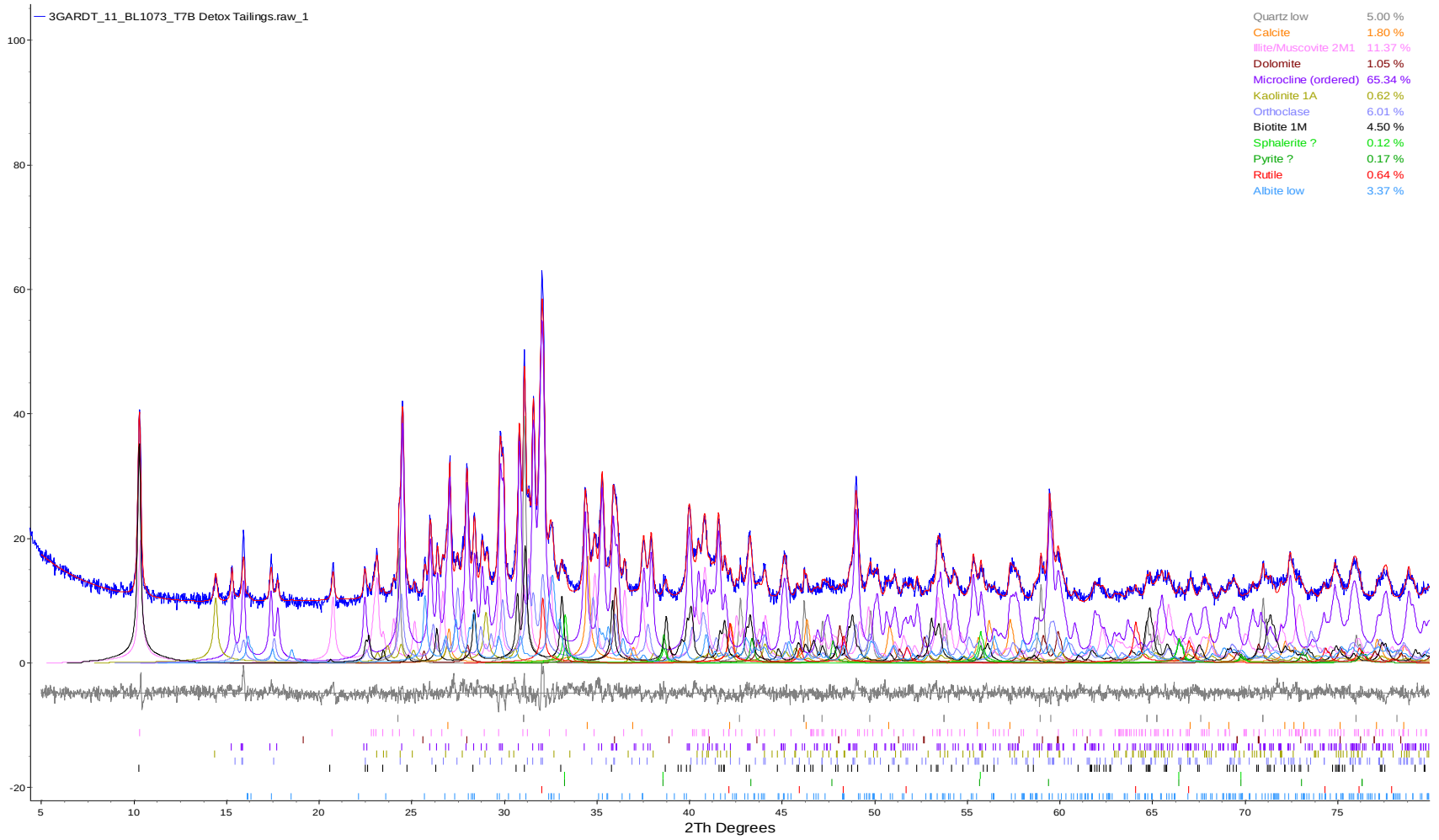

Figure 3. Rietveld refinement plot of sample **Global ARD Testing Services #11: BL1073_T7B Detox Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

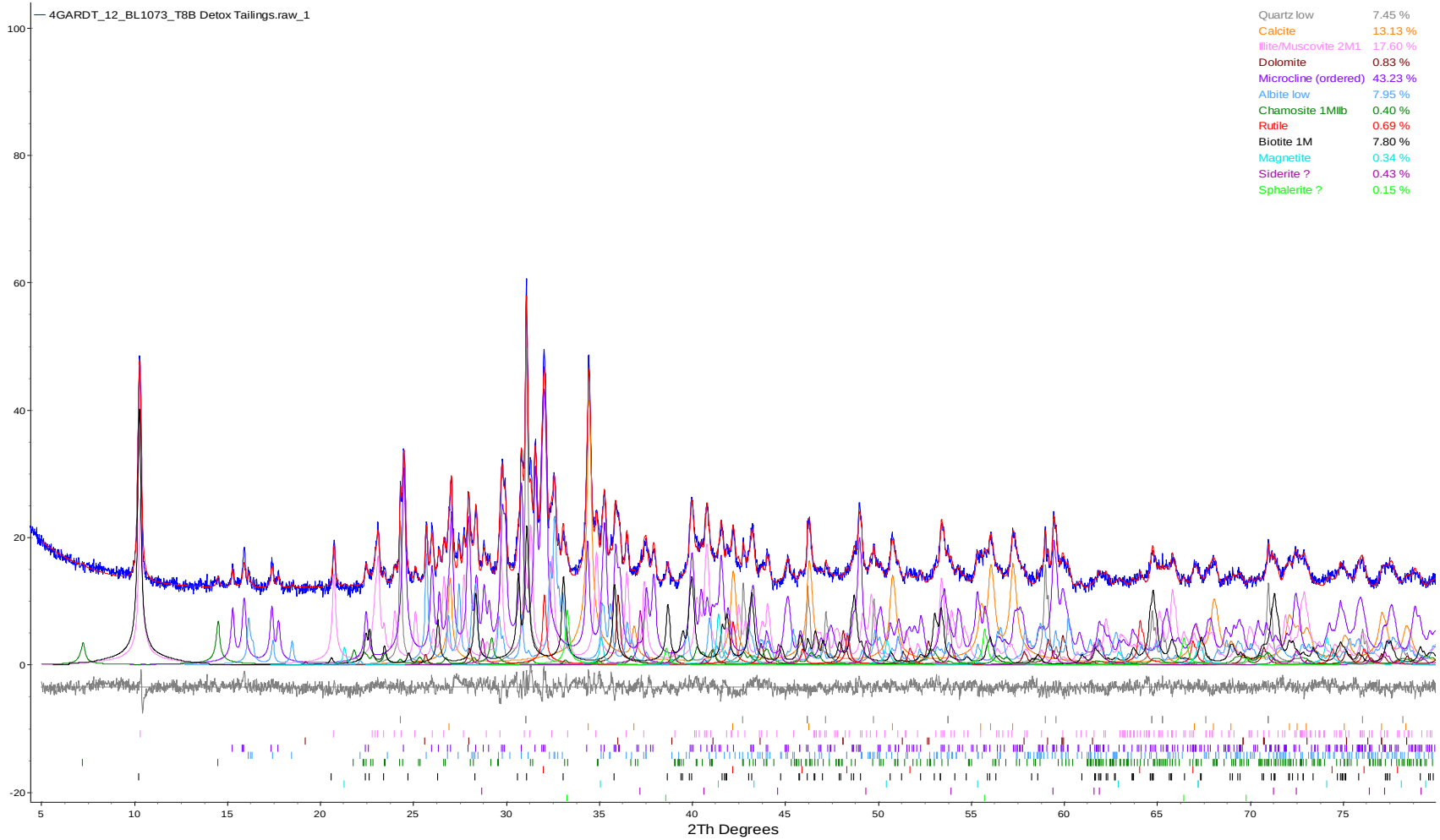

Figure 4. Rietveld refinement plot of sample **Global ARD Testing Services #12: BL1073_T8B Detox Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

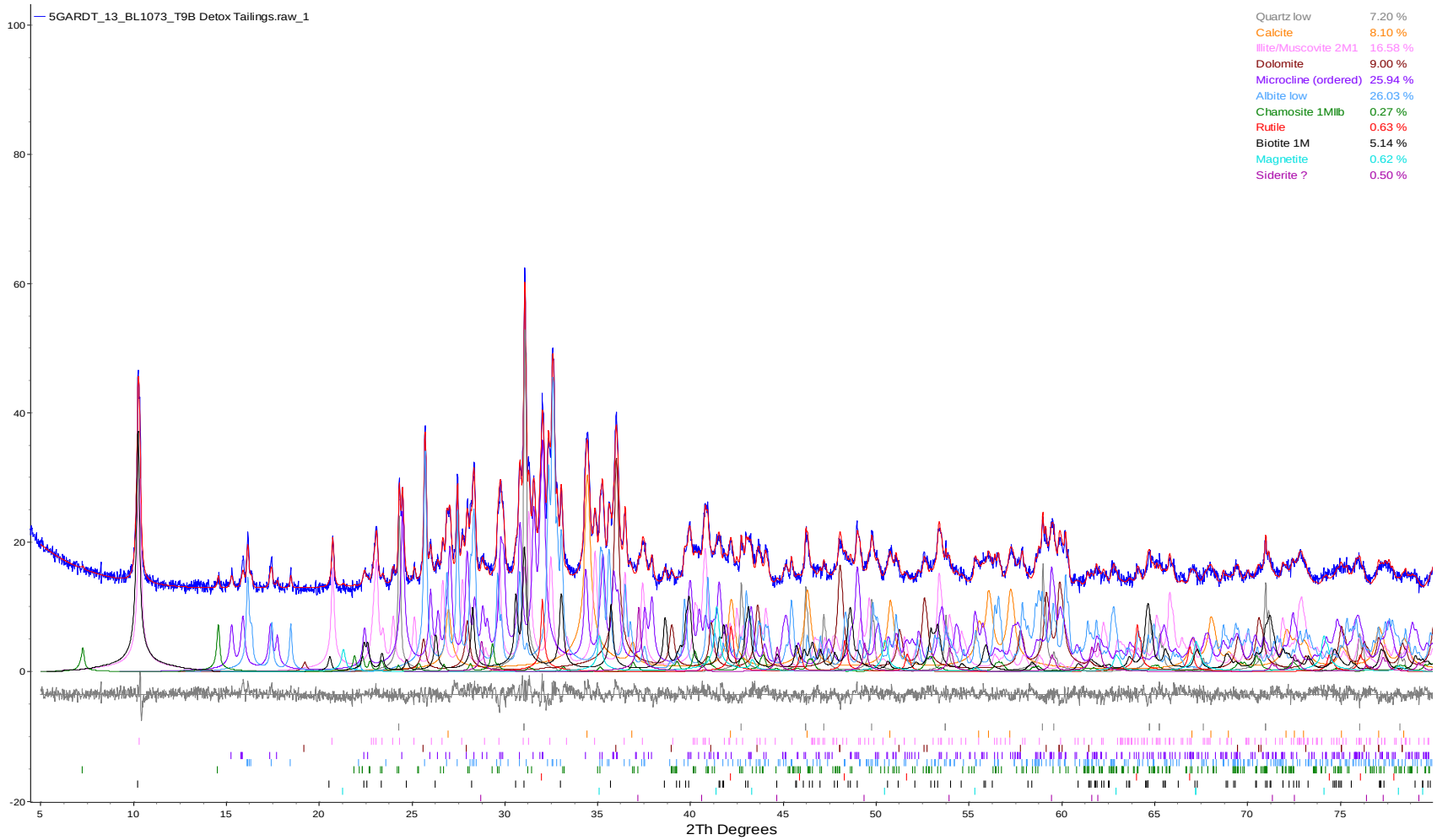

Figure 5. Rietveld refinement plot of sample **Global ARD Testing Services #13: BL1073_T9B Detox Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

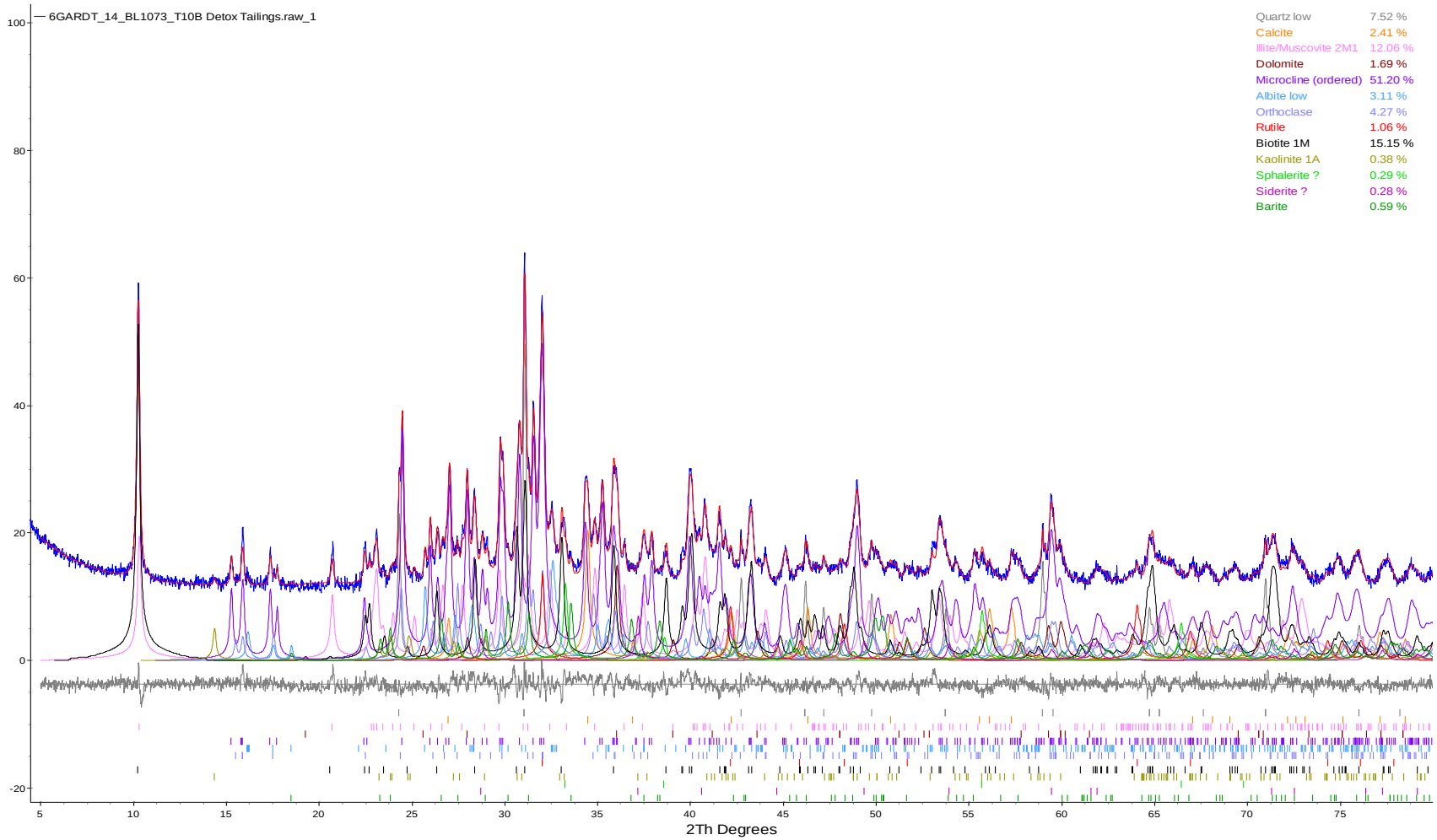

Figure 6. Rietveld refinement plot of sample **Global ARD Testing Services #14: BL1073-T10B Detox Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

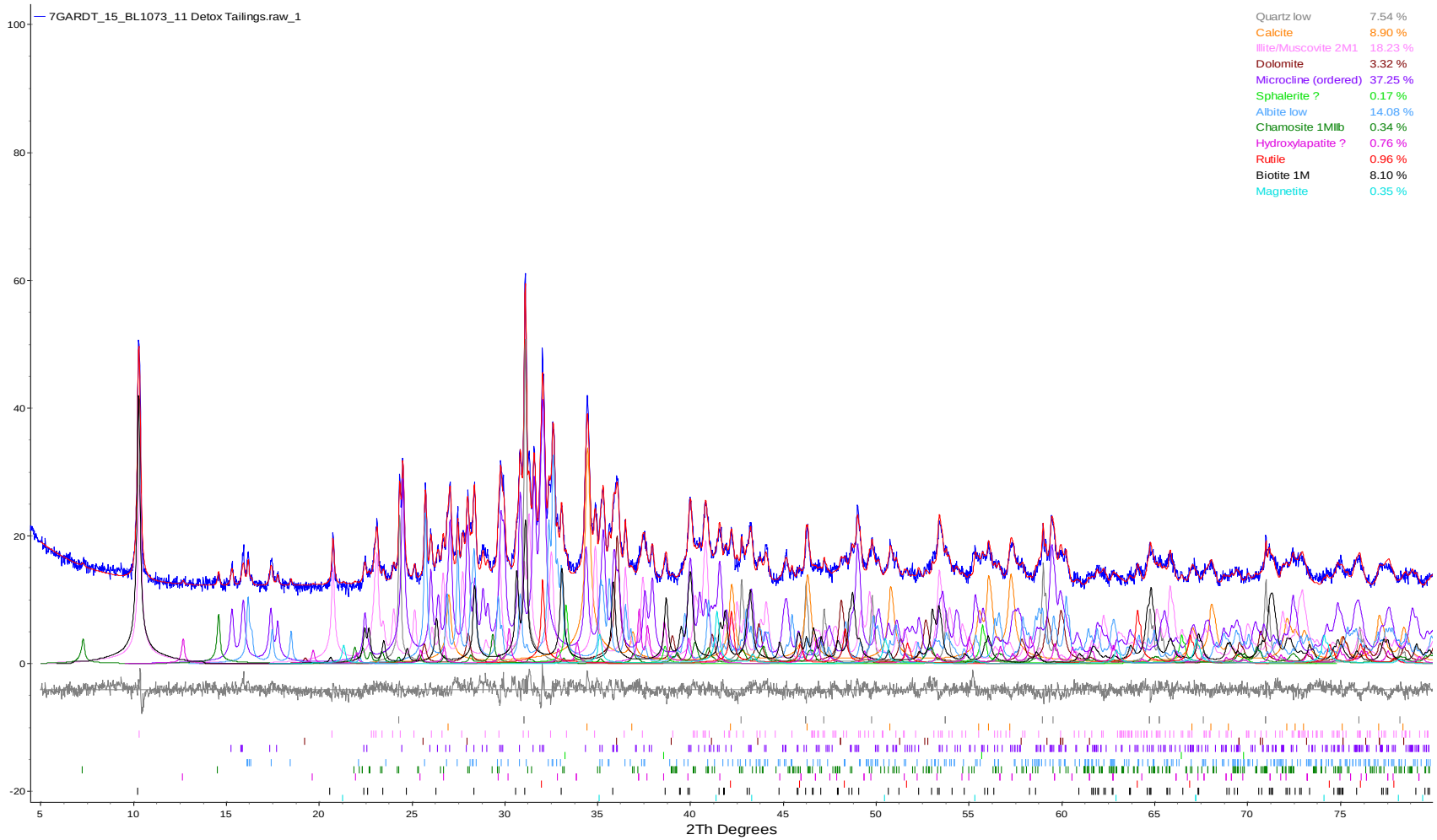

Figure 7. Rietveld refinement plot of sample **Global ARD Testing Services #15: BL1073-11 Detox Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

