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Troilus Gold Project -

Prediction of ARD Potential in the J4, 87, and Southwest Ore Zones -

Phase 1: Based on Generic ARD Criteria

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REPORT SUMMARY

Troilus Gold Corp. has asked the Minesite Drainage Assessment Group (MDAG) to develop criteria for three-dimensional Acid-Rock and Metal Leaching Drainage (ML-ARD) models of its three main ore zones: J4, 87, and Southwest (SW). These criteria were developed in this report by extrapolating acid-base accounting (ABA) results from many dozens of drillcore samples, and from dozens of subsamples from on-site ML-ARD leach columns, to more than 158,000 drillcore assays. In effect, the analytical results from many dozens of carefully selected ABA samples were used to mathematically convert more than 158,000 assays into surrogate ABAs.

The two main steps are:

1) identify additional, unmeasured Neutralization Potential (NP) in Troilus rock, and
2) extrapolate this to drillcore assays.

The value of these surrogate ABAs includes the following.

1) They provide a detailed estimate of the total amounts of rock in each ore zone that will eventually release ARD.

2) They can be combined with the Troilus Gold three-dimensional mining model for integrated assessments of mine planning, economics, and environmental protection.

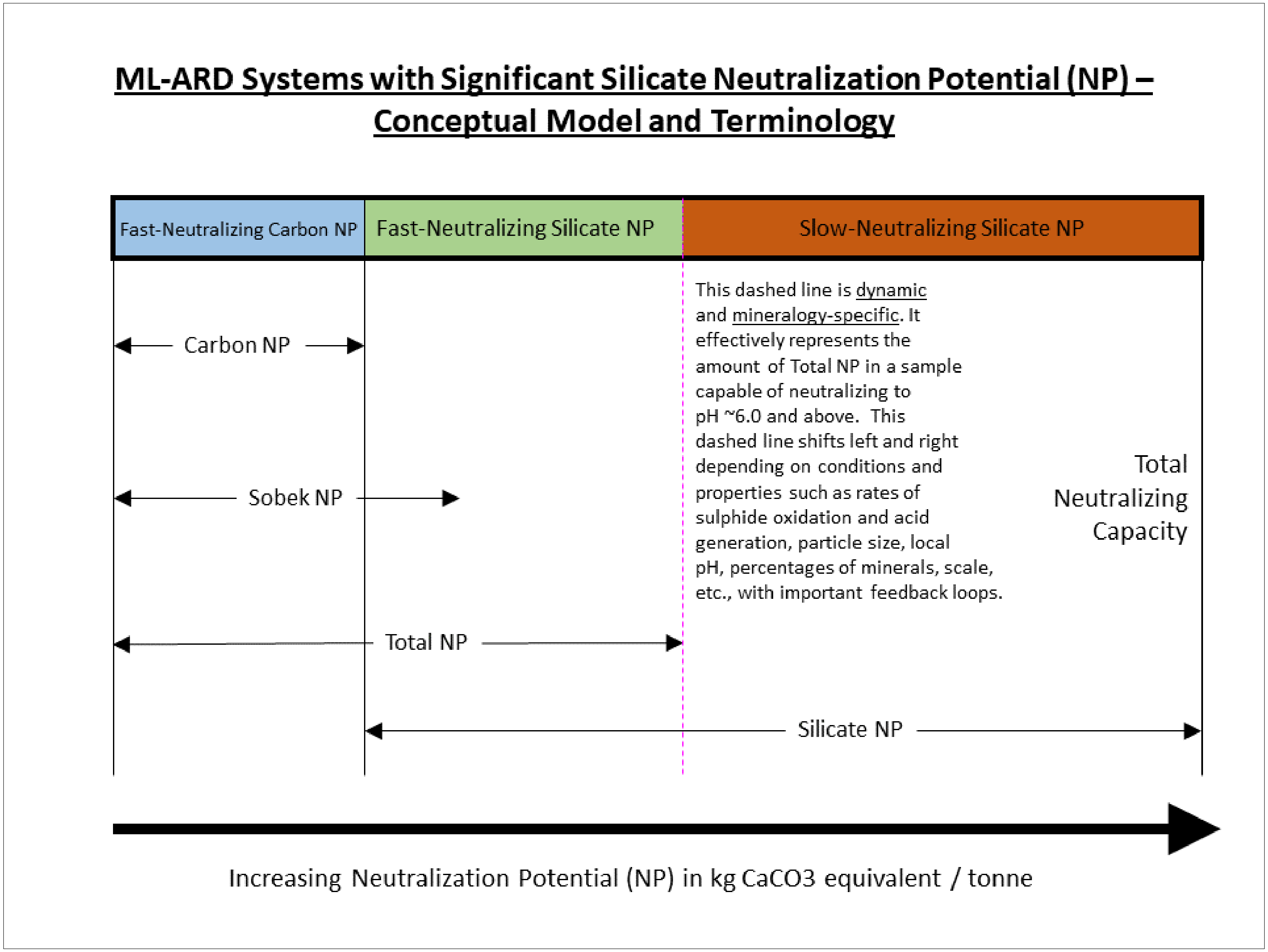
3) When combined with the three-dimensional mine model, they provide year-by-year estimates of the rock eventually releasing ARD, highlighting the extent and amount of ARD mitigation planning needed each year.