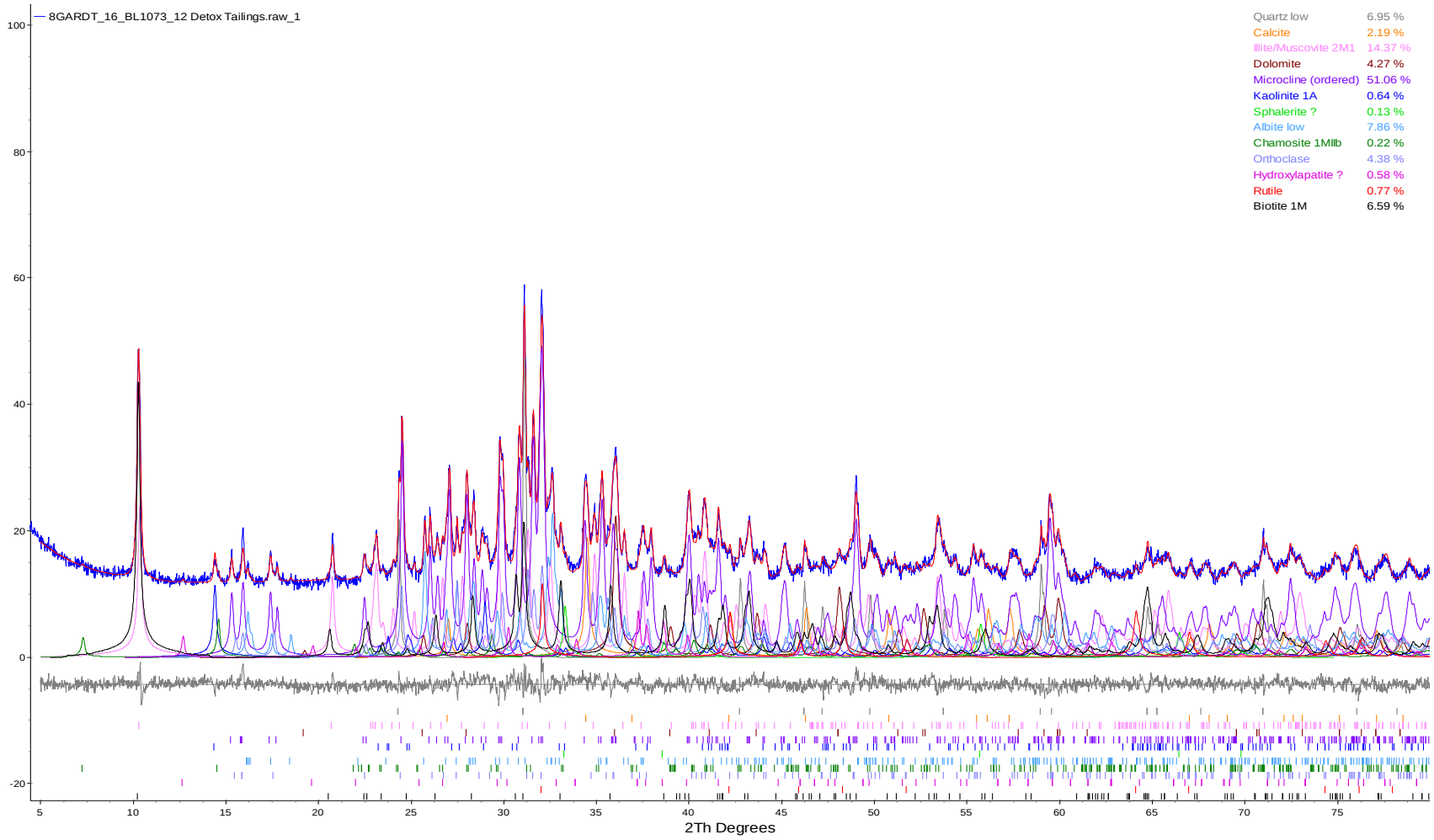

Figure 8. Rietveld refinement plot of sample **Global ARD Testing Services #16: BL1073-12 Detox Tailings** (blue line - observed intensity at each step; red line - calculated pattern; solid grey line below - difference between observed and calculated intensities; vertical bars - positions of all Bragg reflections). Coloured lines are individual diffraction patterns of all phases.

Table 1. Results of quantitative phase analysis (wt.%) XRD-Rietveld: Global ARD Testing Services - proj 1956 (B22) PO GL23-309 - 8 samples

UBC No.	1	2	3	4	5	6	7	8
Client No.	9	10	11	12	13	14	15	16
Mineral \ Sample ID	BL1073_T5B Detox Tailings	BL1073_T6B Detox Tailings	BL1073_T7B Detox Tailings	BL1073_T8B Detox Tailings	BL1073_T9B Detox Tailings	BL1073_T10B Detox Tailings	BL1073_11 Detox Tailings	BL1073_12 Detox Tailings
Apatite	0.8 (?)						0.8 (?)	0.6 (?)
Barite						0.6		
Biotite	3.9	6.3	4.5	7.8	5.1	15.2	8.1	6.6
Calcite	4.6	6.3	1.8	13.1	8.1	2.4	8.9	2.2
Chamosite		0.8		0.4	0.3		0.3	0.2
Dolomite - Ankerite	19.6	12.4	1.1	0.8	9.0	1.7	3.3	4.3
Illite/Muscovite 2M	26.2	20.1	11.4	17.6	16.6	12.1	18.2	14.4
Kaolinite			0.6			0.4		0.6
K-feldspar (microcline)	21.4	22.9	65.3	43.2	25.9	51.2	37.2	51.1
K-feldspar (orthoclase)	4.7		6.0			4.3		4.4
Magnetite		1.0		0.3	0.6		0.3	
Plagioclase (albite)	3.1	14.0	3.4	8.0	26.0	3.1	14.1	7.9
Pyrite			0.2 (?)					
Quartz	15.7	16.3	5.0	7.5	7.2	7.5	7.5	6.9
Rutile			0.6	0.7	0.6	1.1	1.0	0.8
Siderite				0.4 (?)	0.5 (?)	0.3 (?)		
Sphalerite			0.1 (?)	0.2 (?)		0.3 (?)	0.2 (?)	0.1 (?)
Total	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**	**100.0**

CERTIFICATE OF ANALYSIS ▪ COVER PAGE

Global ARD Testing Services Inc.

CLIENT INFORMATION	
Client:	WSP E&I Canada Ltd.
Project Manager:	Anna Klein
Mailing Address	2020 Winston Park Drive
	Oakville, ON, L6H 6X7
Contact No:	(647) 620-5190

COMPANY INFORMATION	
Legal Name:	Global ARD Testing Services Inc.
Mailing Address:	6891 Antrim Avenue
	Burnaby, BC
	V5J 4M5
Contact No:	
	Main: (604) 428-2730
	Alternate: (604) 603-1359

PROJECT INFORMATION	
Project Name:	Springpole
Project Number:	ONS2104

REPORTING	
Global Project No:	1956 (B22)
Report Version:	2
Pages (Including Cover):	7
Report Title:	COA (B22) x 32 Springpole Samples (rec'd 20-Jan23)
Analysis Reviewed By:	Prab Bhatia (Pbhatia@globalARDtesting.com)
Position:	Project Manager
Report Certified By:	Prab Bhatia
Signature:	Prab Bhatia

RESULTS		
Reported To:	**1**	Kristen Gault (kristen.gault@woodplc.com)
	2	Anna Klein (anna.klein@woodplc.com)
	3	
	4	
Date Reported:		
	Version-1:	April 4, 2023
	Version-2:	April 25, 2023 (ABA Rechecks)

INVOICE		
Submitted To:	**1**	Meghan Bertenshaw (meghan@firstmininggold.com)
	2	Kristen Gault (kristen.gault@woodplc.com)
	3	Anna Klein (anna.klein@woodplc.com)
	4	
Client PO No:		
Global Invoice No:		ARD1956-0423A
Date Submitted:		April 4, 2023

NOTES
All samples and pulps are stored at no charge for 90 days past reporting date.
Please contact the lab if you would like to continue storage past 90 days.
Storage charges will apply.

CERTIFICATE OF ANALYSIS ▪ SAMPLE DETAILS

Global
ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

SAMPLE RECEIPT INFO	
Date Samples Received:	January 20, 2023
No of Samples Received:	32
Samples Received By:	Garry

ANALYTICAL INSTRUCTIONS	
From:	
	as per email Confirmation
Date:	February 28, 2023

S. No.	Sample ID	Sample Description	Condition (Wet/Dry)	Wt. of Sample Rec'd (kg)	Global Notes (if any)
1	BL1073-05C (Ro Conc)	Tails	Wet	0.22	
2	BL1073-06C (Ro Conc)	Tails	Wet	0.98	
3	BL1073-07C (Ro Conc)	Tails	Wet	0.81	
4	BL1073-08C (Ro Conc)	Tails	Wet	0.42	
5	BL1073-09C (Ro Conc)	Tails	Wet	1.02	
6	BL1073-10C (Ro Conc)	Tails	Wet	1.02	
7	BL1073-03M (Ro Conc)	Tails	Wet	4.60	
8	BL1073-04L (Ro Conc)	Tails	Wet	3.85	
9	BL1073-T5B Detox Tailing	Tails	Wet	3.55	
10	BL1073-T6B Detox Tailing	Tails	Wet	3.30	
11	BL1073-T7B Detox Tailing	Tails	Wet	3.50	
12	BL1073-T8B Detox Tailing	Tails	Wet	3.60	
13	BL1073-T9B Detox Tailing	Tails	Wet	3.00	
14	BL1073-T10B Detox Tailing	Tails	Wet	3.10	
15	BL1073-11 Detox Tailing	Tails	Wet		Leaking
16	BL1073-12 Detox Tailing	Tails	Wet		Leaking
17	BL1073-05C (Ro Conc) Solution	Water			
18	BL1073-06C (Ro Conc) Solution	Water			
19	BL1073-07C (Ro Conc) Solution	Water			
20	BL1073-08C (Ro Conc) Solution	Water			
21	BL1073-09C (Ro Conc) Solution	Water			
22	BL1073-10C (Ro Conc) Solution	Water			
23	BL1073-03M (Ro Conc) Solution	Water			
24	BL1073-04L (Ro Conc) Solution	Water			
25	BL1073-T5B Detox Tailing Solution	Water			
26	BL1073-T6B Detox Tailing Solution	Water			
27	BL1073-T7B Detox Tailing Solution	Water			
28	BL1073-T8B Detox Tailing Solution	Water			
29	BL1073-T9B Detox Tailing Solution	Water			
30	BL1073-T10B Detox Tailing Solutio	Water			
31	BL1073-11 Detox Tailing Solution	Water			
32	BL1073-12 Detox Tailing Solution	Water			

Total wt of sample rec'd (kg): **32.97**

S. No.	Sample ID	Paste pH	Fizz Rating	Total Carbon	Total Inorganic C	$CaCO_3$ Equivalents*1	Total Sulphur	Sulphate Sulphur	Sulphide Sulphur	AP*3	Modified ABA NP	Standard Sobek NP	NNP*4	NPR*5
	Units:	pH Units		wt %	wt %	kg CaCO3/tonne	wt %	wt %	wt %	kg CaCO3/tonne				
	Reported Detection Limit:	*0.1*		*0.02*	*0.02*	*1.7*	*0.01*	*0.01*	*0.01*	0.3	*0.5*	*0.5*		
1	BL1073-05C (Ro Conc)	7.6	Strong	1.84	1.71	142.5	10.23	0.11	10.12	316.3		147.5	-168.8	0.5
2	BL1073-06C (Ro Conc)	7.7	Moderate	0.85	0.81	67.5	14.59	0.13	14.46	451.9		68.6	-383.3	0.2
3	BL1073-07C (Ro Conc)	7.4	Slight	0.19	0.17	14.2	13.46	0.11	13.35	417.2		19.2	-398.0	0.0
4	BL1073-08C (Ro Conc)	6.8	Moderate	0.55	0.51	42.5	24.68	0.25	24.43	763.4		43.8	-719.6	0.1
5	BL1073-09C (Ro Conc)	8.0	Strong	1.24	1.15	95.8	10.06	0.08	9.98	311.9		106.8	-205.1	0.3
6	BL1073-10C (Ro Conc)	7.3	Slight	0.27	0.25	20.8	18.97	0.32	18.65	582.8		29.5	-553.3	0.1
7	BL1073-03M (Ro Conc)	7.7	Slight	0.28	0.26	21.7	17.95	0.12	17.83	557.2		31.4	-525.8	0.1
8	BL1073-04L (Ro Conc)	7.5	Moderate	0.56	0.53	44.2	21.22	0.23	20.99	655.9		58.1	-597.8	0.1
9	BL1073-T5B Detox Tailing	8.6	Strong	2.73	2.63	219.2	0.13	0.03	0.10	3.1	168.0	236.6	164.9	75.7
10	BL1073-T6B Detox Tailing	8.8	Strong	2.13	2.13	177.5	0.15	0.02	0.13	4.1	157.0	202.7	152.9	49.9
11	BL1073-T7B Detox Tailing	8.6	Slight	0.32	0.31	25.8	0.16	0.03	0.13	4.1	25.9	32.0	21.8	7.9
12	BL1073-T8B Detox Tailing	8.1	Strong	1.68	1.67	139.2	0.15	0.04	0.11	3.4	134.9	150.6	131.5	43.8
13	BL1073-T9B Detox Tailing	8.8	Strong	1.99	1.75	145.8	0.12	0.01	0.11	3.4	145.8	172.1	142.4	50.1
14	BL1073-T10B Detox Tailing	8.6	Moderate	0.55	0.54	45.0	0.26	0.08	0.18	5.6	46.0	71.6	40.4	12.7
15	BL1073-11 Detox Tailing	8.5	Strong	1.48	1.45	120.8	0.23	0.06	0.17	5.3	115.3	144.8	110.0	27.3
16	BL1073-12 Detox Tailing	8.6	Moderate	0.78	0.61	51.1	0.21	0.05	0.16	5.0	58.9	84.9	53.9	17.0
	QUALITY ASSURANCE / QUALITY CONTROL													
Pulp Replicates:														
2	BL1073-06C (Ro Conc)			0.85	2.13		14.59							
2R	BL1073-06C (Ro Conc) (Rep)			0.88	2.13		14.99							
	%RPD			-3%	0%		-3%							
9	BL1073-T5B Detox Tailing											236.6		
9R	BL1073-T5B Detox Tailing (Rep)											233.7		
	%RPD											1%		
10	BL1073-T6B Detox Tailing	8.8	Strong					0.02			157.0	216.2		
10R	BL1073-T6B Detox Tailing (Rep)	8.8	Strong					0.02			156.0	205.7		
10R	BL1073-T6B Detox Tailing (Rep)	8.8	Strong					0.02			156.0	202.7		
	%RPD							0%			1%	6%		
14	BL1073-T10B Detox Tailing		Moderate									78.9		
14R	BL1073-T10B Detox Tailing (Rep)		Moderate									71.6		
	%RPD											10%		
15	BL1073-11 Detox Tailing											144.8		
15R	BL1073-11 Detox Tailing (Rep)											141.9		
	%RPD											2%		
16	BL1073-12 Detox Tailing											91.7		
16R	BL1073-12 Detox Tailing (Rep)											84.9		
	%RPD											8%		
Reference Material Analysis:														
Reference Material		1) NBM-1 2) KZK-1		GS310-7	KZK-1		GS310-7	RTS-3a			1) NBM-1 (Slight) 2) NBM-1 (Moderate)	1) KZK-1 (Slight) 2) KZK-1 (Moderate)		
Ref. Material Certified Value		**1) 8.45 2) 8.80**		**4.16**	**0.92**		**10.92**	**1.10**			**1) 46.6 2) 52.3**	**1) 59.0 2) 64.8**		
Reference Material Results		1) N/A 2) 8.86		4.31	0.94		11.3	0.94			1) 42.3 2) N/A	1) 56.8 2) 66.4		
Acceptance Range:		***90% - 110%***		***90% - 110%***	***80% - 120%***		***90% - 110%***	***90% - 110%***			***90% - 110%***	***90% - 110%***		
Method Blank Analysis:														
Method Blank Results				<0.01	<0.02		<0.01	<0.01						
GLOBAL SOP NO./METHOD:		*ARD-005*	*ARD-005*	*LECO*	*$HClO_4$ Leach CO_2 Coulometer*	*Calc.*	*LECO*	*ARD-010 (HCl Leach)*	*Calc.*	*Calc.*	*ARD-005*	*ARD-007*	*Calc.*	*Calc.*

NOTES:
Job No: YVR2310404

Date of Analysis (24 h): March 27-30, 2023
pH of DI water used (pH units): 5.39
EC of DI water used (µS/cm): 0.79

METHODS:
Total Sulphur by Leco.
Total Inorganic Carbon (TIC): $HClO_4$ leach, evolved CO_2 analysed by CO_2 Coulometer.

ABBREVIATIONS:
R = Rep = Replicate (a replicate is a sub-sample scooped from a single pulp sample bag produced per client sample)
D = Dup = Duplicate (a duplicate is 2nd sub-pulp sample bag produced by processing a 2nd split of the client sample. A duplicate pulp sample is prepared only at client request.
EC = Electric Conductivity
NP = Neutralization Potential
Calc. = Calculation
IND = Indeterminate
COA = Certificate Of Analysis
N/A = Not Applicable
NR = Not Reported

CALCULATIONS:
*1 $CaCO_3$ Equivalents: Is based on TIC (Total Inorganic Carbon)
*2 Non-Extractable Sulphur: Total sulphur - (sulphate sulphur + sulphide sulphur)
*3 AP (Acid Potential): Sulphide-sulphur x 31.25
*4 NNP (Net Neutralization Potential): NP - AP
*5 NPR (Neutralization Potential Ratio): NP/AP

REFERENCES:
Sample Preparation: ASTM E877-08; MEND Report 1.20.1, Version 0 (2009)
ABA: Air-dried, jaw-crushed, split by riffling and pulverized to 85% passing 200 mesh (75 µm).
Surface Rinse-pH: MEND Report 1.20.1, Version 0 (2009).
Modified ABA (Sobek) NP: MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.
STD Sobek NP / Paste pH / Fizz Rating: Sobek, A.A., Schuller, W.A., Freeman, J.R. and Smith, R.M.; US EPA-600/2-78-054 (1978).
Paste pH / Fizz Rating: Sobek, A.A., Schuller, W.A., Freeman, J.R. and Smith, R.M.; US EPA-600/2-78-054 (1978).
Sulphate Sulphur: Based on MEND method using HCl leach. The S extracted is determined by analysing the extract for SO_4 using UV-Vis Spectrophotometer (STD Method 4500-SO42- E).
Sulphur Speciation: Sequential HCl and HNO_3 leach. The S extracted is determined by analysing the extract for SO_4 using UV-Vis Spectrophotometer (STD Method 4500-SO42- E).

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ METALS RESULTS BY AQUA REGIA DIGEST & ICP-MS ANALYSIS ON SOLIDS

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

S. No.	Sample ID	Method / Analyte / Unit / MDL / Sample Type	Silver (Ag) ppm 0.01	Aluminum (Al) % 0.01	Arsenic (As) ppm 0.1	Gold (Au) ppm 0.0005	Boron (B) ppm 10	Barium (Ba) ppm 10	Beryllium (Be) ppm 0.05	Bismuth (Bi) ppm 0.01	Calcium (Ca) % 0.01	Cadmium (Cd) ppm 0.01	Cerium (Ce) ppm 0.02	Cobalt (Co) ppm 0.1	Chromium (Cr) ppm 1	Cesium (Cs) ppm 0.05	Copper (Cu) ppm 0.2	Iron (Fe) % 0.01	Gallium (Ga) ppm 0.05	Germanium (Ge) ppm 0.05	Hafnium (Hf) ppm 0.02	Mercury (Hg) ppm 0.005	Indium (In) ppm 0.005	Potassium (K) % 0.01	Lanthanum (La) ppm 0.2	Lithium (Li) ppm 0.1	Magnesium (Mg) % 0.01	Manganese (Mn) ppm 5
1	BL1073-05C (Ro Conc)	Pulp	3.86	0.67	1539.8	2.0903	19	66	0.53	2.21	3.65	4.73	34.89	168.9	152	6.74	534.5	10.83	2.09	0.08	3.98	1.41	0.040	0.57	18.8	11.6	1.16	1163
2	BL1073-06C (Ro Conc)	Pulp	6.56	0.84	396.8	0.6047	22	36	0.33	0.72	2.12	1.33	101.65	113.9	210	8.99	415.9	14.34	3.35	0.11	2.61	0.63	0.032	0.80	66.7	33.0	1.05	715
3	BL1073-07C (Ro Conc)	Pulp	4.11	0.63	369.5	0.5427	19	27	0.44	1.33	0.67	7.10	87.77	77.6	182	4.06	312.9	12.35	2.75	0.11	3.07	3.93	0.042	0.55	52.2	36.0	0.49	276
4	BL1073-08C (Ro Conc)	Pulp	5.44	0.69	216.0	0.6430	26	18	0.37	4.43	1.70	6.94	106.17	165.4	208	4.90	1081.2	22.41	2.57	0.15	3.21	0.60	0.040	0.63	71.2	54.7	0.63	473
5	BL1073-09C (Ro Conc)	Pulp	4.94	0.67	73.6	0.2535	17	50	0.44	4.78	2.86	2.75	47.76	86.4	198	5.57	474.7	10.06	2.72	0.10	2.43	0.39	0.030	0.61	26.9	17.0	0.97	866
6	BL1073-10C (Ro Conc)	Pulp	8.62	0.86	265.2	0.8098	21	19	0.55	1.52	0.99	8.51	44.62	109.2	232	7.93	1672.7	16.64	3.47	0.15	2.39	1.29	0.084	0.97	29.5	98.8	1.15	308
7	BL1073-03M (Ro Conc)	Pulp	10.44	0.75	497.5	0.8415	22	20	0.49	1.68	0.83	3.93	83.86	121.4	143	6.11	412.6	16.32	3.21	0.12	2.49	1.82	0.039	0.68	51.6	38.0	0.74	386
8	BL1073-04L (Ro Conc)	Pulp	14.60	0.75	180.3	0.6146	21	19	0.41	3.23	1.59	6.64	99.45	129.1	194	5.98	767.5	18.26	2.74	0.16	2.50	1.30	0.038	0.69	67.2	41.7	0.81	459
9	BL1073-T5B Detox Tailing	Pulp	0.64	0.74	19.2	0.0505	<10	89	0.47	0.09	5.12	0.25	45.15	6.4	38	10.28	61.7	3.05	2.15	0.06	1.84	0.10	0.007	0.70	22.6	11.3	1.74	1518
10	BL1073-T6B Detox Tailing	Pulp	0.80	1.01	20.9	0.0255	12	410	0.33	0.05	4.43	0.15	66.81	3.9	34	13.86	59.5	3.25	3.81	0.08	1.47	0.04	0.011	0.95	42.8	41.7	1.82	1643
11	BL1073-T7B Detox Tailing	Pulp	1.18	0.71	17.5	0.0202	<10	1504	0.51	0.14	0.89	0.23	93.76	2.1	31	5.64	77.4	1.01	3.33	0.09	1.62	0.17	0.008	0.64	56.0	57.3	0.72	490
12	BL1073-T8B Detox Tailing	Pulp	0.73	1.13	8.1	0.0133	<10	970	0.53	0.14	4.90	0.44	115.59	2.1	37	9.17	58.3	2.13	3.78	0.10	1.51	0.02	0.008	1.09	78.6	98.9	1.26	1442
13	BL1073-T9B Detox Tailing	Pulp	1.41	0.81	6.0	0.0146	<10	436	0.52	0.25	4.49	0.40	55.47	3.0	42	7.17	68.4	2.69	3.29	0.08	1.51	0.06	0.010	0.79	31.6	23.6	1.42	1459
14	BL1073-T10B Detox Tailing	Pulp	4.51	1.46	16.9	0.1295	<10	1791	0.95	0.14	1.43	0.59	91.44	3.2	76	16.15	62.8	1.78	6.08	0.15	1.53	0.24	0.013	1.67	63.2	224.2	2.29	744
15	BL1073-11 Detox Tailing	Pulp	1.06	1.25	9.7	0.0512	<10	1071	0.61	0.15	4.13	0.47	145.47	2.9	40	11.23	106.5	2.22	4.25	0.13	1.42	0.10	0.010	1.15	101.7	73.1	1.53	1321
16	BL1073-12 Detox Tailing	Pulp	1.37	1.05	22.8	0.1169	11	1281	0.78	0.19	1.76	0.22	92.28	3.5	37	9.99	131.6	2.20	4.35	0.12	1.71	0.20	0.012	0.96	56.3	60.3	1.30	965
QUALITY ASSURANCE / QUALITY CONTROL																												
Pulp Replicates																												
14	BL1073-T10B Detox Tailing	Pulp	4.51	1.46	16.9	0.1295	<10	1791	0.95	0.14	1.43	0.59	91.44	3.2	76	16.15	62.8	1.78	6.08	0.15	1.53	0.235	0.013	1.67	63.2	224.2	2.29	744
14 R	BL1073-T10B Detox Tailing (Rep)	Pulp	4.39	1.45	16.7	0.1335	<10	1713	0.94	0.14	1.47	0.64	83.78	3.2	76	15.64	63.7	1.81	5.76	0.16	1.48	0.256	0.012	1.67	58.0	216.1	2.29	761
		%RPD	3%	1%	1%	-3%		4%	1%	0%	-3%	-8%	9%	0%	0%	3%	-1%	-2%	5%	-6%	3%	-9%	8%	0%	9%	4%	0%	-2%
Reference Material																												
STD OREAS 601			50.90	0.650	382.0	0.972	<10	727	0.58	21.22	0.77	2.68	34.9	4.20	14.0	1.33	1156.6	1.84	3.81	0.12	0.97	0.222	0.502	0.250	17.6	7.60	0.080	207
True Value STD OREAS 601			**50.41**	**0.663**	**378.2**		**< 10**		**0.59**	**21.32**	**0.78**	**2.70**	**34.7**	**4.27**	**14.7**	**1.32**	**1157.6**	**1.84**	**3.86**	**0.08**	**0.97**	**0.217**	**0.497**	**0.254**	**17.3**	**7.56**	**0.084**	**213**
% Difference			1%	-2%	1%				-2%	0%	-1%	-1%	1%	-2%	-5%	1%	0%	0%	-1%	44%	0%	2%	1%	-1%	2%	1%	-5%	-3%
Method Blank:																												
Method Blank			<0.01	<0.01	<0.1	<0.0005	<10	<10	<0.05	<0.01	<0.01	<0.01	<0.02	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.02	<0.005	<0.005	<0.01	<0.2	<0.1	<0.01	<5

NOTES:
Job No: YVR2310404

Analytical Methods (IMS-230):
Analytical Method: A 0.25 g of pulp sample is digested with HClO4, HNO3, HCl, HF to 10 mL. (>) Concentration exceeds upper limits.
REE's may not be totally soluble in this method.
While multi-acid digestion is considered to be near total digestion this digestion is only partial for some Cr and Ba minerals and oxides of Al, Fe, Hf, Mn, Sn, Ta and Zr.
Additionally volatilization during fuming may result in some loss of As, S and Sb.

Abbreviations:
R / Rep = Replicate (a replicate is a sub-sample scooped from a single sample bag produced per client sample)
D / Dup = Duplicate (a duplicate is 2nd sub-sample bag produced by processing a second split of the original client sample received)
MDL = Measurable Detection Limit
IND = Indeterminate
NR = Not Requested

On Cerfified Reference Material and Tolerance:
Any one element in a run reporting outside tolerance limits does not constitute failure of the standard.
As per Certificate of Analysis (COA): All values indicated are Certified. Values indicated in green are indicative only.
NR = Not Reported (in the Certificate Of Analysis).

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ METALS RESULTS BY AQUA REGIA DIGEST & ICP-MS ANALYSIS ON SOLIDS

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

S. No.	Sample ID	Method																									
		Analyte	Molybdenum (Mo)	Sodium (Na)	Niobium (Nb)	Nickel (Ni)	Phosphorous (P)	Lead (Pb)	Rubidium (Rb)	Rhenium (Re)	Sulphur (S)	Antimony (Sb)	Scandium (Sc)	Selenium (Se)	Tin (Sn)	Stronium (Sr)	Tantalum (Ta)	Tellurium (Te)	Thorium (Th)	Titanium (Ti)	Thallium (Tl)	Uranium (U)	Vandium (V)	Tungsten (W)	Yttrium (Y)	Zinc (Zn)	Zirconium (Zr)
		Unit	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	ppm
		MDL	0.05	0.01	0.05	0.2	10	0.2	0.1	0.001	0.01	0.05	0.1	0.2	0.2	0.2	0.01	0.01	0.2	0.005	0.02	0.05	1	0.05	0.05	1	0.5
		Sample Typ																									
1	BL1073-05C (Ro Conc)	Pulp	250.99	0.02	0.55	347.2	917	296.6	51.3	0.007	9.23	31.5	2.2	5	0.9	277.5	0.04	8.46	4.4	0.045	1.7	3.60	17	2.55	9.76	877	145.1
2	BL1073-06C (Ro Conc)	Pulp	129.10	0.03	0.52	202.0	597	186.3	82.0	0.022	>10	9.6	3.9	5.2	0.6	121.4	0.02	8.3	3.0	0.069	1.99	2.10	34	3.3	10.80	380	95.7
3	BL1073-07C (Ro Conc)	Pulp	282.79	0.02	0.40	168.7	314	569.7	63.3	0.036	>10	5.22	2.3	10.1	0.7	121.1	0.01	19.33	6.4	0.026	1.33	5.99	20	12.88	9.47	2251	110.3
4	BL1073-08C (Ro Conc)	Pulp	446.80	0.02	0.45	235.0	422	1258.5	70.5	0.094	>10	5.01	2.6	26	0.9	217.9	0.01	42.09	3.7	0.038	1.36	7.33	20	2.71	8.83	1058	125.3
5	BL1073-09C (Ro Conc)	Pulp	99.09	0.06	0.29	176.9	715	422.4	67.3	0.064	9.21	7.52	3.3	14.1	0.5	156.3	<0.01	22.76	2.7	0.042	1.2	3.62	28	2.01	9.30	450	93.2
6	BL1073-10C (Ro Conc)	Pulp	652.76	0.03	0.39	231.6	430	508.8	118.9	0.219	>10	18.07	4.9	25	0.6	72.4	<0.01	99.32	1.8	0.044	2.12	5.18	35	10.43	9.60	961	96
7	BL1073-03M (Ro Conc)	Pulp	303.79	0.04	0.31	168.8	478	263.5	76.0	0.042	>10	5.87	3.4	13.2	0.5	112.5	<0.01	20.77	4.4	0.045	1.75	4.22	31	8.09	9.73	817	96.8
8	BL1073-04L (Ro Conc)	Pulp	331.98	0.06	0.33	191.7	579	1130.3	76.0	0.193	>10	4.28	2.9	24.9	0.5	232.2	<0.01	43.3	2.6	0.038	1.37	4.75	25	1.84	9.10	1154	101.6
9	BL1073-T5B Detox Tailing	Pulp	9.75	0.04	0.17	21.4	1145	24.9	65.5	<0.001	0.16	2.9	2.4	<0.2	<0.2	426.5	<0.01	0.46	3.8	0.069	1.49	1.74	21	0.64	8.49	74	74.3
10	BL1073-T6B Detox Tailing	Pulp	10.45	0.04	0.16	21.8	639	16.2	102.4	0.003	0.18	0.92	4.4	<0.2	0.3	253.2	<0.01	0.52	2.1	0.093	2.14	1.12	45	1.22	10.34	76	55.2
11	BL1073-T7B Detox Tailing	Pulp	14.41	0.05	0.12	10.8	378	43.5	80.6	0.002	0.17	1.16	2.4	0.2	0.2	226.5	<0.01	2.05	5.4	0.033	1.46	3.84	23	1.98	8.00	101	61
12	BL1073-T8B Detox Tailing	Pulp	17.77	0.04	0.10	19.7	747	51.4	131.6	0.004	0.16	0.68	3.5	<0.2	0.2	1011.5	<0.01	1.41	2.9	0.061	1.9	3.50	31	0.7	11.15	135	57.3
13	BL1073-T9B Detox Tailing	Pulp	7.17	0.04	0.06	25.7	760	30.0	93.7	0.005	0.13	1.08	3.9	0.3	0.2	313.6	<0.01	1.42	2.7	0.061	1.4	1.94	37	1.08	9.76	107	58.1
14	BL1073-T10B Detox Tailing	Pulp	79.61	0.06	0.11	35.8	527	53.1	221.3	0.026	0.22	1.9	8.0	0.5	0.3	173.7	<0.01	8.53	2.3	0.081	3.37	4.28	58	2.22	10.17	160	57.7
15	BL1073-11 Detox Tailing	Pulp	22.38	0.08	0.09	21.6	823	45.9	135.4	0.013	0.23	0.76	4.0	0.3	0.2	1231.7	<0.01	2.27	2.5	0.062	1.94	3.05	36	0.67	10.90	149	53.3
16	BL1073-12 Detox Tailing	Pulp	19.08	0.07	0.13	21.8	618	37.2	114.4	0.003	0.22	2.01	3.9	0.4	0.3	270.5	<0.01	2.56	5.0	0.07	2.14	3.54	41	3.03	8.27	124	65.9
QUALITY ASSURANCE / QUALITY CONTROL																											
Pulp Replicates																											
14	BL1073-T10B Detox Tailing	Pulp	79.61	0.06	0.11	35.8	527	53.1	221.3	0.026	0.22	1.9	8	0.5	0.3	173.7	<0.01	8.53	2.3	0.081	3.37	4.28	58	2.22	10.17	160	57.7
14 R	BL1073-T10B Detox Tailing (Rep)	Pulp	78.40	0.05	0.13	35.6	536	51.9	211.9	0.027	0.22	2.02	7.6	0.5	0.3	177.4	0.01	8.66	2.2	0.082	3.24	4.1	58	2.34	9.75	167	54.3
		%RPD	2%	18%	-17%	1%	-2%	2%		-4%		-6%	5%	0%	0%	-2%		-2%	4%	-1%	4%	4%	0%	-5%	4%	-4%	6%
Reference Material																											
STD OREAS 601			3.36	0.07	0.28	6.0	242	248.2	12.2	<0.001	0.89	29.40	1.00	8.1	1.60	35.6	<0.01	7.03	6.3	0.009	1.24	2.05	4.00	1.17	5.10	377	33.7
True Value STD OREAS 601			**3.35**	**0.05**	**<1**	**6.0**	**243**	**248.1**	**12.4**	**< 0.001**	**0.91**	**29.73**	**1.03**	**8.0**	**1.587**	**36.3**	**< 0.05**	**7.22**	**6.1**	**0.010**	**1.20**	**2.04**	**4.75**	**1.16**	**5.10**	**380.6**	**33.5**
% Difference			0%	32%		0%	-1%	0%	-2%		-2%	-1%	-3%	1%	1%	-2%		-3%	3%	-6%	4%	0%	-16%	0%	0%	-1%	0%
Method Blank:																											
Method Blank			<0.05	<0.01	<0.05	<0.2	<10	<0.2	<0.1	<0.001	<0.01	<0.05	<0.1	<0.2	<0.2	<0.2	<0.01	<0.01	<0.2	<0.005	<0.02	<0.05	<1	<0.05	<0.05	<1	<0.5

CERTIFICATE OF ANALYSIS ▪ SINGLE ADDITION NAG RESULTS (EGi Method)

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

S. No:	Sample ID	Pulp Sample Weight (g)	Vol. of 15% H_2O_2 (mL)	NAG pH (pH Units)	NaOH to pH 4.5 (mL)	NaOH to pH 7.0 (mL)	NaOH Conc. (N)	NAG Acidity pH 4.5 (kg H_2SO_4/tonne)	NAG Acidity pH 7.0 (kg H_2SO_4/tonne)	% RPD to pH 4.5	% RPD to pH 7.0	% RPD Acceptance Criteria
9	BL1073-T5B Detox Tailing	2.5	250	8.56	0.00	0.00	0.1	0.0	0.0			
10	BL1073-T6B Detox Tailing	2.5	250	8.64	0.00	0.00	0.1	0.0	0.0			
11	BL1073-T7B Detox Tailing	2.5	250	8.36	0.00	0.00	0.1	0.0	0.0			
12	BL1073-T8B Detox Tailing	2.5	250	8.40	0.00	0.00	0.1	0.0	0.0			
13	BL1073-T9B Detox Tailing	2.5	250	8.67	0.00	0.00	0.1	0.0	0.0			
14	BL1073-T10B Detox Tailing	2.5	250	8.10	0.00	0.00	0.1	0.0	0.0			
15	BL1073-11 Detox Tailing	2.5	250	8.53	0.00	0.00	0.1	0.0	0.0			
16	BL1073-12 Detox Tailing	2.5	250	8.41	0.00	0.00	0.1	0.0	0.0			
QUALITY ASSURANCE / QUALITY CONTROL												
Replicates:												
10	BL1073-T6B Detox Tailing	2.5	250	8.63	0.00	0.00	0.1	0.0	0.0	0%	0%	10%
10D	BL1073-T6B Detox Tailing (Dup)	2.5	250	8.36	0.00	0.00	0.1	0.0	0.0			
Method Blank Analysis:												
Method Blank (15% H_2O_2 Solution)		N/A	250	4.89	0.00	5.54	0.1					
GLOBAL SOP NO:		***ARD-017***										

NOTES:
Date of Analysis: April 3-4, 2023

pH (pH Units) of 15% H_2O_2 (buffered with 0.5 N NaOH): 4.72
EC (µS/cm) of 15% H_2O_2 (buffered with 0.5 N NaOH): 9.32
pH (pH Units) of DI water used: 5.76
EC (µS/cm) of DI water used: 0.46

Solid:Liquid ratio used: 1:100; 2.5 g Pulp Sample: 250 mL 15% H_2O_2.
pH measurement of 15% H_2O_2 solution was conducted at room temperature & buffered with 0.5N NaOH solution to ensure a pH between 4 and 7.
NAG pH & method blank pH measurements were taken after digesting with peroxide solution and making up the solution to its original volume of 250 mL with DI water.
On client's request the NAG procedure is repeated using 1 g of pulp sample when the NAG value for pH 4.5 exceeds 25 kg H_2SO_4 per tonne.

ABBREVIATIONS:
R = Replicate (i.e. using a pulp sample from the same bag).
D = Duplicate (i.e. client sample is processed to produced a 2nd pulp bag & analyzed as a duplicate).
RPD = Relative Percent Difference.
EC = Electrical Conductivity
ORP = Oxidation Reduction Potential
RDL = Reportable Detection Limit.
EDL = Estimated Detection Limit
SIE = Selective Ion Electrode
IC = Ion Chromatography
Calc. = Calculation

REFERENCE:
Egi - Environmental Geochemistry International; Single Addition Net Acid Generation (NAG) Test Procedure; Miller et al; Revised Dec. 2006; Page 2 to 4.