Prediction of ARD Potential in Troilus Rock

ARD prediction is partly based on the Total Acid Potential (TAP) that all the sulphide minerals can generate during full oxidation. As explained below, nearly all total sulphur in Troilus rock consists of potentially acid-generating sulphide, and thus total sulphur is nearly synonymous with sulphide. This is important because the ~158,000 assays include total sulphur, allowing the simple mathematical conversion from total sulphur to TAP in the assays.

ARD prediction is also partly based on Total Neutralization Potential (TNP). The ratio of TNP to TAP is the Total Net Potential Ratio (TNPR = TNP / TAP). If TNP exceeds TAP, then there is excess TNP and ARD is not expected. If TNP is less than TAP, then ARD is expected after some lag time.

While TAP is easy to estimate for the ~158,000 assays because total sulphur was measured, Total NP was not measured due to the large complexity and difficulty of detecting and calculating Total NP. Figure A on the next page shows the complexity of NP in Troilus rock, and the determination of Total NP is summarized in more detail below.



ML-ARD Systems with Significant Silicate Neutralization Potential (NP) – Conceptual Model and Terminology

This dashed line is dynamic and mineralogy-specific. It effectively represents the amount of Total NP in a sample capable of neutralizing to pH ~6.0 and above. This dashed line shifts left and right depending on conditions and properties such as rates of sulphide oxidation and acid generation, particle size, local pH, percentages of minerals, scale, etc., with important feedback loops.

Figure A. Conceptual model and terminology for various Neutralization Potentials in Troilus rock.

Geology and Mineralogy

The Troilus gold deposits are generally hosted in the Troilus Diorite, with lesser amounts in porphyritic felsic intrusions. The two main Ore Zones of sulphide-hosted gold and copper mined to date are 87 and J4, containing chalcopyrite, pyrite, and pyrrhotite. Thus, sulphur is an important primary geochemical constituent of Troilus rock, and also an important part of ARD predictions to calculate Total Acid Potential (TAP). Recently, the Southwest (SW) Zone has been upgraded to a third full ore zone.

Troilus is primarily a gold (Au) and copper (Cu) deposit. Nevertheless, it also contains minor amounts of silver (Ag), zinc (Zn), and lead (Pb), as well as traces of bismuth (Bi), tellurium (Te), and molybdenum (Mo). Ore grade rock is identified by its gold-equivalent content, which is a mathematical combination of gold, copper, and silver in a sample.

Gold mineralization is spatially correlated with the presence of sulphides, although the sulphide content does not directly correlate with gold and copper grade. Nevertheless, ore generally contains a higher ARD potential than waste rock due to its higher sulphur levels.

Gold-copper mineralization occurs mainly on the physical boundary of the Troilus Diorite (metadiorite, also reportedly appearing as gabbro), within breccias, amphibolite, and quartz - chlorite (±tourmaline) felsic vein swarms. Disseminated mineralization accounts for roughly 90% of Troilus ore, while quartz veining accounts for the remainder.

Five main lithological units are recognized in the Troilus area:
1) mafic to felsic volcanic sequence;
2) diorite (metadiorite) and brecciated diorite;
3) cross-cutting felsic dikes;
4) mafic to ultramafic intrusive; and
5) younger, post-deformation granitic intrusions crosscutting these other rock units.
Thus, there are many rock units at Troilus, but there are only a few major rock units in each of the J4, 87, and SW Ore Zones.

Details of the geology and mineralogy of each of the three ore zones were discussed in separate chapters of this report. For example, based on tens of thousands of drillcore assays, total sulphur in the ore zones is generally lognormally distributed, allowing the calculation of well defined statistical parameters like the mean and the standard deviation. Based on the major rock units, the sulphur statistics, and the three-dimensional locations within each ore zone, approximately 30 samples from each ore zone were selected for solid-phase ML-ARD analyses like acid-base accounting (ABA).

Results of Acid-Base Accounting (ABA)

Traditional ABA including various types of Neutralization Potential (NP) was conducted on:
- 89 ML-ARD samples selected from the three ore zones that were:
    - · generally proportional to the major rock units in each ore zone,

  - · based on tens of thousands of assays in each zone, particularly of potentially acid-generating sulphur with well-defined means and standard deviations, and
  - · collected over wide three-dimensional distributions in each zone.
- 34 subsamples of J4 rock placed in 13 on-site columns holding up to ~300 kg, with 11 columns (Columns 1 to 11) containing future waste rock with various sulphur levels and two columns (Column 12 and 13) containing existing J4 waste rock that has oxidized and weathered for at least 13 years; Column 12 is currently releasing ARD and Column 13 is not.

Paste pH, measured in a mixture of deionized water and pulverized sample of rock, ranged from 8.4 to 10.1. Therefore, all samples were alkaline at the time of analysis, with no acidic conditions detected. These values of paste pH indicated (1) the samples contained additional NP not detected by the standard procedures of Carbon NP and Sobek NP (see Figure A), and (2) the lowest pH values between 8.2 and 8.4 corresponded to sulphur levels above 1-2%S, suggesting at least 1%S would be needed to eventually create ARD.

The range of total sulphur in the 89 ML-ARD samples spans nearly three orders of magnitude, from 0.01%S to 7.15%S. This large range is expected because the 87 ML-ARD samples were selected based on standard deviations above and below the mean sulphur level in each rock unit in each zone. In general, the intrusive rock units (diorite, granite, and gabbro) have lower total-sulphur levels than the extrusive rock units (various volcanics and tuffs, and QFP). This confirms that these 89 ML-ARD samples generally reflect the variabilities of total sulphur seen in more than 158,000 Troilus assays, which was in fact a major objective of these ML-ARD samples. Most of the total sulphur is composed of potentially acid-generating sulphide, and thus total sulphur and sulphide can be used interchangeably. For the 89 ML-ARD samples and the more than 158,000 drillcore assays, Total Acid Potential (TAP in kg $CaCO_3$ equivalent / tonne) is calculated by: %S(total) * 31.25.

Neutralization Potential (NP) represents the amount of acidity that Troilus rock can neutralize upon the oxidation of sulphur. As part of ABA, NP is typically measured by procedures that require less than 24 hours and thus primarily detect fast-neutralizing minerals like carbonates (see Figure A). However, kinetic studies and on-site monitoring show that Troilus rock contains more NP than detected by these short-term methods, which is summarized in more detail below.

Net balances of acid potential and neutralization potential were calculated mathematically by division to obtain values of Total-Sulphur-Based Net Potential Ratio (TNPR) using both Sobek NP ("Sobek TNPR") and Carbon NP ("Carbon TNPR"). The generic criterion to distinguish net-acid-generating from net-neutralizing samples was 2.0 for Sobek TNPR and 0.5 for Carbon TNPR.

These TNPR values showed that nearly two-thirds (64%) of the 89 ML-ARD samples were not predicted to release ARD at anytime. The remaining 36% are predicted to release ARD eventually after various lag times, but this is based on the false assumption that measured Sobek NP represents all neutralization in Troilus rock (shown in Figure A above). In general, total sulphur levels below 0.15%S were consistently associated with higher TNPR values that would not release ARD, while total sulphur levels above 1.3%S were consistently associated with lower TNPR values that would eventually release ARD after various lag times. By individual ore zone and rock unit, the mean sulphur levels of some but not most rock units corresponded to a Sobek TNPR less than 2.0 and were thus capable of eventually releasing ARD. Due to logarithmic statistics this means that less than 50% of many rock units would release ARD.

The dominant chemical element in the 89 Troilus ML-ARD samples, analyzed by four-acid-digestion ICP-MS and x-ray-fluorescence (XRF) whole-rock procedures, was silica, reflecting the known aluminosilicate minerals and quartz, of which some provide additional neutralization (see Figure A above). Silica was followed in abundance by aluminum, iron, calcium, sodium, magnesium, and potassium. At lower and "trace" levels, the elements that frequently exceeded by three times their general crustal abundances were bismuth, copper, molybdenum, and tellurium, consistent with known and potentially economic elements at Troilus. Less frequent exceedances were seen for antimony, arsenic, cadmium, cesium, potassium, lithium, lead, nickel, rubidium, selenium, thallium, tungsten, uranium, and zinc. However, solid-phase levels rarely correlate with leaching rates into water. Thus, leaching tests of Troilus rock on various scales are being conducted separately. Nevertheless, correlations of some elements with total sulphur or Neutralization Potential suggest these elements might have higher leaching rates during active sulphide oxidation and neutralization.