Global ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ SUPERNATANT RESULTS

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

Parameter	Method	Unit	RDL	17	18	19	19R	20	21	22
				BL1073-05C (Ro Conc) Solution	BL1073-06C (Ro Conc) Solution	BL1073-07C (Ro Conc) Solution	BL1073-07C (Ro Conc) Solution (Rep)	BL1073-08C (Ro Conc) Solution	BL1073-09C (Ro Conc) Solution	BL1073-10C (Ro Conc) Solution
Weight of dry sample used	Weighing Scale	g	0.01							
Volume of DI water used	Graduated Cylinder	mL	0.50							
On filtered samples (using 0.45 µm filter paper):										
pH	Meter	pH units	0.01	7.9	8.2	8.2		7.6	8.1	8.2
EC	Meter	µS/cm	1	6220	9360	7850		7160	8510	11840
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5	30.0	6.4	8.0		28.9	6.8	6.5
Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5	100.0	216.0	183.1		137.8	146.3	235.9
Sulphate	Gravimetric	mg/L	1	1839.0	5433.3	4671.4		3950.0	4814.3	7100.0
Nitrate	IC	mg/L	0.01	<1.00	<1.00	<1.00		<1.00	<1.00	<1.00
Nitrite	IC	mg/L	0.01	6.110	13.300	11.500		<1.00	20.400	42.900
Ammonia		mg/L	0.05	46.900	110.000	88.000		85.100	114.000	204.000
Total Dissolved Phosphorus	IC	mg/L	0.005	0.192	0.025	0.025		0.075	0.032	0.119
Total Cyanide		mg/L	0.002	0.098	0.296	0.133		0.252	0.144	0.330
Cyanide WAD		mg/L	0.002	0.007	0.033	0.029		0.072	0.059	0.072
Thiocyanata	IC	mg/L	1	102.000	285.000	209.000		292.000	211.000	331.000
Cyanate	Colorimetric	mg/L	0.1	77.000	131.000	161.000		82.000	225.000	444.000
Free Cyanide	Colorimetric	mg/L	0.1	<0.1	<0.1	<0.1		<0.1	<0.1	<0.1
Dissolved Metals Analysis by ICP-MS:										
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.625	1060.0	1140.0	1280.0		1380.0	1280.0	1560.0
Aluminum Dissolved	ICP-MS	mg/L	0.001	0.0153	0.0178	0.023	0.0251	0.0185	0.0206	0.183
Antimony Dissolved	ICP-MS	mg/L	0.00005	0.331	0.284	0.189	0.181	0.0277	0.201	0.417
Arsenic Dissolved	ICP-MS	mg/L	0.00005	0.0427	0.0776	0.0454	0.0442	0.00517	0.0168	0.0546
Barium Dissolved	ICP-MS	mg/L	0.0001	0.0369	0.0242	0.0346	0.0337	0.03	0.0452	0.0487
Beryllium Dissolved	ICP-MS	mg/L	0.00001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000100
Bismuth Dissolved	ICP-MS	mg/L	0.00001	<0.000050	<0.000050	0.000052	<0.000050	<0.000050	<0.000050	<0.000100
Boron Dissolved	ICP-MS	mg/L	0.002	0.0516	0.0228	0.0536	0.0526	0.0278	0.0336	0.0308
Cadmium Dissolved	ICP-MS	mg/L	0.000002	<0.0000500	<0.0000300	<0.000110	0.0000857	<0.000180	<0.000100	<0.00120
Calcium Dissolved	ICP-MS	mg/L	0.05	385.0	402.0	477.0	466.0	479.0	452.0	550.0
Chromium Dissolved	ICP-MS	mg/L	0.000	0.0011	0.0012	0.0008	0.0007	0.0017	0.0012	<0.00100
Cobalt Dissolved	ICP-MS	mg/L	0.000005	0.342	0.193	0.144	0.141	0.177	0.161	0.182
Copper Dissolved	ICP-MS	mg/L	0.0001	0.0798	0.0723	0.104	0.104	0.0926	0.168	1.44
Iron Dissolved	ICP-MS	mg/L	0.002	<0.0100	0.0527	<0.0100	<0.0100	0.0159	0.0148	<0.0200
Lead Dissolved	ICP-MS	mg/L	0.00005	<0.000250	<0.000250	<0.000250	<0.000250	0.000362	0.000281	0.00101
Lithium Dissolved	ICP-MS	mg/L	0.000	0.0097	0.0202	0.0177	0.0173	0.0294	0.0167	0.0414
Magnesium Dissolved	ICP-MS	mg/L	0.005	24.1	32.5	21.6	21.2	43.2	35.8	46.1
Manganese Dissolved	ICP-MS	mg/L	0.00005	0.0969	0.0197	0.0188	0.0185	0.0221	0.196	0.217
Mercury Dissolved	ICP-MS	ug/L	0.005	0.0268	0.0412	<0.0050		0.0092	0.054	0.654
Molybdenum Dissolved	ICP-MS	mg/L	0.00001	0.237	0.216	0.489	0.473	0.846	0.29	1.29
Nickel Dissolved	ICP-MS	mg/L	0.00004	0.147	0.0219	0.0118	0.0114	0.032	0.0553	0.00569
Phosphorus Dissolved	ICP-MS	mg/L	0.01	<0.050	<0.050	<0.050	<0.050	<0.050	<0.050	<0.100
Potassium Dissolved	ICP-MS	mg/L	0.02	29.3	69.8	93.5	89.7	61.8	73.2	120
Selenium Dissolved	ICP-MS	mg/L	0.0001	0.0314	0.0371	0.0533	0.0513	0.234	0.179	0.59
Silicon Dissolved	ICP-MS	mg/L	0.1	2.67	4.68	4.43	4.28	2.37	4.5	2.89
Silver Dissolved	ICP-MS	mg/L	0.00001	0.0025	0.00428	0.000174	0.000159	0.00325	0.00134	0.00241
Sodium Dissolved	ICP-MS	mg/L	0.02	382	2340	1800	1730	1420	2100	3130
Strontium Dissolved	ICP-MS	mg/L	0.0001	1.7	1.97	3.72	3.61	6.96	2.66	4.16
Sulphur Dissolved	ICP-MS	mg/L	1.00000	620.0	2360.0	1870.0	1810.0	1790.0	2100.0	2900.0
Tellurium Dissolved	ICP-MS	mg/L	0.00005	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000500
Thallium Dissolved	ICP-MS	mg/L	0.000004	0.00137	0.00052	0.000305	0.0003	0.000755	0.000536	0.000662
Thorium Dissolved	ICP-MS	mg/L	0.00001	0.000054	0.000126	0.000085	0.000087	0.000074	0.000083	0.000493
Tin Dissolved	ICP-MS	mg/L	0.00005	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	<0.000250	0.00109
Titanium Dissolved	ICP-MS	mg/L	0.0002	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00100	<0.00200
Tungsten Dissolved	ICP-MS	mg/L	0.0002	0.00754	0.0293	0.841	0.817	0.00471	0.0136	0.424
Uranium Dissolved	ICP-MS	mg/L	0.000001	0.00154	0.00948	0.0109	0.0106	0.0128	0.00593	0.00595
Vanadium Dissolved	ICP-MS	mg/L	0.001	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.00500	<0.0100
Zinc Dissolved	ICP-MS	mg/L	0.00	0.006	<0.0050	<0.0050	<0.0050	<0.0050	0.028	0.103
Zirconium Dissolved	ICP-MS	mg/L	0.000	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000200
Ion Balance:										
Major Anions	Calc.	meq/L		43.99	126.09	107.88	107.88	91.14	112.45	169.49
Major Cations	Calc.	meq/L		38.64	126.33	106.35	102.62	90.96	118.78	170.59
Difference	Calc.	meq/L		-5.35	0.24	-1.53	-5.26	-0.18	6.32	1.10
Balance (%)	Calc.	%		-6.5%	0.1%	-0.7%	-2.5%	-0.1%	2.7%	0.3%
			Shake Flask Extract ID:	*23C0615-01*	*23C0615-02*	*23C0615-03*	*23C0615-03*	*23C0615-04*	*23C0615-05*	*23C0615-06*

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ SUPERNATANT RESULTS

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

Parameter	Method	Unit	RDL	23	24	25	26	26R	27	28
				BL1073-03M (Ro Conc) Solution	BL1073-04L (Ro Conc) Solution	BL1073-T5B Detox Tailing Solution	BL1073-T6B Detox Tailing Solution	BL1073-T6B Detox Tailing Solution (Rep)	BL1073-T7B Detox Tailing Solution	BL1073-T8B Detox Tailing Solution
Weight of dry sample used	Weighing Scale	g	0.01							
Volume of DI water used	Graduated Cylinder	mL	0.50							
On filtered samples (using 0.45 µm filter paper):										
pH	Meter	pH units	0.01	8.0	8.5	8.0	8.0	8.0	8.2	8.1
EC	Meter	µS/cm	1	10890	10130	8560	8080	7780	8480	8350
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5	28.0	0.0	7.9	8.2	8.9	5.2	5.6
Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5	168.7	210.4	144.2	116.5	116.0	149.0	127.6
Sulphate	Gravimetric	mg/L	1	5909.5	4623.8	5338.1	4909.5	4385.7	5052.4	4814.3
Nitrate	IC	mg/L	0.01	<1.00	<1.00	<1.00	<1.00		<1.00	<1.00
Nitrite	IC	mg/L	0.01	1.190	48.600	10.100	22.800		21.400	24.600
Ammonia		mg/L	0.05	215.000	234.000	60.100	124.000		114.000	132.000
Total Dissolved Phosphorus	IC	mg/L	0.005	0.104	0.061	0.015	0.012		0.010	0.009
Total Cyanide		mg/L	0.002	0.486	0.369	0.034	0.449		0.337	0.661
Cyanide WAD		mg/L	0.002	0.067	0.079	0.005	0.130		0.119	0.027
Thiocyanata	IC	mg/L	1	775.000	859.000	5.000	7.000		6.000	8.000
Cyanate	Colorimetric	mg/L	0.1	11.500	410.000	114.000	246.000		213.000	239.000
Free Cyanide	Colorimetric	mg/L	0.1	<0.1	<0.1	<0.1	<0.1		<0.1	<0.1
Dissolved Metals Analysis by ICP-MS:										
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.625	838.0	1280.0	1560.0	1200.0		1210.0	1390.0
Aluminum Dissolved	ICP-MS	mg/L	0.001	0.0189	0.0148	0.016	0.0109		0.0132	0.0073
Antimony Dissolved	ICP-MS	mg/L	0.00005	0.614	0.221	0.129	0.057		0.0487	0.0264
Arsenic Dissolved	ICP-MS	mg/L	0.00005	0.281	0.0206	0.0489	0.0527		0.042	0.0272
Barium Dissolved	ICP-MS	mg/L	0.0001	0.00339	0.0192	0.0292	0.0242		0.0332	0.0338
Beryllium Dissolved	ICP-MS	mg/L	0.00001	<0.000100	<0.000100	<0.000050	<0.000050		<0.000050	<0.000050
Bismuth Dissolved	ICP-MS	mg/L	0.00001	<0.000100	<0.000100	<0.000050	<0.000050		<0.000050	<0.000050
Boron Dissolved	ICP-MS	mg/L	0.002	0.0308	0.0318	0.0419	0.0216		0.0187	0.0139
Cadmium Dissolved	ICP-MS	mg/L	0.000002	<0.000240	<0.000600	<0.0000700	<0.0000400		<0.0000400	<0.000120
Calcium Dissolved	ICP-MS	mg/L	0.05	305.0	481.0	561.0	427.0		427.0	507.0
Chromium Dissolved	ICP-MS	mg/L	0.000	<0.00100	<0.00100	0.0031	0.0024		0.0057	0.0038
Cobalt Dissolved	ICP-MS	mg/L	0.000005	0.589	0.456	0.127	0.0571		0.0813	0.0599
Copper Dissolved	ICP-MS	mg/L	0.0001	0.0687	0.285	0.104	0.143		0.117	0.0345
Iron Dissolved	ICP-MS	mg/L	0.002	0.0241	<0.0200	<0.0100	0.0417		0.0245	0.154
Lead Dissolved	ICP-MS	mg/L	0.00005	<0.000500	0.000516	0.000435	0.000302		0.000283	<0.000250
Lithium Dissolved	ICP-MS	mg/L	0.000	0.0296	0.0439	0.0200	0.0162		0.0146	0.0362
Magnesium Dissolved	ICP-MS	mg/L	0.005	18.0	19.5	38.0	33.1		34.2	29.2
Manganese Dissolved	ICP-MS	mg/L	0.00005	<0.000500	0.0248	0.165	0.0298		0.0191	0.0285
Mercury Dissolved	ICP-MS	ug/L	0.005	2.99	0.195	0.187	1.72		1.61	0.258
Molybdenum Dissolved	ICP-MS	mg/L	0.00001	1.25	3.01	0.0814	0.114		0.225	0.332
Nickel Dissolved	ICP-MS	mg/L	0.00004	0.00905	0.0211	0.00481	0.00791		0.00804	0.00531
Phosphorus Dissolved	ICP-MS	mg/L	0.01	<0.100	<0.100	<0.050	<0.050		<0.050	<0.050
Potassium Dissolved	ICP-MS	mg/L	0.02	189	176	98.1	60.7		59.5	79.7
Selenium Dissolved	ICP-MS	mg/L	0.0001	0.496	1.22	0.0058	0.0059		0.0177	0.0156
Silicon Dissolved	ICP-MS	mg/L	0.1	5.59	3.35	5.95	7.49		8.85	13.3
Silver Dissolved	ICP-MS	mg/L	0.00001	0.0251	0.0243	<0.000050	0.00986		0.0132	0.00241
Sodium Dissolved	ICP-MS	mg/L	0.02	2560	2460	1970	1930		2230	2030
Strontium Dissolved	ICP-MS	mg/L	0.0001	5.03	14.3	2.62	4.21		11.5	28
Sulphur Dissolved	ICP-MS	mg/L	1.00000	2700.0	2340.0	2050.0	1830.0		2110.0	1980.0
Tellurium Dissolved	ICP-MS	mg/L	0.00005	<0.000500	<0.000500	<0.000250	<0.000250		<0.000250	<0.000250
Thallium Dissolved	ICP-MS	mg/L	0.000004	0.000274	0.000179	0.000871	0.000675		0.000784	0.000595
Thorium Dissolved	ICP-MS	mg/L	0.00001	0.000347	0.000314	0.000154	0.000135		0.000154	0.000146
Tin Dissolved	ICP-MS	mg/L	0.00005	0.00065	<0.000500	0.000794	0.000368		<0.000250	0.000591
Titanium Dissolved	ICP-MS	mg/L	0.0002	<0.00200	0.00275	<0.00100	<0.00100		<0.00100	<0.00100
Tungsten Dissolved	ICP-MS	mg/L	0.0002	0.335	0.0368	0.01	0.0166		0.0869	0.0132
Uranium Dissolved	ICP-MS	mg/L	0.000001	0.0204	0.0162	0.0142	0.0189		0.0805	0.00388
Vanadium Dissolved	ICP-MS	mg/L	0.001	<0.0100	<0.0100	<0.00500	<0.00500		<0.00500	<0.00500
Zinc Dissolved	ICP-MS	mg/L	0.00	<0.0100	0.021	0.006	<0.0050		<0.0050	<0.0050
Zirconium Dissolved	ICP-MS	mg/L	0.000	<0.000200	<0.000200	<0.000100	<0.000100		<0.000100	<0.000100
Ion Balance:										
Major Anions	Calc.	meq/L		141.94	119.84	118.92	114.70		117.53	113.62
Major Cations	Calc.	meq/L		133.01	137.44	119.37	109.61		122.88	118.66
Difference	Calc.	meq/L		-8.93	17.60	0.45	-5.09		5.35	5.04
Balance (%)	Calc.	%		-3.2%	6.8%	0.2%	-2.3%		2.2%	2.2%
			Shake Flask Extract ID:	*23C0615-07*	*23C0615-08*	*23C0615-09*	*23C0615-10*	*23C0615-10*	*23C0615-11*	*23C0615-12*

Parameter	Method	Unit	RDL	29	30	31	32
				BL1073-T9B Detox Tailing Solution	BL1073-T10B Detox Tailing Solution	BL1073-11 Detox Tailing Solution	BL1073-12 Detox Tailing Solution
Weight of dry sample used	Weighing Scale	g	0.01				
Volume of DI water used	Graduated Cylinder	mL	0.50				
On filtered samples (using 0.45 µm filter paper):							
pH	Meter	pH units	0.01	7.7	7.9	7.5	8.1
EC	Meter	µS/cm	1	8060	8070	7630	8260
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5	16.6	11.7	21.6	5.8
Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5	97.8	118.9	104.4	172.7
Sulphate	Gravimetric	mg/L	1	4719.0	4909.5	4671.4	5504.8
Nitrate	IC	mg/L	0.01	<1.00	<1.00	<1.00	<1.00
Nitrite	IC	mg/L	0.01	20.600	12.800	20.600	<1.00
Ammonia		mg/L	0.05	122.000	113.000	67.200	105.000
Total Dissolved Phosphorus	IC	mg/L	0.005	0.012	0.016	0.031	0.026
Total Cyanide		mg/L	0.002	0.295	0.629	0.062	0.091
Cyanide WAD		mg/L	0.002	0.141	0.127	0.020	0.061
Thiocyanata	IC	mg/L	1	4.000	3.000	17.000	23.000
Cyanate	Colorimetric	mg/L	0.1	164.000	167.000	105.000	152.000
Free Cyanide	Colorimetric	mg/L	0.1	<0.1	<0.1	<0.1	<0.1
Dissolved Metals Analysis by ICP-MS:							
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.625	1200.0	1920.0	1470.0	1610.0
Aluminum Dissolved	ICP-MS	mg/L	0.001	0.0117	0.0166	0.005	0.0098
Antimony Dissolved	ICP-MS	mg/L	0.00005	0.0492	0.101	0.0225	0.0418
Arsenic Dissolved	ICP-MS	mg/L	0.00005	0.0131	0.0776	0.021	0.0473
Barium Dissolved	ICP-MS	mg/L	0.0001	0.0266	0.03	<0.00050	0.0395
Beryllium Dissolved	ICP-MS	mg/L	0.00001	<0.000050	<0.000050	<0.000050	<0.000050
Bismuth Dissolved	ICP-MS	mg/L	0.00001	<0.000050	<0.000050	<0.000050	<0.000050
Boron Dissolved	ICP-MS	mg/L	0.002	0.018	0.011	0.017	0.0284
Cadmium Dissolved	ICP-MS	mg/L	0.000002	<0.0000300	<0.0000600	<0.000110	<0.0000800
Calcium Dissolved	ICP-MS	mg/L	0.05	426.0	725.0	514.0	593.0
Chromium Dissolved	ICP-MS	mg/L	0.000	0.0099	0.0040	0.0025	0.0018
Cobalt Dissolved	ICP-MS	mg/L	0.000005	0.0248	0.0476	0.162	0.236
Copper Dissolved	ICP-MS	mg/L	0.0001	0.0861	0.0306	0.0851	0.198
Iron Dissolved	ICP-MS	mg/L	0.002	0.0386	0.168	<0.0100	<0.0100
Lead Dissolved	ICP-MS	mg/L	0.00005	0.000261	0.000276	0.000267	<0.000250
Lithium Dissolved	ICP-MS	mg/L	0.000	0.0109	0.0266	0.0305	0.0257
Magnesium Dissolved	ICP-MS	mg/L	0.005	32.4	26.6	45.1	30.5
Manganese Dissolved	ICP-MS	mg/L	0.00005	0.0557	0.0262	0.174	0.137
Mercury Dissolved	ICP-MS	ug/L	0.005	6.77	11.6	15.5	0.203
Molybdenum Dissolved	ICP-MS	mg/L	0.00001	0.112	0.195	0.339	0.243
Nickel Dissolved	ICP-MS	mg/L	0.00004	0.00266	0.00193	0.0118	0.0103
Phosphorus Dissolved	ICP-MS	mg/L	0.01	<0.050	<0.050	<0.050	<0.050
Potassium Dissolved	ICP-MS	mg/L	0.02	71.2	39.9	97.6	107
Selenium Dissolved	ICP-MS	mg/L	0.0001	0.0196	0.0253	0.04	0.176
Silicon Dissolved	ICP-MS	mg/L	0.1	8.87	8.07	9.9	4.95
Silver Dissolved	ICP-MS	mg/L	0.00001	0.041	0.0163	0.00127	0.000583
Sodium Dissolved	ICP-MS	mg/L	0.02	2040	1890	1890	2060
Strontium Dissolved	ICP-MS	mg/L	0.0001	9.05	7.51	33.8	10.6
Sulphur Dissolved	ICP-MS	mg/L	1.00000	1970.0	2100.0	2000.0	2100.0
Tellurium Dissolved	ICP-MS	mg/L	0.00005	<0.000250	0.00029	0.000304	0.000526
Thallium Dissolved	ICP-MS	mg/L	0.000004	0.000714	0.000531	0.0011	0.00157
Thorium Dissolved	ICP-MS	mg/L	0.00001	0.000103	0.000112	0.000124	0.000198
Tin Dissolved	ICP-MS	mg/L	0.00005	0.000279	0.000587	0.000328	<0.000250
Titanium Dissolved	ICP-MS	mg/L	0.0002	<0.00100	<0.00100	<0.00100	<0.00100
Tungsten Dissolved	ICP-MS	mg/L	0.0002	0.0161	0.0874	0.0164	0.077
Uranium Dissolved	ICP-MS	mg/L	0.000001	0.0257	0.0417	0.0228	0.105
Vanadium Dissolved	ICP-MS	mg/L	0.001	<0.00500	<0.00500	<0.00500	<0.00500
Zinc Dissolved	ICP-MS	mg/L	0.00	<0.0050	0.005	<0.0050	<0.0050
Zirconium Dissolved	ICP-MS	mg/L	0.000	<0.000100	<0.000100	<0.000100	0.000
Ion Balance:							
Major Anions	Calc.	meq/L		110.09	113.45	105.30	125.64
Major Cations	Calc.	meq/L		114.66	121.75	114.83	124.68
Difference	Calc.	meq/L		4.57	8.30	9.53	-0.96
Balance (%)	Calc.	%		2.0%	3.5%	4.3%	-0.4%
			Shake Flask Extract ID:	*23C0615-13*	*23C0615-14*	*23C0615-15*	*23C0615-16*

Global ARD Testing Services Inc. Ltd.

Parameter	Method	Unit	RDL
Weight of dry sample used	Weighing Scale	g	0.01
Volume of DI water used	Graduated Cylinder	mL	0.50
On filtered samples (using 0.45 µm filter paper):			
pH	Meter	pH units	0.01
EC	Meter	µS/cm	1
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5
Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5
Sulphate	Gravimetric	mg/L	1
Nitrate	IC	mg/L	0.01
Nitrite	IC	mg/L	0.01
Ammonia		mg/L	0.05
Total Dissolved Phosphorus	IC	mg/L	0.005
Total Cyanide		mg/L	0.002
Cyanide WAD		mg/L	0.002
Thiocyanata	IC	mg/L	1
Cyanate	Colorimetric	mg/L	0.1
Free Cyanide	Colorimetric	mg/L	0.1
Dissolved Metals Analysis by ICP-MS:			
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.625
Aluminum Dissolved	ICP-MS	mg/L	0.001
Antimony Dissolved	ICP-MS	mg/L	0.00005
Arsenic Dissolved	ICP-MS	mg/L	0.00005
Barium Dissolved	ICP-MS	mg/L	0.0001
Beryllium Dissolved	ICP-MS	mg/L	0.00001
Bismuth Dissolved	ICP-MS	mg/L	0.00001
Boron Dissolved	ICP-MS	mg/L	0.002
Cadmium Dissolved	ICP-MS	mg/L	0.000002
Calcium Dissolved	ICP-MS	mg/L	0.05
Chromium Dissolved	ICP-MS	mg/L	0.000
Cobalt Dissolved	ICP-MS	mg/L	0.000005
Copper Dissolved	ICP-MS	mg/L	0.0001
Iron Dissolved	ICP-MS	mg/L	0.002
Lead Dissolved	ICP-MS	mg/L	0.00005
Lithium Dissolved	ICP-MS	mg/L	0.000
Magnesium Dissolved	ICP-MS	mg/L	0.005
Manganese Dissolved	ICP-MS	mg/L	0.00005
Mercury Dissolved	ICP-MS	ug/L	0.005
Molybdenum Dissolved	ICP-MS	mg/L	0.00001
Nickel Dissolved	ICP-MS	mg/L	0.00004
Phosphorus Dissolved	ICP-MS	mg/L	0.01
Potassium Dissolved	ICP-MS	mg/L	0.02
Selenium Dissolved	ICP-MS	mg/L	0.0001
Silicon Dissolved	ICP-MS	mg/L	0.1
Silver Dissolved	ICP-MS	mg/L	0.00001
Sodium Dissolved	ICP-MS	mg/L	0.02
Strontium Dissolved	ICP-MS	mg/L	0.0001
Sulphur Dissolved	ICP-MS	mg/L	1.00000
Tellurium Dissolved	ICP-MS	mg/L	0.00005
Thallium Dissolved	ICP-MS	mg/L	0.000004
Thorium Dissolved	ICP-MS	mg/L	0.00001
Tin Dissolved	ICP-MS	mg/L	0.00005
Titanium Dissolved	ICP-MS	mg/L	0.0002
Tungsten Dissolved	ICP-MS	mg/L	0.0002
Uranium Dissolved	ICP-MS	mg/L	0.000001
Vanadium Dissolved	ICP-MS	mg/L	0.001
Zinc Dissolved	ICP-MS	mg/L	0.00
Zirconium Dissolved	ICP-MS	mg/L	0.000
Ion Balance:			
Major Anions	Calc.	meq/L	
Major Cations	Calc.	meq/L	
Difference	Calc.	meq/L	
Balance (%)	Calc.	%	
			Shake Flask Extract ID:

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ SUPERNATANT RESULTS

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

Parameter	Method	Unit	RDL	17	18	19	19R	20	21	22
				BL1073-05C (Ro Conc) Solution	BL1073-06C (Ro Conc) Solution	BL1073-07C (Ro Conc) Solution	BL1073-07C (Ro Conc) Solution (Rep)	BL1073-08C (Ro Conc) Solution	BL1073-09C (Ro Conc) Solution	BL1073-10C (Ro Conc) Solution

NOTES:
Job No: 23C0615
Date of Analysis (24 h): March 3, 2023

ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliquot).
D / Dup = Duplicate (produced by processing a second split of the original client sample)
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
NA = Not Applicable.
NR = Not Reported.
mg/L = Milligrams per Litre

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ SUPERNATANT RESULTS

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

Parameter	Method	Unit	RDL	23	24	25	26	26R	27	28
				BL1073-03M (Ro Conc) Solution	BL1073-04L (Ro Conc) Solution	BL1073-T5B Detox Tailing Solution	BL1073-T6B Detox Tailing Solution	BL1073-T6B Detox Tailing Solution (Rep)	BL1073-T7B Detox Tailing Solution	BL1073-T8B Detox Tailing Solution

NOTES:
Job No: 23C0615
Date of Analysis (24 h): March 3, 2023

ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliq
D / Dup = Duplicate (produced by processing a second split of the original client samp
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
NA = Not Applicable.
NR = Not Reported.
mg/L = Milligrams per Litre

Parameter	Method	Unit	RDL	29	30	31	32
				BL1073-T9B Detox Tailing Solution	BL1073-T10B Detox Tailing Solution	BL1073-11 Detox Tailing Solution	BL1073-12 Detox Tailing Solution

NOTES:
Job No: 23C0615
Date of Analysis (24 h): March 3, 2023

ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliq
D / Dup = Duplicate (produced by processing a second split of the original client samp
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
NA = Not Applicable.
NR = Not Reported.
mg/L = Milligrams per Litre

Global ARD Testing Services Inc. Ltd.

Parameter	Method	Unit	RDL

NOTES:
Job No: 23C0615
Date of Analysis (24 h): March 3, 2023

ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliq
D / Dup = Duplicate (produced by processing a second split of the original client samp
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
NA = Not Applicable.
NR = Not Reported.
mg/L = Milligrams per Litre

Sulphate:

Certified Reference Material:	Parameter: Sulphate	% Recovery	Matrix Spike %	Units	QC Limits
STD Mineral Water (15.3 mg/L)	14.80	96.7%		%	80 - 120
Spiked Blank (19.61 mg/L)	16.20		82.6%	%	80 - 120

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
23C0615_B3C0759-BLK1	Nitrate (as N)	<0.010	mg/L	T	REG	SM 4110 B (2020)	08-Mar-23	0.01	mg/L		
23C0615_B3C0759-BLK1	Nitrite (as N)	<0.010	mg/L	T	REG	SM 4110 B (2020)	08-Mar-23	0.01	mg/L		
23C0615_B3C0759-BLK2	Nitrate (as N)	<0.010	mg/L	T	REG	SM 4110 B (2020)	08-Mar-23	0.01	mg/L		
23C0615_B3C0759-BLK2	Nitrite (as N)	<0.010	mg/L	T	REG	SM 4110 B (2020)	08-Mar-23	0.01	mg/L		
23C0615_B3C0759-BS1	Nitrate (as N)	100	%	T	SC	SM 4110 B (2020)	08-Mar-23	1	%	110	90
23C0615_B3C0759-BS1	Nitrite (as N)	102	%	T	SC	SM 4110 B (2020)	08-Mar-23	1	%	115	85
23C0615_B3C0759-BS2	Nitrate (as N)	99	%	T	SC	SM 4110 B (2020)	08-Mar-23	1	%	110	90
23C0615_B3C0759-BS2	Nitrite (as N)	102	%	T	SC	SM 4110 B (2020)	08-Mar-23	1	%	115	85
23C0615_B3C0764-BLK1	Cyanide Weak Acid Dissociable	<0.0020	mg/L	F	REG	ASTM D6888-09	08-Mar-23	0.002	mg/L		
23C0615_B3C0764-BS1	Cyanide Weak Acid Dissociable	100	%	F	SC	ASTM D6888-09	08-Mar-23	1	%	115	85
23C0615_B3C0764-BSD1	Cyanide Weak Acid Dissociable	100	%	F	SC	ASTM D6888-09	08-Mar-23	1	%	115	85
23C0615_B3C0828-BLK1	Phosphorus Total Dissolved	<0.0050	mg/L	F	REG	SM 4500-P F (2021)	09-Mar-23	0.005	mg/L		
23C0615_B3C0828-BLK3	Phosphorus Total Dissolved	<0.0050	mg/L	F	REG	SM 4500-P F (2021)	09-Mar-23	0.005	mg/L		
23C0615_B3C0828-BS1	Phosphorus Total Dissolved	113	%	F	SC	SM 4500-P F (2021)	09-Mar-23	1	%	115	85
23C0615_B3C0828-BS3	Phosphorus Total Dissolved	113	%	F	SC	SM 4500-P F (2021)	09-Mar-23	1	%	115	85
23C0615_B3C0828-DUP1	Phosphorus Total Dissolved	0.0262	mg/L	F	REG	SM 4500-P F (2021)	09-Mar-23	0.005	mg/L		
23C0615_B3C0828-MS1	Phosphorus Total Dissolved	0.147	mg/L	F	REG	SM 4500-P F (2021)	09-Mar-23	0.005	mg/L	125	70
23C0615_B3C0892-BLK1	Cyanide Total	<0.0020	mg/L	T	REG	ASTM D7511-12	09-Mar-23	0.002	mg/L		
23C0615_B3C0892-BLK2	Cyanide Total	<0.0020	mg/L	T	REG	ASTM D7511-12	09-Mar-23	0.002	mg/L		
23C0615_B3C0892-BS1	Cyanide Total	101	%	T	SC	ASTM D7511-12	09-Mar-23	1	%	120	82
23C0615_B3C0892-BS2	Cyanide Total	104	%	T	SC	ASTM D7511-12	09-Mar-23	1	%	120	82
23C0615_B3C0892-BSD1	Cyanide Total	101	%	T	SC	ASTM D7511-12	09-Mar-23	1	%	120	82
23C0615_B3C0892-BSD2	Cyanide Total	104	%	T	SC	ASTM D7511-12	09-Mar-23	1	%	120	82
23C0615_B3C0893-BLK1	Ammonia Total (as N)	<0.050	mg/L	T	REG	SM 4500-NH3 G* (2021)	09-Mar-23	0.05	mg/L		
23C0615_B3C0893-BLK2	Ammonia Total (as N)	<0.050	mg/L	T	REG	SM 4500-NH3 G* (2021)	09-Mar-23	0.05	mg/L		
23C0615_B3C0893-BLK3	Ammonia Total (as N)	0.05	mg/L	T	REG	SM 4500-NH3 G* (2021)	09-Mar-23	0.05	mg/L		
23C0615_B3C0893-BS1	Ammonia Total (as N)	114	%	T	SC	SM 4500-NH3 G* (2021)	09-Mar-23	1	%	115	85
23C0615_B3C0893-BS2	Ammonia Total (as N)	110	%	T	SC	SM 4500-NH3 G* (2021)	09-Mar-23	1	%	115	85
23C0615_B3C0893-BS3	Ammonia Total (as N)	113	%	T	SC	SM 4500-NH3 G* (2021)	09-Mar-23	1	%	115	85
23C0615_B3C0893-DUP1	Ammonia Total (as N)	59.7	mg/L	T	REG	SM 4500-NH3 G* (2021)	09-Mar-23	0.5	mg/L		
23C0615_B3C0893-MS1	Ammonia Total (as N)	58.9	mg/L	T	REG	SM 4500-NH3 G* (2021)	09-Mar-23	0.5	mg/L	125	75
23C0615_B3C0937-BLK1	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	09-Mar-23	0.005	ug/L		
23C0615_B3C0937-BLK2	Mercury dissolved	<0.0050	ug/L	F	REG	EPA 245.7*	09-Mar-23	0.005	ug/L		
23C0615_B3C0937-BS1	Mercury dissolved	98	%	F	SC	EPA 245.7*	09-Mar-23	1	%	120	80
23C0615_B3C0937-BS2	Mercury dissolved	90	%	F	SC	EPA 245.7*	09-Mar-23	1	%	120	80
23C0615_B3C1164-BLK1	Aluminum dissolved	<0.0010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.001	mg/L		
23C0615_B3C1164-BLK1	Antimony dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L		
23C0615_B3C1164-BLK1	Arsenic dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L		
23C0615_B3C1164-BLK1	Barium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0001	mg/L		
23C0615_B3C1164-BLK1	Beryllium dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00001	mg/L		
23C0615_B3C1164-BLK1	Bismuth dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00001	mg/L		
23C0615_B3C1164-BLK1	Boron dissolved	<0.0020	mg/L	F	REG	EPA 6020B	13-Mar-23	0.002	mg/L		
23C0615_B3C1164-BLK1	Cadmium dissolved	<0.0000020	mg/L	F	REG	EPA 6020B	13-Mar-23	0.000002	mg/L		
23C0615_B3C1164-BLK1	Calcium dissolved	<0.050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.05	mg/L		
23C0615_B3C1164-BLK1	Chromium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0001	mg/L		
23C0615_B3C1164-BLK1	Cobalt dissolved	<0.0000050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.000005	mg/L		
23C0615_B3C1164-BLK1	Copper dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0001	mg/L		
23C0615_B3C1164-BLK1	Iron dissolved	<0.0020	mg/L	F	REG	EPA 6020B	13-Mar-23	0.002	mg/L		
23C0615_B3C1164-BLK1	Lead dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L		
23C0615_B3C1164-BLK1	Lithium dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L		
23C0615_B3C1164-BLK1	Magnesium dissolved	<0.0050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.005	mg/L		
23C0615_B3C1164-BLK1	Manganese dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L		
23C0615_B3C1164-BLK1	Molybdenum dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00001	mg/L		
23C0615_B3C1164-BLK1	Nickel dissolved	<0.000040	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00004	mg/L		
23C0615_B3C1164-BLK1	Phosphorus dissolved	<0.010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.01	mg/L		
23C0615_B3C1164-BLK1	Potassium dissolved	<0.020	mg/L	F	REG	EPA 6020B	13-Mar-23	0.02	mg/L		
23C0615_B3C1164-BLK1	Selenium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0001	mg/L		
23C0615_B3C1164-BLK1	Silicon dissolved	<0.10	mg/L	F	REG	EPA 6020B	13-Mar-23	0.1	mg/L		
23C0615_B3C1164-BLK1	Silver dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00001	mg/L		
23C0615_B3C1164-BLK1	Sodium dissolved	<0.020	mg/L	F	REG	EPA 6020B	13-Mar-23	0.02	mg/L		

CERTIFICATE OF ANALYSIS ▪ MEND-SFE QA/QC RESULTS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

Sulphate:

Certified Reference Material:	Parameter: Sulphate	% Recovery	Matrix Spike %	Units	QC Limits
STD Mineral Water (15.3 mg/L)	14.80	96.7%		%	80 - 120
Spiked Blank (19.61 mg/L)	16.20		82.6%	%	80 - 120

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
23C0615_B3C1164-BLK1	Strontium dissolved	<0.00010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0001	mg/L		
23C0615_B3C1164-BLK1	Sulfur dissolved	<1.00	mg/L	F	REG	EPA 6020B	13-Mar-23	1	mg/L		
23C0615_B3C1164-BLK1	Tellurium dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L		
23C0615_B3C1164-BLK1	Thallium dissolved	<0.0000040	mg/L	F	REG	EPA 6020B	13-Mar-23	0.000004	mg/L		
23C0615_B3C1164-BLK1	Thorium dissolved	<0.000010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00001	mg/L		
23C0615_B3C1164-BLK1	Tin dissolved	<0.000050	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L		
23C0615_B3C1164-BLK1	Titanium dissolved	<0.00020	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0002	mg/L		
23C0615_B3C1164-BLK1	Tungsten dissolved	<0.00020	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0002	mg/L		
23C0615_B3C1164-BLK1	Uranium dissolved	<0.0000010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.000001	mg/L		
23C0615_B3C1164-BLK1	Vanadium dissolved	<0.00100	mg/L	F	REG	EPA 6020B	13-Mar-23	0.001	mg/L		
23C0615_B3C1164-BLK1	Zinc dissolved	<0.0010	mg/L	F	REG	EPA 6020B	13-Mar-23	0.001	mg/L		
23C0615_B3C1164-BLK1	Zirconium dissolved	<0.000020	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00002	mg/L		
23C0615_B3C1164-BS1	Aluminum dissolved	109	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Antimony dissolved	105	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Arsenic dissolved	108	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Barium dissolved	102	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Beryllium dissolved	107	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Bismuth dissolved	105	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Boron dissolved	103	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Cadmium dissolved	105	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Calcium dissolved	105	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Chromium dissolved	109	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Cobalt dissolved	106	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Copper dissolved	106	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Iron dissolved	108	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Lead dissolved	105	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Lithium dissolved	104	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Magnesium dissolved	111	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Manganese dissolved	107	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Molybdenum dissolved	101	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Nickel dissolved	106	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Phosphorus dissolved	110	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Potassium dissolved	110	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Selenium dissolved	104	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Silicon dissolved	106	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Silver dissolved	104	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Sodium dissolved	108	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Strontium dissolved	110	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Sulfur dissolved	104	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Tellurium dissolved	106	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Thallium dissolved	105	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Thorium dissolved	110	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Tin dissolved	106	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Titanium dissolved	109	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Tungsten dissolved	108	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Uranium dissolved	108	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Vanadium dissolved	107	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Zinc dissolved	109	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-BS1	Zirconium dissolved	107	%	F	SC	EPA 6020B	13-Mar-23	1	%	120	80
23C0615_B3C1164-MS1	Aluminum dissolved	20.7	mg/L	F	REG	EPA 6020B	13-Mar-23	0.005	mg/L	130	70
23C0615_B3C1164-MS1	Antimony dissolved	0.483	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00025	mg/L	130	70
23C0615_B3C1164-MS1	Arsenic dissolved	2.19	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00025	mg/L	130	70
23C0615_B3C1164-MS1	Barium dissolved	0.23	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0005	mg/L	130	70
23C0615_B3C1164-MS1	Beryllium dissolved	0.193	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L	130	70
23C0615_B3C1164-MS1	Bismuth dissolved	0.192	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L	130	70
23C0615_B3C1164-MS1	Boron dissolved	1.89	mg/L	F	REG	EPA 6020B	13-Mar-23	0.01	mg/L	130	70
23C0615_B3C1164-MS1	Cadmium dissolved	0.204	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00001	mg/L	130	70
23C0615_B3C1164-MS1	Calcium dissolved	402	mg/L	F	REG	EPA 6020B	13-Mar-23	0.25	mg/L	130	70
23C0615_B3C1164-MS1	Chromium dissolved	0.204	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0005	mg/L	130	70
23C0615_B3C1164-MS1	Cobalt dissolved	0.391	mg/L	F	REG	EPA 6020B	13-Mar-23	0.000025	mg/L	130	70
23C0615_B3C1164-MS1	Copper dissolved	0.263	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0005	mg/L	130	70
23C0615_B3C1164-MS1	Iron dissolved	20.9	mg/L	F	REG	EPA 6020B	13-Mar-23	0.01	mg/L	130	70
23C0615_B3C1164-MS1	Lead dissolved	0.195	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00025	mg/L	130	70
23C0615_B3C1164-MS1	Lithium dissolved	0.194	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00025	mg/L	130	70