On-Site ML-ARD Columns

At the Troilus Gold site, 11 ML-ARD columns were built and filled with up to about 100 kg of fresh J4 drillcore. An additional two ML-ARD columns were filled about 300 kg of J4 rock from the existing J4 waste-rock pile that has been exposed and oxidizing for 14-28 years. Column 12 contains brown, well-oxidized, and acidic existing J4 rock with abundant fine particles. Column 13 contains grey, near-neutral existing J4 rock with abundant fine particles. There is a visible distinction at Troilus between the weathered brown rock and the relatively unweathered grey rock.

The pre-testing paste pH values indicated all rock subsamples from these columns were near neutral, and the initial effluents from all columns were initially near neutral. However, within a few weeks, the effluent pH from Column 12 with brown rock fell below 4.5 and eventually reached a typical ARD pH around 3.5. In contrast, the pH from Column 13 with existing grey rock remained near neutral, typically around pH 6.0-6.5 but with some higher and lower values. This pH range is also typical of pH measured after mine closure at Monitoring Station STP-09 for the full-scale, existing J4 waste-rock pile containing tens of millions of tonnes of rock.

Pre-testing ABA results for the column subsamples were consistent with the 89 ML-ARD samples discussed above, based on a Sobek TNPR criterion of 2.0 and a Carbon TNPR criterion of 0.5. Thus, (1) higher levels of total sulphur are associated with lower, but still near-neutral paste pH; (2) total sulphur levels below 0.15%S are consistently net neutralizing; (3) total sulphur levels above 1.3%S (like Column 12) are consistently net acid generating and capable of releasing ARD after various lag times; (4) total sulphur levels between 0.15%S and 1.3%S (like Column 13 and the samples studied by the National Research Council of Canada, 2023) require additional information on Silicate Neutralization Potential (Figure A above) for ARD predictions; and (5) the amount of Total NP in Troilus rock may depend on the amount of total sulphur and its oxidation rate rather than being a certain numerical value (vertical dashed line in Figure A). The additional NP not currently detected in Troilus rock can cause TNPR values to increase significantly and thus to have less ARD potential than reported at this point. Chapter 7 addresses this additional Silicate NP.

Estimation of Fast-Neutralizing Silicate NP from the Amount of Solid-Phase Calcium in a Sample

Based on advanced, state-of-the-art techniques by the National Research Council of Canada (NRC), the detailed mineralogy including various forms of plagioclase has been measured in samples of existing J4 waste rock at Troilus Gold. Rates of oxygen consumption by sulphide minerals, which in turn results in acid generation, were also measured in two samples, with particle sizes of approximately 1 and 5 mm. These rates were 69 mg $CaCO_3$/kg/week for the fine 1 mm rock and 21 mg $CaCO_3$/kg/week for the coarser 5 mm rock.

In order to estimate the amount of unmeasured, Silicate Neutralization Potential (Silicate NP, Figure A) in these samples, databases on reaction rates of silicate minerals and their total capacities to neutralize were combined into the spreadsheet-based MDAG Silicate NP Model. This Model was then applied to the state-of-the-art mineralogy of Troilus rock by NRC.

This showed that the NRC samples of Troilus rock contained a total Silicate NP of 160 kg of $CaCO_3$ equivalent/tonne of rock, plus about 2 kg/t of Carbon NP, for a Theoretical Total Neutralizing Capacity of 162 kg/t as depicted in Figure A. Notably, when the Silicate Neutralization Rate was separated into rates for each relevant silicate mineral, at least 95% of the Rate could be attributed to the two calcium-rich plagioclase minerals, bytownite and labradorite. Combined, bytownite and labradorite in the NRC sample represent a Fast-Neutralizing Silicate NP of only 24 kg/t (14 + 9.9 kg/t) for ARD predictions, while accounting for at least 95% of active neutralization by silicate minerals but only 7.7% of the entire rock mass. In other words, while this sample has a Silicate NP of 160 kg/t, only15% (24/160) of this Silicate NP is sufficiently reactive to fully neutralize at the acid-generation rate, particle size, and particle-scale pH in this sample. At the current, relatively slow near-neutral rates, the amounts of bytownite and labradorite would persist and neutralize for up to several centuries.

These observations led to several complex observations and predictions. For example:

- If the rate of sulphide oxidation and acid generation did not decrease by at least 95% of the current initial rates within weeks to months, ARD could appear from this sample.
- However, if this ARD results in a pH below the current particle-scale of pH 3.5, then the Silicate Neutralization Rate would increase. For example, if pH fell to 3.0 at the current acid-generation rate after all bytownite was consumed, then the rate of neutralization from labradorite would accelerate sufficiently to neutralize overall pH above pH 6.
- At slower rates of acid generation such as from coarser particles, additional silicate minerals can contribute significant neutralization, like andesine, which also means that there would then be additional Fast-Reacting Silicate NP above the 24 kg/t from bytownite and labradorite.
- At some faster rates of oxidation, neutralization by bytownite and others would no longer be able to "keep up" and ARD would appear, unless pH around mineral grains falls

below 3.5 to cause a higher rate of Silicate Neutralization Rate from the remaining silicate minerals.