CERTIFICATE OF ANALYSIS ▪ MEND-SFE QA/QC RESULTS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B22)
CLIENT: WSP E&I Canada Ltd.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 2

Sulphate:

Certified Reference Material:	Parameter: Sulphate	% Recovery	Matrix Spike %	Units	QC Limits
STD Mineral Water (15.3 mg/L)	14.80	96.7%		%	80 - 120
Spiked Blank (19.61 mg/L)	16.20		82.6%	%	80 - 120

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
23C0615_B3C1164-MS1	Magnesium dissolved	54.8	mg/L	F	REG	EPA 6020B	13-Mar-23	0.025	mg/L	130	70
23C0615_B3C1164-MS1	Manganese dissolved	0.219	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00025	mg/L	130	70
23C0615_B3C1164-MS1	Molybdenum dissolved	0.428	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L	130	70
23C0615_B3C1164-MS1	Nickel dissolved	0.22	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0002	mg/L	130	70
23C0615_B3C1164-MS1	Phosphorus dissolved	22.4	mg/L	F	REG	EPA 6020B	13-Mar-23	0.05	mg/L	130	70
23C0615_B3C1164-MS1	Potassium dissolved	90.6	mg/L	F	REG	EPA 6020B	13-Mar-23	0.1	mg/L	130	70
23C0615_B3C1164-MS1	Selenium dissolved	2.26	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0005	mg/L	130	70
23C0615_B3C1164-MS1	Silicon dissolved	27.4	mg/L	F	REG	EPA 6020B	13-Mar-23	0.5	mg/L	130	70
23C0615_B3C1164-MS1	Silver dissolved	0.174	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L	130	70
23C0615_B3C1164-MS1	Sodium dissolved	2440	mg/L	F	REG	EPA 6020B	13-Mar-23	0.1	mg/L	130	70
23C0615_B3C1164-MS1	Strontium dissolved	2.19	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0005	mg/L	130	70
23C0615_B3C1164-MS1	Sulfur dissolved	2640	mg/L	F	REG	EPA 6020B	13-Mar-23	5	mg/L	130	70
23C0615_B3C1164-MS1	Tellurium dissolved	0.218	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00025	mg/L	130	70
23C0615_B3C1164-MS1	Thallium dissolved	0.193	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00002	mg/L	130	70
23C0615_B3C1164-MS1	Thorium dissolved	0.202	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00005	mg/L	130	70
23C0615_B3C1164-MS1	Tin dissolved	0.219	mg/L	F	REG	EPA 6020B	13-Mar-23	0.00025	mg/L	130	70
23C0615_B3C1164-MS1	Titanium dissolved	0.216	mg/L	F	REG	EPA 6020B	13-Mar-23	0.001	mg/L	130	70
23C0615_B3C1164-MS1	Tungsten dissolved	0.245	mg/L	F	REG	EPA 6020B	13-Mar-23	0.001	mg/L	130	70
23C0615_B3C1164-MS1	Uranium dissolved	0.216	mg/L	F	REG	EPA 6020B	13-Mar-23	0.000005	mg/L	130	70
23C0615_B3C1164-MS1	Vanadium dissolved	0.209	mg/L	F	REG	EPA 6020B	13-Mar-23	0.005	mg/L	130	70
23C0615_B3C1164-MS1	Zinc dissolved	1.99	mg/L	F	REG	EPA 6020B	13-Mar-23	0.005	mg/L	130	70
23C0615_B3C1164-MS1	Zirconium dissolved	0.225	mg/L	F	REG	EPA 6020B	13-Mar-23	0.0001	mg/L	130	70

NOTES:
Job No: 23C0615

Abbreviations & Descriptions:
Method Blank (Blk): A blank sample that undergoes sample processing identical to that carried out for the test samples.
Method Blank results are used to assess contamination from the laboratory environment and reagents.

Duplicate (Dup): An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process.
Duplicates provide a measure of the analytical method's precision (reproducibility).

Blank Spike (BS): A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS).
Blank spikes provide a measure of the analytical method's accuracy.

Matrix Spike (MS): A second aliquot of sample is fortified with a known concentration of target analytes and carried through the entire analytical process.
Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.

Standard Reference Material (SRM): A homogenous material of similar matrix to the samples, certified for the parameter(s) listed.
Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples.

For all types of QC, specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

EQL = Estimated Quantitation Limits
PQL = Practical Quantitation Limits
UCL = Upper Control Limit
LCL = Lower Control Limit
BLK = Blank
BS = Blank Spike
MS = Matrix Spike
DUP = Duplicate

CERTIFICATE OF ANALYSIS ▪ COVER PAGE

Global ARD Testing Services Inc.

CLIENT INFORMATION		
Client:		First Mining Gold Corp.
Consulting Client:		Wood
Project Manager(s):	1	Kristen Gault
	2	Meghan Bertenshaw
Mailing Address:		Suite 2070 - 1188 West Georgia Street
		Vancouver, BC, V6E 4A2
Contact No:	1	(647) 402 3089
	2	(844) 306-8827

PROJECT INFORMATION	
Project Name:	Springpole
Project Number:	ONS2104

RESULTS		
Reported To:	1	Kristen Gault (kristen.gault@woodplc.com)
	2	Anna Klein (anna.klein@woodplc.com)
	3	Bart Debaere (bart.debaere@woodplc.com)
	4	Mark Ridgway (Mark@firstmininggold.com)
cc:		Meghan Bertenshaw (meghan@firstmininggold.com)
Date Reported:	**V1:**	November 28, 2021 (Water Analysis)
	V2:	December 2, 2021 (ABA, NAG, SFE)
	V3:	December 10, 2021 (Metals)

INVOICE		
Submitted To:	1	Accounts Payable (accountspayale@firstmininggold.com)
	2	Kristen Gault (kristen.gault@woodplc.com)
Company:		First Mining Gold Corp.
Address:		Suite 2070 - 1188 West Georgia, Street Vancouver, BC V6E 4A2.
Contact No:		(844) 306-8827
cc:	1	Meghan Bertenshaw (meghan@firstmininggold.com)
	2	N/A
Global Invoice No:		ARD1956-1221A
Dates Submitted:		December 10, 2021

COMPANY INFORMATION	
Legal Name:	Global ARD Testing Services Inc.
Mailing Address:	6891 Antrim Avenue, Burnaby, BC, Canada V5J 4M5.
Contact No:	Main: (604) 428-2730
	Prab Bhatia (Cell): (604) 603-1359
Fax No:	(604) 428-2731

REPORTING	
Global Project No:	1956 (B13)
Report Version:	3
Pages (Including Cover):	9
Report Title:	COA (B13) 2 Springpole Tailings (rec'd 11-Nov21)
Analysis Reviewed By:	Prab Bhatia (PBhatia@globalARDtesting.com)
Position:	Project Manager
Report Certified By:	Prab Bhatia
Signature:	

GLOBAL NOTES
All samples are stored at no charge for 90 days past reporting date.
HCT, column, custom leach columns (Lysimeters) & SAD column samples will be stored free for 90 days past kinetic testing program or Closedown.
Please contact the lab if you require additional sample storage time.
Storage charges will apply.

CERTIFICATE OF ANALYSIS ▪ SAMPLE DETAILS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B13)
CLIENT: First Mining Gold Corp.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 3

Sample List:

S. No.	Sample ID	Sample Type	Condition	Wt. of Sample Rec'd (Kg)	Global Notes - if any
1	BL758-24 Rough Concentrate	Tailings	Damp	0.50	
2	Production Composite Floatation Tailings	Tailings	Wet	2.50	

Total wt of sample rec'd (kg): **3.00**

Sample Receipt Info:	
Date Samples Rec'd:	11-Nov-21
No. of Samples Rec'd:	2
Samples Rec'd By:	Jeff

Analytical Instructions:	
From:	Anna Klein via email/COC confirmation
Date:	16-Nov-21

CERTIFICATE OF ANALYSIS ▪ WATER ANALYSIS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B13)
CLIENT: First Mining Gold Corp.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 3

Parameter	Method	Unit	RDL	1	2
				Detox Process Water	Flotation Tailings Supernatant
On filtered samples (using 0.45 µm filter paper):					
pH	Meter	pH units	0.01	8.1	8.2
EC	Meter	mV	1.0	6560	6550
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5	5.9	5.6
Total Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5	190.1	174.6
Sulphate	Turbidity	mg/L	100.0	2900	3100
Nitrate		mg/L	0.1	<0.100	0.2
Nitrite		mg/L	0.1	<0.100	<0.100
Total Ammonia		mg/L	5.0	162.0	160.0
Cyanide Total		mg/L	0.1	0.60	0.66
Cyanide, WAD		mg/L	0.1	0.11	0.22
Cyanide, Free		mg/L	0.01	0.09	0.11
Thiocyanate		mg/L	0.5	16.5	259
Cyanate		mg/L	0.5	16.6	244
Phosphorous	IC	mg/L	0.0050	0.0287	0.0154
Dissolved Metals Analysis by ICP-MS:					
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.5	1160	1240
Aluminum Dissolved	ICP-MS	mg/L	0.005	0.0424	0.0168
Antimony Dissolved	ICP-MS	mg/L	0.0002	0.117	0.0996
Arsenic Dissolved	ICP-MS	mg/L	0.0005	0.0495	0.0255
Barium Dissolved	ICP-MS	mg/L	0.005	0.105	0.0322
Beryllium Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010
Bismuth Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010
Boron Dissolved	ICP-MS	mg/L	0.05	<0.0500	<0.0500
Cadmium Dissolved	ICP-MS	mg/L	0.00001	0.0002	0.000081
Calcium Dissolved	ICP-MS	mg/L	0.2	449.0	470.0
Chromium Dissolved	ICP-MS	mg/L	0.0005	0.0053	0.0041
Cobalt Dissolved	ICP-MS	mg/L	0.0001	0.028	0.0284
Copper Dissolved	ICP-MS	mg/L	0.0004	0.818	0.273
Iron Dissolved	ICP-MS	mg/L	0.01	0.042	<0.010
Lead Dissolved	ICP-MS	mg/L	0.0002	0.00879	<0.00020
Lithium Dissolved	ICP-MS	mg/L	0.0001	0.0338	0.0451
Magnesium Dissolved	ICP-MS	mg/L	0.01	10.0	16.4
Manganese Dissolved	ICP-MS	mg/L	0.0002	0.172	0.253
Mercury Dissolved	CVAF	mg/L	0.00002	0.000187	0.000208
Molybdenum Dissolved	ICP-MS	mg/L	0.0001	0.302	0.319
Nickel Dissolved	ICP-MS	mg/L	0.0004	0.00894	0.00429
Phosphorus Dissolved	ICP-MS	mg/L	0.05	<0.050	<0.050
Potassium Dissolved	ICP-MS	mg/L	0.1	106	118
Selenium Dissolved	ICP-MS	mg/L	0.0005	0.0131	0.00509
Silicon Dissolved	ICP-MS	mg/L	1	7.4	6
Silver Dissolved	ICP-MS	mg/L	0.00005	<0.000050	<0.000050
Sodium Dissolved	ICP-MS	mg/L	0.1	1170	1270
Strontium Dissolved	ICP-MS	mg/L	0.001	13.7	14
Sulphur Dissolved	ICP-MS	mg/L	3	1160.0	1240.0
Tellurium Dissolved	ICP-MS	mg/L	0.0005	<0.00050	<0.00050
Thallium Dissolved	ICP-MS	mg/L	0.00002	0.000744	0.000876
Thorium Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010
Tin Dissolved	ICP-MS	mg/L	0.0002	0.00071	0.00053
Titanium Dissolved	ICP-MS	mg/L	0.005	<0.0050	<0.0050
Tungsten Dissolved	ICP-MS	mg/L	0.001	0.309	0.267
Uranium Dissolved	ICP-MS	mg/L	0.00002	0.0128	0.0185
Vanadium Dissolved	ICP-MS	mg/L	0.001	0.0017	<0.0010
Zinc Dissolved	ICP-MS	mg/L	0.004	0.047	<0.0040
Zirconium Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010
Ion Balance:					
Major Anions	Calc.	meq/L		64.22	68.07
Major Cations	Calc.	meq/L		77.17	83.38
Difference	Calc.	meq/L		12.95	15.31
Balance (%)	Calc.	%		9.2%	10.1%
			ID:	21K2396-01	21K2396-02

NOTES:
Job No: 21K2396
Date of Analysis (24 h): November 22, 2021
pH of DI water used (pH Units): 5.57
EC of DI water used (µS/cm): 0.96
ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliquot).
D / Dup = Duplicate (which involves the analysis of a separate SF extract, produced by processing a secopnd split of the original client sample received).
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
N/A = Not Applicable.
mg/L = Milligrams per Litre

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
21K2396_B1K2158-BLK1	Cyanide Total	<0.0020	mg/L	T	General Parameters	ASTM D7511-12	20-Nov-21	0.002	mg/L		
21K2396_B1K2158-BLK2	Cyanide Total	<0.0020	mg/L	T	General Parameters	ASTM D7511-12	20-Nov-21	0.002	mg/L		
21K2396_B1K2158-BS1	Cyanide Total	91	%	T	General Parameters	ASTM D7511-12	20-Nov-21	1	%	120	82
21K2396_B1K2158-BS2	Cyanide Total	93	%	T	General Parameters	ASTM D7511-12	20-Nov-21	1	%	120	82
21K2396_B1K2158-BSD1	Cyanide Total	90	%	T	General Parameters	ASTM D7511-12	20-Nov-21	1	%	120	82
21K2396_B1K2158-BSD2	Cyanide Total	90	%	T	General Parameters	ASTM D7511-12	20-Nov-21	1	%	120	82
21K2396_B1K2271-BLK1	Nitrate (as N)	<0.010	mg/L	T	General Parameters	SM 4110 B (2017)	20-Nov-21	0.01	mg/L		
21K2396_B1K2271-BLK1	Nitrite (as N)	<0.010	mg/L	T	General Parameters	SM 4110 B (2017)	20-Nov-21	0.01	mg/L		
21K2396_B1K2271-BLK1	Sulfate	<1.0	mg/L	T	General Parameters	SM 4110 B (2017)	20-Nov-21	1	mg/L		
21K2396_B1K2271-BS1	Nitrate (as N)	101	%	T	General Parameters	SM 4110 B (2017)	20-Nov-21	1	%	110	90
21K2396_B1K2271-BS1	Nitrite (as N)	100	%	T	General Parameters	SM 4110 B (2017)	20-Nov-21	1	%	115	85
21K2396_B1K2271-BS1	Sulfate	100	%	T	General Parameters	SM 4110 B (2017)	20-Nov-21	1	%	110	90
21K2396_B1K2385-BLK1	Ammonia Total (as N)	<0.050	mg/L	T	General Parameters	SM 4500-NH3 G* (2017)	22-Nov-21	0.05	mg/L		
21K2396_B1K2385-BS1	Ammonia Total (as N)	100	%	T	General Parameters	SM 4500-NH3 G* (2017)	22-Nov-21	1	%	115	90
21K2396_B1K2390-BLK1	Phosphorus Total Dissolved	<0.0050	mg/L	F	General Parameters	SM 4500-P F (2017)	22-Nov-21	0.005	mg/L		
21K2396_B1K2390-BLK3	Phosphorus Total Dissolved	<0.0050	mg/L	F	General Parameters	SM 4500-P F (2017)	22-Nov-21	0.005	mg/L		
21K2396_B1K2390-BS1	Phosphorus Total Dissolved	103	%	F	General Parameters	SM 4500-P F (2017)	22-Nov-21	1	%	115	85
21K2396_B1K2390-BS3	Phosphorus Total Dissolved	94	%	F	General Parameters	SM 4500-P F (2017)	22-Nov-21	1	%	115	85
21K2396_B1K2395-BLK1	Aluminum dissolved	<0.0050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.005	mg/L		
21K2396_B1K2395-BLK1	Antimony dissolved	<0.00020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0002	mg/L		
21K2396_B1K2395-BLK1	Arsenic dissolved	<0.00050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0005	mg/L		
21K2396_B1K2395-BLK1	Barium dissolved	<0.0050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.005	mg/L		
21K2396_B1K2395-BLK1	Beryllium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK1	Bismuth dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK1	Boron dissolved	<0.0500	mg/L	F	metals	EPA 6020B	22-Nov-21	0.05	mg/L		
21K2396_B1K2395-BLK1	Cadmium dissolved	<0.000010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.00001	mg/L		
21K2396_B1K2395-BLK1	Calcium dissolved	<0.20	mg/L	F	metals	EPA 6020B	22-Nov-21	0.2	mg/L		
21K2396_B1K2395-BLK1	Chromium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0005	mg/L		
21K2396_B1K2395-BLK1	Cobalt dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK1	Copper dissolved	<0.00040	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0004	mg/L		
21K2396_B1K2395-BLK1	Iron dissolved	<0.010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.01	mg/L		
21K2396_B1K2395-BLK1	Lead dissolved	<0.00020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0002	mg/L		
21K2396_B1K2395-BLK1	Lithium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK1	Magnesium dissolved	<0.010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.01	mg/L		
21K2396_B1K2395-BLK1	Manganese dissolved	<0.00020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0002	mg/L		
21K2396_B1K2395-BLK1	Molybdenum dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK1	Nickel dissolved	<0.00040	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0004	mg/L		
21K2396_B1K2395-BLK1	Phosphorus dissolved	<0.050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.05	mg/L		
21K2396_B1K2395-BLK1	Potassium dissolved	<0.10	mg/L	F	metals	EPA 6020B	22-Nov-21	0.1	mg/L		
21K2396_B1K2395-BLK1	Selenium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0005	mg/L		
21K2396_B1K2395-BLK1	Silicon dissolved	<1.0	mg/L	F	metals	EPA 6020B	22-Nov-21	1	mg/L		
21K2396_B1K2395-BLK1	Silver dissolved	<0.000050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.00005	mg/L		
21K2396_B1K2395-BLK1	Sodium dissolved	<0.10	mg/L	F	metals	EPA 6020B	22-Nov-21	0.1	mg/L		
21K2396_B1K2395-BLK1	Strontium dissolved	<0.0010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.001	mg/L		
21K2396_B1K2395-BLK1	Sulfur dissolved	<3.0	mg/L	F	metals	EPA 6020B	22-Nov-21	3	mg/L		
21K2396_B1K2395-BLK1	Tellurium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0005	mg/L		
21K2396_B1K2395-BLK1	Thallium dissolved	<0.000020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.00002	mg/L		
21K2396_B1K2395-BLK1	Thorium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK1	Tin dissolved	<0.00020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0002	mg/L		
21K2396_B1K2395-BLK1	Titanium dissolved	<0.0050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.005	mg/L		
21K2396_B1K2395-BLK1	Tungsten dissolved	<0.0010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.001	mg/L		
21K2396_B1K2395-BLK1	Uranium dissolved	<0.000020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.00002	mg/L		
21K2396_B1K2395-BLK1	Vanadium dissolved	<0.0010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.001	mg/L		
21K2396_B1K2395-BLK1	Zinc dissolved	<0.0040	mg/L	F	metals	EPA 6020B	22-Nov-21	0.004	mg/L		
21K2396_B1K2395-BLK1	Zirconium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK2	Aluminum dissolved	<0.0050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.005	mg/L		
21K2396_B1K2395-BLK2	Antimony dissolved	<0.00020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0002	mg/L		
21K2396_B1K2395-BLK2	Arsenic dissolved	<0.00050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0005	mg/L		
21K2396_B1K2395-BLK2	Barium dissolved	<0.0050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.005	mg/L		
21K2396_B1K2395-BLK2	Beryllium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK2	Bismuth dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK2	Boron dissolved	<0.0500	mg/L	F	metals	EPA 6020B	22-Nov-21	0.05	mg/L		
21K2396_B1K2395-BLK2	Cadmium dissolved	<0.000010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.00001	mg/L		
21K2396_B1K2395-BLK2	Calcium dissolved	<0.20	mg/L	F	metals	EPA 6020B	22-Nov-21	0.2	mg/L		
21K2396_B1K2395-BLK2	Chromium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0005	mg/L		
21K2396_B1K2395-BLK2	Cobalt dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK2	Copper dissolved	<0.00040	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0004	mg/L		
21K2396_B1K2395-BLK2	Iron dissolved	<0.010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.01	mg/L		
21K2396_B1K2395-BLK2	Lead dissolved	<0.00020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0002	mg/L		
21K2396_B1K2395-BLK2	Lithium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK2	Magnesium dissolved	<0.010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.01	mg/L		
21K2396_B1K2395-BLK2	Manganese dissolved	<0.00020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0002	mg/L		
21K2396_B1K2395-BLK2	Molybdenum dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK2	Nickel dissolved	<0.00040	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0004	mg/L		
21K2396_B1K2395-BLK2	Phosphorus dissolved	<0.050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.05	mg/L		
21K2396_B1K2395-BLK2	Potassium dissolved	<0.10	mg/L	F	metals	EPA 6020B	22-Nov-21	0.1	mg/L		
21K2396_B1K2395-BLK2	Selenium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0005	mg/L		
21K2396_B1K2395-BLK2	Silicon dissolved	<1.0	mg/L	F	metals	EPA 6020B	22-Nov-21	1	mg/L		
21K2396_B1K2395-BLK2	Silver dissolved	<0.000050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.00005	mg/L		
21K2396_B1K2395-BLK2	Sodium dissolved	<0.10	mg/L	F	metals	EPA 6020B	22-Nov-21	0.1	mg/L		
21K2396_B1K2395-BLK2	Strontium dissolved	<0.0010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.001	mg/L		
21K2396_B1K2395-BLK2	Sulfur dissolved	<3.0	mg/L	F	metals	EPA 6020B	22-Nov-21	3	mg/L		
21K2396_B1K2395-BLK2	Tellurium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0005	mg/L		
21K2396_B1K2395-BLK2	Thallium dissolved	<0.000020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.00002	mg/L		
21K2396_B1K2395-BLK2	Thorium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BLK2	Tin dissolved	<0.00020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0002	mg/L		
21K2396_B1K2395-BLK2	Titanium dissolved	<0.0050	mg/L	F	metals	EPA 6020B	22-Nov-21	0.005	mg/L		
21K2396_B1K2395-BLK2	Tungsten dissolved	<0.0010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.001	mg/L		
21K2396_B1K2395-BLK2	Uranium dissolved	<0.000020	mg/L	F	metals	EPA 6020B	22-Nov-21	0.00002	mg/L		
21K2396_B1K2395-BLK2	Vanadium dissolved	<0.0010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.001	mg/L		
21K2396_B1K2395-BLK2	Zinc dissolved	<0.0040	mg/L	F	metals	EPA 6020B	22-Nov-21	0.004	mg/L		
21K2396_B1K2395-BLK2	Zirconium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	22-Nov-21	0.0001	mg/L		
21K2396_B1K2395-BS1	Aluminum dissolved	110	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Antimony dissolved	90	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Arsenic dissolved	83	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Barium dissolved	93	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Beryllium dissolved	90	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Bismuth dissolved	93	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
21K2396_B1K2395-BS1	Boron dissolved	97	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Cadmium dissolved	86	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Calcium dissolved	111	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Chromium dissolved	94	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Cobalt dissolved	94	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Copper dissolved	91	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Iron dissolved	89	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Lead dissolved	101	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Lithium dissolved	88	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Magnesium dissolved	92	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Manganese dissolved	87	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Molybdenum dissolved	90	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Nickel dissolved	97	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Phosphorus dissolved	89	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Potassium dissolved	99	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Selenium dissolved	82	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Silicon dissolved	104	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Silver dissolved	88	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Sodium dissolved	102	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Strontium dissolved	91	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Sulfur dissolved	110	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Tellurium dissolved	89	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Thallium dissolved	92	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Thorium dissolved	84	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Tin dissolved	101	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Titanium dissolved	96	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Tungsten dissolved	95	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Uranium dissolved	88	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Vanadium dissolved	92	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Zinc dissolved	96	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS1	Zirconium dissolved	94	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Aluminum dissolved	112	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Antimony dissolved	87	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Arsenic dissolved	81	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Barium dissolved	87	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Beryllium dissolved	88	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Bismuth dissolved	90	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Boron dissolved	103	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Cadmium dissolved	84	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Calcium dissolved	101	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Chromium dissolved	93	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Cobalt dissolved	92	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Copper dissolved	88	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Iron dissolved	87	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Lead dissolved	97	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Lithium dissolved	89	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Magnesium dissolved	90	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Manganese dissolved	84	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Molybdenum dissolved	88	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Nickel dissolved	94	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Phosphorus dissolved	86	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Potassium dissolved	95	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Selenium dissolved	87	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Silicon dissolved	98	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Silver dissolved	103	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Sodium dissolved	100	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Strontium dissolved	91	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Sulfur dissolved	100	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Tellurium dissolved	93	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Thallium dissolved	88	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Thorium dissolved	81	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Tin dissolved	96	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Titanium dissolved	100	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Tungsten dissolved	94	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Uranium dissolved	85	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Vanadium dissolved	95	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Zinc dissolved	89	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-BS2	Zirconium dissolved	93	%	F	metals	EPA 6020B	22-Nov-21	1	%	120	80
21K2396_B1K2395-SRM1	Aluminum dissolved	98	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Antimony dissolved	99	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Arsenic dissolved	97	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Barium dissolved	95	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Beryllium dissolved	99	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Boron dissolved	105	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Cadmium dissolved	92	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Calcium dissolved	98	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Chromium dissolved	102	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Cobalt dissolved	103	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Copper dissolved	97	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Iron dissolved	98	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Lead dissolved	108	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Lithium dissolved	98	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Magnesium dissolved	102	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Manganese dissolved	91	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Molybdenum dissolved	100	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Nickel dissolved	103	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Phosphorus dissolved	104	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Potassium dissolved	112	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Selenium dissolved	97	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Sodium dissolved	103	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Strontium dissolved	94	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Thallium dissolved	99	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Uranium dissolved	94	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Vanadium dissolved	100	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM1	Zinc dissolved	99	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Aluminum dissolved	102	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Antimony dissolved	104	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Arsenic dissolved	99	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Barium dissolved	99	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Beryllium dissolved	103	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Boron dissolved	109	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Cadmium dissolved	96	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Calcium dissolved	101	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Chromium dissolved	106	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Cobalt dissolved	107	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
21K2396_B1K2395-SRM2	Copper dissolved	100	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Iron dissolved	101	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Lead dissolved	113	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Lithium dissolved	102	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Magnesium dissolved	105	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Manganese dissolved	94	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Molybdenum dissolved	105	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Nickel dissolved	107	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Phosphorus dissolved	109	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Potassium dissolved	116	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Selenium dissolved	101	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Sodium dissolved	106	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Strontium dissolved	97	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Thallium dissolved	104	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Uranium dissolved	99	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Vanadium dissolved	104	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2395-SRM2	Zinc dissolved	102	%	F	metals	EPA 6020B	22-Nov-21	1	%	130	70
21K2396_B1K2494-BLK1	Cyanide Total	<0.0020	mg/L	T	General Parameters	ASTM D7511-12	23-Nov-21	0.002	mg/L		
21K2396_B1K2494-BS1	Cyanide Total	94	%	T	General Parameters	ASTM D7511-12	23-Nov-21	1	%	120	82
21K2396_B1K2494-BSD1	Cyanide Total	93	%	T	General Parameters	ASTM D7511-12	23-Nov-21	1	%	120	82
21K2396_B1K2733-BLK1	Cyanide Free	<0.0050	mg/L	T	General Parameters	ASTM D7237-15a	25-Nov-21	0.005	mg/L		
21K2396_B1K2733-BS1	Cyanide Free	105	%	T	General Parameters	ASTM D7237-15a	25-Nov-21	1	%	115	85
21K2396_B1K2733-BSD1	Cyanide Free	107	%	T	General Parameters	ASTM D7237-15a	25-Nov-21	1	%	115	85
21K2396_B1K2734-BLK1	Cyanide Weak Acid Dissociable	<0.0020	mg/L	F	General Parameters	ASTM D6888-09	25-Nov-21	0.002	mg/L		
21K2396_B1K2734-BS1	Cyanide Weak Acid Dissociable	101	%	F	General Parameters	ASTM D6888-09	25-Nov-21	1	%	115	85
21K2396_B1K2734-BSD1	Cyanide Weak Acid Dissociable	102	%	F	General Parameters	ASTM D6888-09	25-Nov-21	1	%	115	85
21K2396_B1K2939-BLK1	Mercury dissolved	<0.000010	mg/L	F	metals	EPA 245.7*	26-Nov-21	0.00001	mg/L		
21K2396_B1K2939-DUP1	Mercury dissolved	0.000187	mg/L	F	metals	EPA 245.7*	26-Nov-21	0.00002	mg/L		
21K2396_B1K2939-MS1	Mercury dissolved	0.000618	mg/L	F	metals	EPA 245.7*	26-Nov-21	0.00002	mg/L	130	70
21K2396_B1K2939-SRM1	Mercury dissolved	92	%	F	metals	EPA 245.7*	26-Nov-21	1	%	200	0

NOTES:
Job No: 21K2396

Abbreviations & Descriptions:
Method Blank (Blk): A blank sample that undergoes sample processing identical to that carried out for the test samples.
Method Blank results are used to assess contamination from the laboratory environment and reagents.

Duplicate (Dup): An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process.
Duplicates provide a measure of the analytical method's precision (reproducibility).

Blank Spike (BS): A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS).
Blank spikes provide a measure of the analytical method's accuracy.

Matrix Spike (MS): A second aliquot of sample is fortified with a known concentration of target analytes and carried through the entire analytical process.
Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.

Standard Reference Material (SRM): A homogenous material of similar matrix to the samples, certified for the parameter(s) listed.
Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples.

For all types of QC, specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

EQL = Estimated Quantitation Limits
PQL = Practical Quantitation Limits
UCL = Upper Control Limit
LCL = Lower Control Limit
BLK = Blank
BS = Blank Spike
MS = Matrix Spike
DUP = Duplicate
SRM = Standard Reference Materials

CERTIFICATE OF ANALYSIS ▪ ABA + QA/QC RESULTS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B13)
CLIENT: First Mining Gold Corp.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 3

S. No.	Sample ID	Paste pH	Fizz Rating	Total Carbon	Total Inorganic C	$CaCO_3$ Equivalents *1	Total Sulphur	Sulphate Sulphur	Sulphide Sulphur	AP *3	STD Sobek NP	NNP *4	NPR *5
	Units:	pH Units		wt.%	wt %	kg CaCO3/tonne	wt.%	wt %	wt %		kg CaCO3/tonne		
	Reported Detection Limit:	***0.01***		**0.02**	***0.02***	***1.7***	**0.01**	***0.01***	***0.01***	**0.3**	***0.5***		
1	BL758-24 Rough Concentrate	7.8	Strong	0.55	0.31	25.8	21.2	0.04	21.16	661.3	48.8	-612.5	0.1
2	Production Composite Floatation Tailings	8.6	Strong	1.33	1.21	100.8	0.08	0.03	0.05	1.6	108.0	106.4	69.1
	QUALITY ASSURANCE / QUALITY CONTROL												
	Replicates:												
1	BL758-24 Rough Concentrate			0.55	0.31		21.2						
1R	BL758-24 Rough Concentrate (Rep)			0.54	0.31		21.5						
	Certified Reference Material (CRM) Analysis:												
	Certified Reference Material	KZK-1		KZK-1	Calcium Carbonate		KZK-1	RTS-3a	KZK-1		1) KZK-1 (Slight) 2) KZK-1 (Moderate)		
	CRM True Value	**8.80**		**0.95**	**0.84**		**0.80**	**1.10**	**0.37**		**1) 59.0 2) 64.8**		
	Reference Material Results	8.86		0.95	0.71		0.80	1.03			1) 58.8 2) 63.1		
	Tolerance (+/-) or Acceptance Range	***0.09 (+/-)***		***90% - 110%***	***80% - 120%***		***90% - 110%***	***90% - 110%***	***90% - 110%***		***1) 2.8 (+/-) 2) 5.8 (+/-)***		
	Method Blank Analysis:												
	Method Blank Results			<0.02	<0.02		<0.01	<0.01					
	GLOBAL SOP No. / Method:	*ARD-004*	*ARD-005*	*LECO*	*HCl leach/ CO2-Coulometer*	*Calc.*	*LECO*	*ARD-013 (Seq. HCl/HNO3 leach)*		*Calc.*	*ARD-007*	*Calc.*	*Calc.*

NOTES:
Acceptance criteria at Global ARD Testing for all CRMs is ±10 % of certified value.
Job No: 21V834590
Date of Analysis: November 24, 2021
pH of DI water used: 5.56
EC of DI water used: 0.98

METHODS:
Total Sulphur by Leco.
Total Inorganic Carbon (TIC): HCl leach, evolved gas (CO_2) analysed by CO_2 Coulometer.

ABBREVIATIONS:
R = Rep = Replicate (a replicate is a sub-sample scooped from a single pulp sample bag produced per client sample)
D = Dup = Duplicate (a duplicate is 2nd sub-pulp sample bag produced by processing a split of the original client sample received. A duplicate pulp sample is prepared only at client request)
NP = Neutralization Potential
Calc. = Calculation
NR = Not Received

CALCULATIONS:
*1 CaCO3 Equivalents: based on TIC
*2 Sulphide-Sulphur: Total-sulphur - sulphate-sulphur
*3 AP (Acid Potential): Sulphide-Sulphur x 31.25
*4 NNP (Net Neutralization Potential): NP - AP
*5 NPR (Neutralization Potential Ratio): NP/AP

REFERENCES:
Sample Preparation: ASTM E877-08; MEND Report 1.20.1, Version 0 (2009)
ABA: Dried below 40°C (as requested by client), jaw-crushed if necessary, split by riffling and pulverized to 85% passing 200 mesh (75 µm).
Modified ABA (Sobek) NP: MEND Acid Rock Drainage Prediction Manual, MEND Project 1.16.1b (pages 6.2-11 to 17), March 1991.
Paste pH / Fizz Rating: Sobek, A.A., Schuller, W.A., Freeman, J.R. and Smith, R.M.; US EPA-600/2-78-054 (1978).
Sulphate Sulphur: Based on MEND method. The S extracted is determined by analysing the extract for SO4 using UV-Vis Spectrophotometer (STD Method 4500-SO42- E).

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ RESULTS OF METALS BY AQUA REGIA DIGEST & ICP-MS ANALYSIS ON SOLIDS (Code IMS-130)

GLOBAL PROJECT NO: 1956 (B13)
CLIENT: First Mining Gold Corp.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 3

S. No.	Sample ID	Method	IMS-130																									
		Analyte	Silver (Ag)	Aluminum (Al)	Arsenic (As)	Gold (Au)	Boron (B)	Barium (Ba)	Beryllium (Be)	Bismuth (Bi)	Calcium (Ca)	Cadmium (Cd)	Cerium (Ce)	Cobalt (Co)	Chromium (Cr)	Cesium (Cs)	Copper (Cu)	Iron (Fe)	Gallium (Ga)	Germanium (Ge)	Hafnium (Hf)	Mercury (Hg)	Indium (In)	Potassium (K)	Lanthanum (La)	Lithium (Li)	Magnesium (Mg)	Manganese (Mn)
		Unit	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	ppm	ppm	ppm	%	ppm	ppm	%	ppm
		MDL	0.01	0.01	0.1	0.0005	10	10	0.05	0.01	0.01	0.01	0.02	0.1	1	0.05	0.2	0.01	0.05	0.05	0.02	0.005	0.005	0.01	0.2	0.1	0.01	5
		Sample Type																										
1	BL758-24 Rough Concentrate	Pulp	80.31	0.6	963.9	9.2384	27	10	0.39	6.90	1.47	6.64	50.46	172.0	123	4.14	551.9	19.65	2.47	0.11	2.91	2.72	0.057	0.47	26.8	18.8	0.52	565
2	Production Composite Floatation Tailings	Pulp	1.55	0.6	17.7	0.0803	<10	264	0.41	0.33	3.51	0.27	66.49	4.3	174	7.77	141.7	2.41	3.03	0.08	2.10	0.24	0.011	0.56	35.4	22.1	1.01	1276
QUALITY ASSURANCE / QUALITY CONTROL																												
Pulp Replicates:																												
Certified Reference Material:																												
STD OREAS 601			49.42	0.860	312.0	0.756	<10	213	0.65	21.13	1.09	7.54	47.5	4.50	45.0	1.99	1021.8	2.21	5.22	0.07	0.85	0.303	1.729	0.270	21.9	7.70	0.200	456
True Value STD OREAS 601			**49.40**	**0.826**	**305.0**	**0.774**	**<10**	**2714**	**0.62**	**20.60**	**1.07**	**7.81**	**44.8**	**4.70**	**44.2**	**1.98**	**1010.0**	**2.20**	**5.17**	**<0.1**	**<1**	**<3**	**1.680**	**0.251**	**21.2**	**7.95**	**0.195**	**450**
% Difference			0%	4%	2%	-2%			5%	3%	2%	-3%	6%	-4%	2%	1%	1%	0%	1%				3%	8%	3%	-3%	3%	1%
Method Blank:																												
Method Blank			<0.01	<0.01	<0.1	<0.0005	<10	<10	<0.05	<0.01	<0.01	<0.01	<0.02	<0.1	<1	<0.05	<0.2	<0.01	<0.05	<0.05	<0.02	<0.005	<0.005	<0.01	<0.2	<0.1	<0.01	<5

NOTES:
Job No: YVR2111127

Analytical Methods (IMS-130):
A 0.5 g of pulp sample is leached in hot (95°C) 3:1 aqua regia digestion followed by ICP Mass Spec analysis.
Gold determinations by this method are semi-quantitative due to the small sample weight used (0.5 g).
Refractory and graphitic samples can limit Au solubility.

Abbreviations:
R / Rep = Replicate (a replicate is a sub-sample scooped from a single sample bag produced per client sample)
D / Dup = Duplicate (a duplicate is 2nd sub-sample bag produced by processing a second split of the original client sample received)
MDL = Measurable Detection Limit
IND = Indeterminate

On Certified Reference Material and Tolerance:
Any one element in a run reporting outside tolerance limits does not constitute failure of the standard.
As per Certificate of Analysis (COA): All values indicated are Certified. Values indicated in green are indicative only.
NR = Not Reported (in the Certificate Of Analysis).

Global
ARD Testing Services Inc.