Based on the mineralogy of the rock tested by the National Research Council of Canada, the amount of Fast-Neutralizing Silicate NP relative to the calcium-rich plagioclase minerals can be estimated from (1) measured solid-phase concentrations of total calcium and (2) the sample's solid-phase Calcium Molar Ratio based on (calcium + sodium). This equation ("Equation 7-5") is:
Fast-Neutralizing Silicate Neutralization Potential (kg $CaCO_3$ eq / t) =

$$\text{Total \%Ca in sample} * [(1.167 * \text{Sample Calcium Molar Ratio}) - 0.167] * 25 \text{ kg } CaCO_3/\text{t} / \%\text{Ca}$$

This equation and the stepwise approach of Table A below to obtain Total NP and Total TNPR were tested on subsamples of the on-site ML-ARD Columns. For Column 12 with ongoing release of ARD around pH 3.5, its 10 subsamples all had Total TNPR values less than the criterion of 1.0. On the other hand, all but one of the 10 subsamples of near-neutral Column 13 had Total TNPR values greater than 1.0. Thus, this approach and equation were successful for predicting ARD potential in J4 rock.

Silicate-mineral neutralization in these Troilus samples is remarkably similar to that documented more than 10 years ago at a former minesite in British Columbia.

- ABA results indicated ARD should be widespread, but no full-scale ARD was detected at the site over decades.
- Small-scale kinetic tests produced ARD, although no full-scale ARD was detected on site after decades.
- Calcite and carbonate minerals represented a minor portion of Total NP, with ongoing weathering of rock producing small amounts of carbonate that are detected in ABA.
- Aqueous alkalinity can be accounted for by ingassing of atmospheric carbon dioxide.
- Minerals like biotite, magnetite, and epidote theoretically contributed substantially to Total NP, but apparently were not reacting sufficiently fast to provide much neutralization.
- Plagioclase minerals apparently provided most of the silicate neutralization, but they were at relatively lower levels than seen at Troilus in the samples tested by National Research Council of Canada (2023).
- Plagioclase minerals were not separated as done for Troilus, but tended to be more sodium rich than Troilus, and thus with less neutralization and at slower rates.
- Acid-generating sulphide minerals were primarily pyrite and pyrrhotite with some chalcopyrite and molybdenite, and their levels ranged from trace amounts (<~0.1%S) up to ~5%S.
- Rates of acid generation at this site were generally lower than at Troilus, around 7 mg$CaCO_3$ equivalent/kg/wk under near-neutral conditions and around 20-30 mg/kg/wk under acidic conditions, which was attributed to trace amounts of molybdenite that may suppress sulphide oxidation.

Table A. The stepwise site-specific approach to calculating Silicate NP in Troilus rock based only on the most reactive feldspar minerals of bytownite and labradorite

Step 1	Obtain measured total calcium and sodium in weight-% in a sample using four-acid-digestion ICP-MS or XRF analytical techniques	Solid-phase Total Calcium and Sodium are measured
Step 2	Calculate the amount of measured %Ca that is not in plagioclase minerals such as calcite and tremolite[1], and subtract it from measured Total Calcium	Plagioclase %Ca = Total %Ca - Non-Plagioclase %Ca[1]
Step 3	Multiply Plagioclase %Ca from Step 2 by an equation including the Sample Calcium Molar Ratio to obtain its most reactive neutralizing fraction	Fast-Neutralizing %Ca = Plagioclase %Ca * [(1.167 * Sample Calcium Molar Ratio) - 0.167]
Step 4	Obtain Fast-Neutralizing Silicate NP reflecting only the most reactive silicate mineral in Troilus rock by mathematical conversion to typical units	Fast-Neutralizing Silicate NP in kg $CaCO_3$ equivalent/tonne = Fast-Neutralizing Plagioclase %Ca * 25
Step 5	Obtain the Total NP of the sample	Total NP in kg/t = Fast-Neutralizing Silicate NP plus Carbon NP[1]
Step 6	Calculate Total TNPR and apply a criterion of 1.0 with Total TNPR < 1.0 potentially capable of releasing ARD after some lag time	Total TNPR (kg/t) = Total NP / (Total Sulphur in %S * 31.25)

[1] If calcite and its Carbon NP are not available separately (which is the case for most of the ~158,000 drillcore intervals), its %Ca is automatically included as Plagioclase %Ca in Step 2, and thus calcite is downgraded to a feldspar mineral as a safety factor with significantly less NP than reality; when the amount of tremolite is not known (which is the case for virtually all of the ~158,000 drillcore intervals), then Plagioclase %Ca = Total %Ca in Step 2 and the calculations in these Steps are designed for this situation based on Sample %Ca rather than Plagioclase %Ca as explained in the text.

Surrogate ABA Results from the Assay Databases for J4, 87, And SW Zones

A major objective of this report is to use the analytical results from dozens of carefully selected ABA samples and from on-site ML-ARD columns to mathematically convert more than 158,000 drillcore assays into surrogate ABAs.

These surrogate ABAs for ~158,000 drillcore intervals can meet the following requirements.

1) They provide a detailed estimate of the total amounts of rock in each ore zone that will eventually release ARD.
2) They can be combined with the Troilus Gold three-dimensional mining model for integrated assessments of mine planning, economics, and environmental protection.
3) When combined with the three-dimensional mine model, they provide year-by-year estimates of the rock eventually releasing ARD, highlighting the extent and amount of ARD mitigation planning needed each year.

The surrogate ABAs for drillcore were obtained following the stepwise procedure in Table A above. This table summarizes the procedure for estimating Fast-Neutralizing Silicate Neutralization Potential (NP), based on a sample's measured amounts of solid-phase calcium and sodium, which is then added to Carbon NP to obtain Total NP. Total NP is then mathematically divided by a sample's Total Acid Potential based on a sample's total sulphur level multiplied by 31.25. This division yields Total Total-Sulphur-Based Net Potential Ratio (Total TNPR). A Total TNPR value less than 1.0 for a drillcore interval is predicted to eventually release ARD after some lag time.

Several general observations can be made about these surrogate ABAs from drillcore assays of roughly 158,000 core intervals.

- There were no carbon analyses for J4 drillcore, less than 200 for 87 drillcore, and 7009 valid carbon analyses for SW. Therefore, the rapid and strong neutralization provided by calcite in Troilus rock is not well known or defined. As explained in Table A, the unknown amount of calcium associated with calcite in nearly all drillcore intervals was "downgraded" and made much less neutralizing by considering it part of Silicate NP.
- Assays and chemical analyses are subject to minimum and maximum detection limits and mathematical division is not possible with zero values in the divisor. As a result, some artifacts appear such as spikes in certain statistical ranges.
- The Bulk Total TNPR of each ore zone can be calculated using mathematical division of the sum of all intervals' surrogate Total NP by the sum of all intervals' Total Acid Potential (TAP). Bulk Total TNPR values for all three ore zones are above 1.0 with SW Zone having the highest bulk values. Thus, on average and in bulk, all Troilus rock will not release ARD, although smaller-scale amounts could do so.
- Overall, the statistical distributions of Total NP and of Total TNPR are generally lognormal. Thus, as single ore zones, the proportions of all rock, as ore + waste or as waste only, can be reliably calculated for J4, 87, and SW Zones, which is one of this report's objectives. For example about twice the percentage of J4 Zone waste rock (26.3%) is predicted to release ARD compared with SW Zone rock (13.5%), although in bulk and on average ARD would not be released based on Bulk Total

TNPR.

-The other objectives of three-dimensional distributions of surrogate Total TNPR and the year-to-year TNPR levels during mining can be met by importing the surrogate ABAs into Troilus Gold's mine model for the three ore zones.

1. INTRODUCTION

1.1 An Explanation of Acid Rock Drainage (ARD) and Its Prediction

Metal leaching (ML) and acid rock drainage (ARD) are often water-quality issues for minesites (e.g., Price, 2009; Morin and Hutt, 1997 and 2001). As a result, the accurate prediction and control of ML-ARD at proposed minesites are high priorities of various levels of government.

ARD is caused by oxidation of sulphide minerals, particularly iron-bearing sulphides like pyrite and pyrrhotite. Whether sulphide minerals are present or not, weathering can still lead to accelerated metal leaching (ML). For example, the simple dissolution of carbonate minerals can release metals.

Put simply, ML-ARD potential is synonymous with potential for on-site inorganic water contamination. If a significant potential exists at a site, then mitigative measures would be needed to prevent this water from migrating offsite and into the surrounding environment.

A primary analytical tool for predicting ARD potential is called "Acid-Base Accounting" or ABA. ABA consists of several laboratory analyses that, when combined, predict whether a sample (1) will never release ARD and will remain net acid neutralizing or (2) will eventually be net acid generating and release ARD after some "lag time".