CERTIFICATE OF ANALYSIS ▪ METALS RESULTS BY AQUA REGIA DIGEST & ICP-MS ANALYSIS ON SOLIDS (Code IMS-130)

GLOBAL PROJECT NO: 1956 (B13)
CLIENT: First Mining Gold Corp.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
3

S. No.	Sample ID	Method / Analyte / Unit / MDL / Sample Typ	Molybdenum (Mo) ppm 0.05	Sodium (Na) % 0.01	Niobium (Nb) ppm 0.05	Nickel (Ni) ppm 0.2	Phosphorous (P) ppm 10	Lead (Pb) ppm 0.2	Rubidium (Rb) ppm 0.1	Rhenium (Re) ppm 0.001	Sulphur (S) % 0.01	Antimony (Sb) ppm 0.05	Scandium (Sc) ppm 0.1	Selenium (Se) ppm 0.2	Tin (Sn) ppm 0.2	Stronium (Sr) ppm 0.2	Tantalum (Ta) ppm 0.01	Tellurium (Te) ppm 0.01	Thorium (Th) ppm 0.2	Titanium (Ti) % 0.005	Thallium (Tl) ppm 0.02	Uranium (U) ppm 0.05	Vandium (V) ppm 1	Tungsten (W) ppm 0.05	Yttrium (Y) ppm 0.05	Zinc (Zn) ppm 1	Zirconium (Zr) ppm 0.5
1	BL758-24 Rough Concentrate	Pulp	401.04	0.02	0.35	179.7	641	860.0	51.9	0.22	>10	37.33	2.7	21.2	0.4	95.4	0.04	45.83	3.8	0.043	1.38	3.56	19	55.59	9.03	1178	99.0
2	Production Composite Floatation Tailings	Pulp	25.83	0.05	0.17	88.0	931	38.6	79.3	0.014	0.15	2.56	2.7	0.3	0.5	245.4	<0.01	2.23	3.9	0.063	1.5	2.37	29	3.80	9.28	101	69.3
QUALITY ASSURANCE / QUALITY CONTROL																												
Pulp Replicates:																												
Certified Reference Material:																												
STD OREAS 601			3.73	0.08	0.24	23.4	368	280.2	16.1	<0.001	1.05	21.04	1.90	12.1	2.70	37.2	<0.01	15.09	6.9	0.011	0.75	2.05	9.00	1.04	5.87	1303	24.9
True Value STD OREAS 601			**3.80**	**0.07**	**<1**	**24.1**	**360**	**283.0**	**16.0**	**<1**	**1.04**	**21.10**	**1.83**	**12.3**	**2.61**	**36.2**	**0.099**	**15.40**	**6.7**	**0.010**	**0.74**	**1.94**	**9.24**	**1.06**	**5.87**	**1293**	**26.7**
% Difference			-2%	14%		-3%	2%	-1%	1%		1%	0%	4%	-2%	3%	3%		-2%	3%	7%	1%	6%	-3%	-2%	0%	1%	-7%
Method Blank:																												
Method Blank			<0.05	<0.01	<0.05	<0.2	<10	<0.2	<0.1	<0.001	<0.01	<0.05	<0.1	<0.2	<0.2	<0.2	<0.01	<0.01	<0.2	<0.005	<0.02	<0.05	<1	<0.05	<0.05	<1	<0.5

CERTIFICATE OF ANALYSIS ▪ SINGLE ADDITION NAG RESULTS (EGi Method)

Global
ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B13)
CLIENT: First Mining Gold Corp.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 3

S. No:	Sample ID	Pulp Sample Weight (g)	Vol. of 15% H_2O_2 (mL)	NAG pH (pH Units)	NaOH to pH 4.5 (mL)	NaOH to pH 7.0 (mL)	NaOH Conc. (N)	NAG Acidity pH 4.5 (kg H_2SO_4/tonne)	NAG Acidity pH 7.0 (kg H_2SO_4/tonne)	% RPD to pH 4.5	% RPD to pH 7.0	% RPD Acceptance Criteria
2	Production Composite Floatation Tailings	2.5	250	7.55	0.00	0.00	0.1	0.0	0.0			
QAQC:												
Replicates:												
										0%	0%	10%
Method Blank Analysis:												
Method Blank (15% H_2O_2 Solution)		N/A	250	5.53	0.00	7.75	0.1					
GLOBAL SOP NO:		***ARD-017***										

NOTES:
Date of Analysis: November 29, 2021

pH (pH Units) of DI water used to prepare 15% H2O2: 5.61
EC (µS/cm) of DI water used to prepare 15% H2O2: 1.04
pH (pH Units) of 15% H_2O_2 (buffered with 0.5 N NaOH): 5.27
EC (µS/cm) of 15% H_2O_2 (buffered with 0.5 N NaOH): 15.3
Solid:Liquid ratio used: 1:100; 2.5 g Pulp Sample: 250 mL 15% H_2O_2.
pH measurement of 15% H_2O_2 solution was conducted at room temperature & buffered with 0.5N NaOH solution to ensure a pH between 4 and 7.
NAG pH & method blank pH measurements were taken after digesting with peroxide solution and making up the solution to its original volume of 250 mL with DI water.
On client's request the NAG procedure is repeated using 1 g of pulp sample when the NAG value for pH 4.5 exceeds 25 kg H_2SO_4 per tonne.

ABBREVIATIONS:
R = Replicate (i.e. using a pulp sample from the same bag).
D = Duplicate (i.e. client sample is processed to produced a 2nd pulp bag & analyzed as a duplicate).
RPD = Relative Percent Difference.
Calc. = Calculation

REFERENCE:
Egi - Environmental Geochemistry International; Single Addition Net Acid Generation (NAG) Test Procedure; Miller et al; Revised Dec. 2006; Page 2 to 4.

CERTIFICATE OF ANALYSIS ▪ MEND-SHAKE FLASK EXTRACTION RESULTS

Global ARD Testing Services Inc.

GLOBAL PROJECT NO: 1956 (B13)
CLIENT: First Mining Gold Corp.
PROJECT NAME: Springpole
PROJECT NO: ONS2104
REPORT VERSION: 3

Parameter	Method	Unit	RDL	1	2	Method Blank
				BL758-24 Rough Concentrate	Production Composite Floatation Tailings	
Weight of dry sample used	Weighing Scale	g	0.01	250	250	N/A
Volume of DI water used	Graduated Cylinder	mL	0.50	750	750	750
On filtered samples (using 0.45 µm filter paper):						
pH	Meter	pH units	0.01	7.0	7.4	5.6
EC	Meter	mV	1.0	353	655	1.8
Acidity (to pH 8.3)	Titration	mg $CaCO_3$/L	0.5	3.6	3.9	1.3
Total Alkalinity (to pH 4.5)	Titration	mg $CaCO_3$/L	0.5	28.9	39.5	0.3
Sulphate	Colourimetry	mg/L	0.5	103.5	203.0	<0.5
Phosphorous	IC	mg/L	0.0050	0.0053	0.0068	<0.0050
Dissolved Metals Analysis by ICP-MS:						
Dissolved Hardness (CaCO3)	ICP-MS	mg/L	0.5	124.0	74.0	<0.500
Aluminum Dissolved	ICP-MS	mg/L	0.005	0.0649	0.136	<0.0050
Antimony Dissolved	ICP-MS	mg/L	0.0002	0.00873	0.0104	<0.00020
Arsenic Dissolved	ICP-MS	mg/L	0.0005	0.00312	0.0124	<0.00050
Barium Dissolved	ICP-MS	mg/L	0.005	0.0344	0.0528	<0.0050
Beryllium Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010	<0.00010
Bismuth Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010	<0.00010
Boron Dissolved	ICP-MS	mg/L	0.05	<0.0500	<0.0500	<0.0500
Cadmium Dissolved	ICP-MS	mg/L	0.00001	0.00003	<0.000010	<0.000010
Calcium Dissolved	ICP-MS	mg/L	0.2	37.5	26.5	<0.20
Chromium Dissolved	ICP-MS	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Cobalt Dissolved	ICP-MS	mg/L	0.0001	0.00104	0.00222	<0.00010
Copper Dissolved	ICP-MS	mg/L	0.0004	0.00082	0.00929	<0.00040
Iron Dissolved	ICP-MS	mg/L	0.01	<0.010	0.045	<0.010
Lead Dissolved	ICP-MS	mg/L	0.0002	0.00063	<0.00020	<0.00020
Lithium Dissolved	ICP-MS	mg/L	0.0001	0.0058	0.0053	<0.00010
Magnesium Dissolved	ICP-MS	mg/L	0.01	7.3	1.9	0.093
Manganese Dissolved	ICP-MS	mg/L	0.0002	0.134	0.0239	0.00324
Mercury Dissolved	CVAF	mg/L	0.00001	<0.000010	0.000025	<0.000010
Molybdenum Dissolved	ICP-MS	mg/L	0.0001	0.00945	0.0182	<0.00010
Nickel Dissolved	ICP-MS	mg/L	0.0004	0.00543	<0.00040	<0.00040
Phosphorus Dissolved	ICP-MS	mg/L	0.05	<0.050	<0.050	<0.050
Potassium Dissolved	ICP-MS	mg/L	0.1	11.4	13.5	<0.10
Selenium Dissolved	ICP-MS	mg/L	0.0005	0.00814	0.00086	<0.00050
Silicon Dissolved	ICP-MS	mg/L	1	<1.0	1	<1.0
Silver Dissolved	ICP-MS	mg/L	0.00005	0.000155	0.000096	<0.000050
Sodium Dissolved	ICP-MS	mg/L	0.1	1.58	82.8	<0.10
Strontium Dissolved	ICP-MS	mg/L	0.001	0.933	1.08	0.0013
Sulphur Dissolved	ICP-MS	mg/L	3	59.3	78.6	<3.0
Tellurium Dissolved	ICP-MS	mg/L	0.0005	<0.00050	<0.00050	<0.00050
Thallium Dissolved	ICP-MS	mg/L	0.00002	0.000268	0.000079	<0.000020
Thorium Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010	<0.00010
Tin Dissolved	ICP-MS	mg/L	0.0002	<0.00020	<0.00020	<0.00020
Titanium Dissolved	ICP-MS	mg/L	0.005	<0.0050	<0.0050	<0.0050
Tungsten Dissolved	ICP-MS	mg/L	0.001	0.115	0.0141	<0.0010
Uranium Dissolved	ICP-MS	mg/L	0.00002	0.0012	0.000748	<0.000020
Vanadium Dissolved	ICP-MS	mg/L	0.001	<0.0010	<0.0010	<0.0010
Zinc Dissolved	ICP-MS	mg/L	0.004	<0.0040	<0.0040	<0.0040
Zirconium Dissolved	ICP-MS	mg/L	0.0001	<0.00010	<0.00010	<0.00010
Ion Balance:						
Major Anions	Calc.	meq/L		2.73	5.02	
Major Cations	Calc.	meq/L		2.86	5.47	
Difference	Calc.	meq/L		0.13	0.45	
Balance (%)	Calc.	%		2.3%	4.3%	
			Shake Flask Extract ID:	21K3067-01	21K3067-02	*21K3067-03*

NOTES:
Job No: 21K3067
Date of Analysis (24 h): November 25, 2021
pH of DI water used (pH Units): 5.56
EC of DI water used (µS/cm): 0.96
ABBREVIATIONS:
R / Rep = Replicate (which involves the analysis of the same Shake Flask Extract aliquot).
D / Dup = Duplicate (which involves the analysis of a separate SF extract, produced by processing a secopnd split of the original client sample received).
Calc. = Calculation
EC = Electrical Conductivity
IC = Ion Chromatography
N/A = Not Applicable.
mg/L = Milligrams per Litre
REFERENCE:
Prediction Manual for Drainage Chemistry from Sulphidic Geologic Material, MEND Report 1.20.1; Version 0 - Dec. 2009. Section 11.5; P 11 (8-9).
Extraction Method used: Using gyratory shaker for 24 h (± 2 h; gentle agitation).
Liquid: Solid ratio used: 3: 1; L: S; 750 mL DI H_2O: 250 g of homogenized as received material.

Sulphate:

Certified Reference Material:	Parameter: Sulphate	% Recovery	Matrix Spike %	Units	QC Limits (%)
STD Mineral Water (28.5 mg/L)	26.20	91.9%		%	80 - 120
Spiked Blank (19.61 mg/L)	20.80		106.1%	%	80 - 120

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
21K3067_B1K2850-BLK1	Aluminum dissolved	<0.0050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.005	mg/L		
21K3067_B1K2850-BLK1	Antimony dissolved	<0.00020	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0002	mg/L		
21K3067_B1K2850-BLK1	Arsenic dissolved	<0.00050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0005	mg/L		
21K3067_B1K2850-BLK1	Barium dissolved	<0.0050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.005	mg/L		
21K3067_B1K2850-BLK1	Beryllium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0001	mg/L		
21K3067_B1K2850-BLK1	Bismuth dissolved	<0.00010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0001	mg/L		
21K3067_B1K2850-BLK1	Boron dissolved	<0.0500	mg/L	F	metals	EPA 6020B	25-Nov-21	0.05	mg/L		
21K3067_B1K2850-BLK1	Cadmium dissolved	<0.000010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.00001	mg/L		
21K3067_B1K2850-BLK1	Calcium dissolved	<0.20	mg/L	F	metals	EPA 6020B	25-Nov-21	0.2	mg/L		
21K3067_B1K2850-BLK1	Chromium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0005	mg/L		
21K3067_B1K2850-BLK1	Cobalt dissolved	<0.00010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0001	mg/L		
21K3067_B1K2850-BLK1	Copper dissolved	<0.00040	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0004	mg/L		
21K3067_B1K2850-BLK1	Iron dissolved	<0.010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.01	mg/L		
21K3067_B1K2850-BLK1	Lead dissolved	<0.00020	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0002	mg/L		
21K3067_B1K2850-BLK1	Lithium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0001	mg/L		
21K3067_B1K2850-BLK1	Magnesium dissolved	<0.010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.01	mg/L		
21K3067_B1K2850-BLK1	Manganese dissolved	<0.00020	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0002	mg/L		
21K3067_B1K2850-BLK1	Molybdenum dissolved	<0.00010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0001	mg/L		
21K3067_B1K2850-BLK1	Nickel dissolved	<0.00040	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0004	mg/L		
21K3067_B1K2850-BLK1	Phosphorus dissolved	<0.050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.05	mg/L		
21K3067_B1K2850-BLK1	Potassium dissolved	<0.10	mg/L	F	metals	EPA 6020B	25-Nov-21	0.1	mg/L		
21K3067_B1K2850-BLK1	Selenium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0005	mg/L		
21K3067_B1K2850-BLK1	Silicon dissolved	<1.0	mg/L	F	metals	EPA 6020B	25-Nov-21	1	mg/L		
21K3067_B1K2850-BLK1	Silver dissolved	<0.000050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.00005	mg/L		
21K3067_B1K2850-BLK1	Sodium dissolved	<0.10	mg/L	F	metals	EPA 6020B	25-Nov-21	0.1	mg/L		
21K3067_B1K2850-BLK1	Strontium dissolved	<0.0010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.001	mg/L		
21K3067_B1K2850-BLK1	Sulfur dissolved	<3.0	mg/L	F	metals	EPA 6020B	25-Nov-21	3	mg/L		
21K3067_B1K2850-BLK1	Tellurium dissolved	<0.00050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0005	mg/L		
21K3067_B1K2850-BLK1	Thallium dissolved	<0.000020	mg/L	F	metals	EPA 6020B	25-Nov-21	0.00002	mg/L		
21K3067_B1K2850-BLK1	Thorium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0001	mg/L		
21K3067_B1K2850-BLK1	Tin dissolved	<0.00020	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0002	mg/L		
21K3067_B1K2850-BLK1	Titanium dissolved	<0.0050	mg/L	F	metals	EPA 6020B	25-Nov-21	0.005	mg/L		
21K3067_B1K2850-BLK1	Tungsten dissolved	<0.0010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.001	mg/L		
21K3067_B1K2850-BLK1	Uranium dissolved	<0.000020	mg/L	F	metals	EPA 6020B	25-Nov-21	0.00002	mg/L		
21K3067_B1K2850-BLK1	Vanadium dissolved	<0.0010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.001	mg/L		
21K3067_B1K2850-BLK1	Zinc dissolved	<0.0040	mg/L	F	metals	EPA 6020B	25-Nov-21	0.004	mg/L		
21K3067_B1K2850-BLK1	Zirconium dissolved	<0.00010	mg/L	F	metals	EPA 6020B	25-Nov-21	0.0001	mg/L		
21K3067_B1K2850-BS1	Aluminum dissolved	102	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Antimony dissolved	98	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Arsenic dissolved	87	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Barium dissolved	95	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Beryllium dissolved	101	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Bismuth dissolved	100	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Boron dissolved	106	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Cadmium dissolved	89	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Calcium dissolved	100	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Chromium dissolved	101	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Cobalt dissolved	97	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Copper dissolved	105	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Iron dissolved	95	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Lead dissolved	103	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Lithium dissolved	101	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Magnesium dissolved	107	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Manganese dissolved	94	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Molybdenum dissolved	98	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Nickel dissolved	100	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Phosphorus dissolved	95	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Potassium dissolved	105	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Selenium dissolved	82	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Silicon dissolved	96	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Silver dissolved	92	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Sodium dissolved	101	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Strontium dissolved	89	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Sulfur dissolved	95	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Tellurium dissolved	84	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Thallium dissolved	96	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Thorium dissolved	96	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Tin dissolved	103	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Titanium dissolved	112	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Tungsten dissolved	103	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Uranium dissolved	100	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Vanadium dissolved	105	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Zinc dissolved	100	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-BS1	Zirconium dissolved	105	%	F	metals	EPA 6020B	25-Nov-21	1	%	120	80
21K3067_B1K2850-SRM1	Aluminum dissolved	95	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Antimony dissolved	100	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Arsenic dissolved	94	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Barium dissolved	91	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Beryllium dissolved	108	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Boron dissolved	104	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Cadmium dissolved	91	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Calcium dissolved	102	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Chromium dissolved	102	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Cobalt dissolved	101	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Copper dissolved	97	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Iron dissolved	96	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Lead dissolved	112	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Lithium dissolved	109	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Magnesium dissolved	110	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Manganese dissolved	95	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Molybdenum dissolved	99	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Nickel dissolved	102	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Phosphorus dissolved	101	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Potassium dissolved	110	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Selenium dissolved	90	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Sodium dissolved	99	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Strontium dissolved	89	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Thallium dissolved	105	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70

Dissolved Metals by ICP-MS:

Sample Code	Parameter	Result	Result Units	Total or Filtered	Method Type	Method Name	Date Analyzed	EQL	EQL Units	UCL	LCL
21K3067_B1K2850-SRM1	Uranium dissolved	100	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Vanadium dissolved	101	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K2850-SRM1	Zinc dissolved	104	%	F	metals	EPA 6020B	25-Nov-21	1	%	130	70
21K3067_B1K3206-BLK3	Phosphorus Total Dissolve	<0.0050	mg/L	F	General Parameters	SM 4500-P F (2017)	30-Nov-21	0.005	mg/L		
21K3067_B1K3206-BS3	Phosphorus Total Dissolve	97	%	F	General Parameters	SM 4500-P F (2017)	30-Nov-21	1	%	115	85
21K3067_B1K3288-BLK1	Mercury dissolved	<0.000010	mg/L	F	metals	EPA 245.7*	30-Nov-21	0.00001	mg/L		
21K3067_B1K3288-BLK2	Mercury dissolved	<0.000010	mg/L	F	metals	EPA 245.7*	30-Nov-21	0.00001	mg/L		
21K3067_B1K3288-SRM1	Mercury dissolved	94	%	F	metals	EPA 245.7*	30-Nov-21	1	%	200	0
21K3067_B1K3288-SRM2	Mercury dissolved	95	%	F	metals	EPA 245.7*	30-Nov-21	1	%	200	0

NOTES:
Job No: 21K3067

Abbreviations & Descriptions:
Method Blank (Blk): A blank sample that undergoes sample processing identical to that carried out for the test samples.
Method Blank results are used to assess contamination from the laboratory environment and reagents.

Duplicate (Dup): An additional or second portion of a randomly selected sample in the analytical run carried through the entire analytical process.
Duplicates provide a measure of the analytical method's precision (reproducibility).

Blank Spike (BS): A sample of known concentration which undergoes processing identical to that carried out for test samples, also referred to as a laboratory control sample (LCS).
Blank spikes provide a measure of the analytical method's accuracy.

Matrix Spike (MS): A second aliquot of sample is fortified with a known concentration of target analytes and carried through the entire analytical process.
Matrix spikes evaluate potential matrix effects that may affect the analyte recovery.

Standard Reference Material (SRM): A homogenous material of similar matrix to the samples, certified for the parameter(s) listed.
Reference Materials ensure that the analytical process is adequate to achieve acceptable recoveries of the parameter(s) tested.

Each QC type is analyzed at a 5-10% frequency, i.e. one blank/duplicate/spike for every 10-20 samples.

For all types of QC, specified recovery (% Rec) and relative percent difference (RPD) limits are derived from long-term method performance averages and/or prescribed by the reference method.

EQL = Estimated Quantitation Limits
PQL = Practical Quantitation Limits
UCL = Upper Control Limit
LCL = Lower Control Limit
BLK = Blank
BS = Blank Spike
MS = Matrix Spike
DUP = Duplicate
SRM = Standard Reference Materials