1.2 The Approach and Objectives in This Report to Predict ARD

Troilus Gold Corp. has asked the Minesite Drainage Assessment Group (MDAG) to develop criteria for three-dimensional ARD models of its three main ore zones: J4, 87, and Southwest (SW). These criteria are developed in this report by extrapolating ABA results from many dozens of drillcore samples to more than 158,000 drillcore assays.

The two main steps are:

1) identify additional, unmeasured Neutralization Potential (NP) in Troilus rock, and
2) extrapolate this to drillcore assays.

To start, approximately 30 core samples each from of J4, 87, and SW Zones (a total of 89 samples) were selected in this report for ABA analyses for a total of 89 samples:

1) to obtain some very widely spatially spaced ARD data like Neutralization Potential (NP) for the proposed new rock to be mined;
2) to have an improved idea of ARD variability in three dimensions throughout the proposed ore zones and their pits;
3) to assess the general variability of ABA characteristics within each rock unit; and,
4) to learn if existing extensive assay data can act as ABA surrogates.

Additionally, 34 subsamples were collected from the 13 on-site ML-ARD columns holding up to ~300 kg of J4 rock. Two of the 13 on-site columns contain existing J4 waste rock that has oxidized and weathered for at least 13 years, with one column currently releasing ARD.

In effect, the analytical results from these many dozens of carefully selected ABA samples are used in this report to mathematically convert more than 158,000 assays into surrogate ABAs.

The value of these surrogate ABAs includes the following.

1) They provide a detailed estimate of the total amounts of rock in each ore zone that will eventually release ARD.
2) They can be combined with the Troilus Gold three-dimensional mining model for integrated assessments of mine planning, economics, and environmental protection.
3) When combined with the three-dimensional mine model, they provide year-by-year estimates of the rock eventually releasing ARD, highlighting the extent and amount of ARD mitigation planning needed each year.

Surrogate ABAs for Troilus rock require estimates of Total Acid Potential (TAP) and Total Neutralization Potential (TNP) for each core interval. As explained in Chapters 6 and 7, the ~158,000 Troilus assays include total sulphur from which TAP can be calculated simply, but TNP is more complicated (Figure 1-1) and requires additional calculations.

1.3 This Generic Phase 1 Work Will Be Followed by Site-Specific Phase 2 Work

ABAs are relatively short-term tests. For example, the measurement of Neutralization Potential (NP) typically requires one day or less. It would be naive to believe that 24 hours of testing can predict ARD reliably over many years to decades.

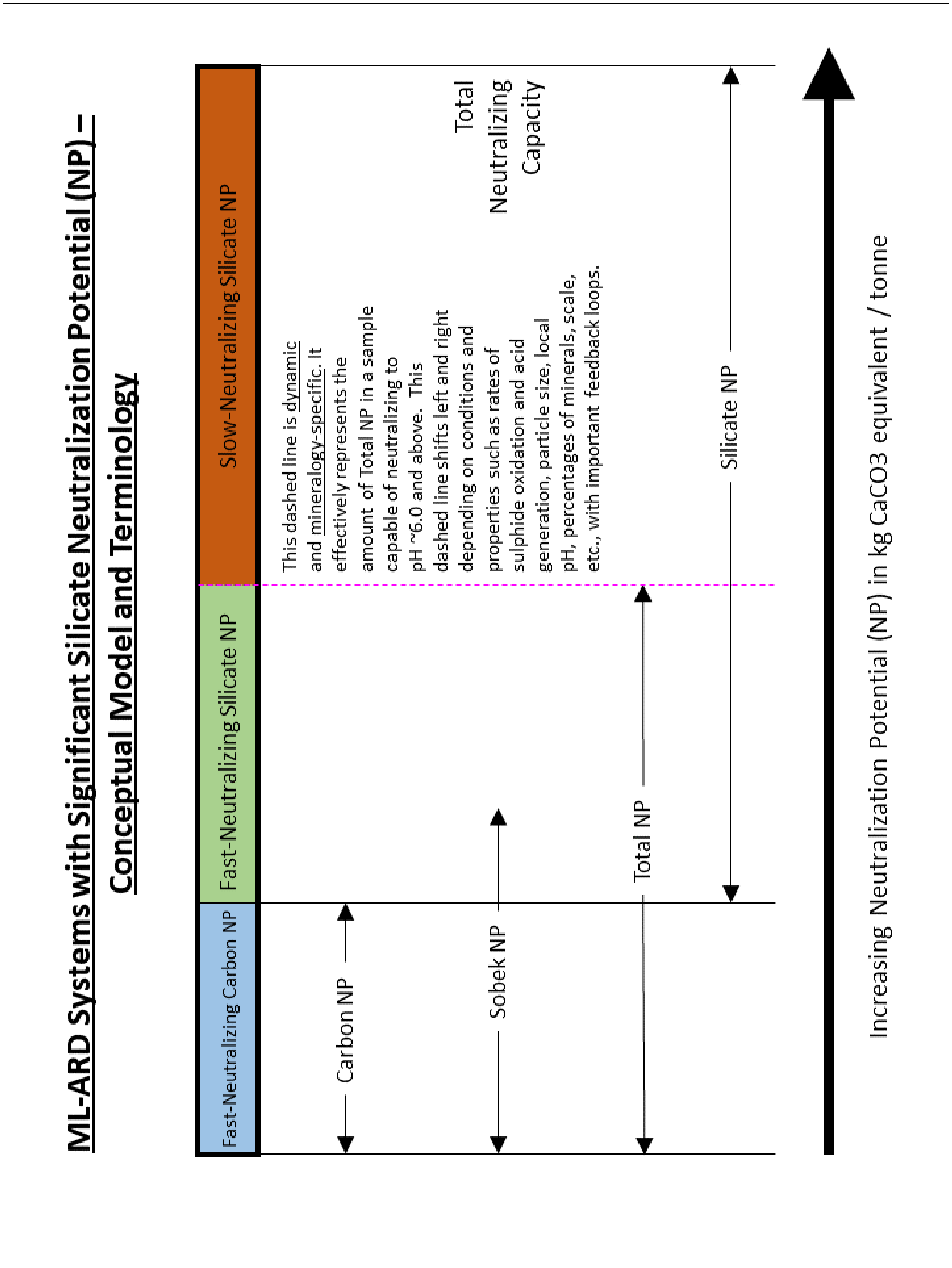
Therefore, there are generic criteria for interpreting ABAs based on long-term assumptions and extrapolations. These assumptions and extrapolations are not reliable for some minesites, and are being tested for Troilus rock using kinetic tests like laboratory-based humidity cells and on-site leach columns.

Many years of monitoring and study have shown that Troilus rock does not obey the generic predictive ARD criteria. Instead, Troilus rock contains more NP and less ARD potential than generic ABA shows (Figure 1-1).

However, site-specific criteria for Troilus are not yet finalized. Therefore, this report is “Phase 1” based on generic criteria and is expected to exaggerate ARD potential at Troilus, and a “Phase 2” will follow when site-specific criteria are available.

1.4 The Structure of This Report

This report starts by summarizing the general geology, rock units, and mineralogy of the Troilus Gold site in Chapter 2. Then, for the J4, 87, and SW Ore Zones at Troilus, Chapters 3 to 5 summarize zone-specific geology and rock units, geostatistics of potentially acid-generating sulphur, three-dimensional distributions of sulphur, and rationales for the ML-ARD ABA samples chosen from drillcore to represent each zone and each rock unit.



ML-ARD Systems with Significant Silicate Neutralization Potential (NP) – Conceptual Model and Terminology

This dashed line is dynamic and mineralogy-specific. It effectively represents the amount of Total NP in a sample capable of neutralizing to pH ~6.0 and above. This dashed line shifts left and right depending on conditions and properties such as rates of sulphide oxidation and acid generation, particle size, local pH, percentages of minerals, scale, etc., with important feedback loops.

Figure 1-1. Conceptual model and terminology for various Neutralization Potentials in Troilus rock.

Chapter 6 interprets the analytical results from selected ABA samples of drillcore and from the on-site ML-ARD columns using generic ARD criteria. Chapter 7 then develops a site-specific Silicate Model based on Figure 1-1 above to estimate the additional, unmeasured Neutralization Potential (NP) in Troilus rock.

Chapter 8 uses Chapters 6 and 7 to convert ~158,000 drillcore assays into surrogate ABAs. This information is then used to estimate the overall bulk potential for ARD from each ore zone and to estimate the percentage of each ore zone that has the potential to release ARD after various lag times.

All analytical data are compiled in the appendices.

2. GENERAL GEOLOGY AND MINERALOGY OF THE TROILUS SITE

Most of the following information in this chapter is taken from AGP Mining Consultants (2020a), the Technical Report and Mineral Resource Estimate, and from AGP Mining Consultants (2020b), the Preliminary Economic Assessment.

2.1 Background on Geology and Mineralogy

The Troilus gold deposits are generally hosted in the Troilus Diorite, with lesser amounts in porphyritic felsic intrusions (Figure 2-1). The two main zones of sulphide-hosted gold and copper mined to date are 87 and J4, containing chalcopyrite, pyrite, and pyrrhotite. Recently, the Southwest (SW) Zone has been upgraded to a third full ore zone.

Gold-copper mineralization occurs mainly on the physical boundary of the Troilus Diorite (metadiorite, also reportedly appearing as gabbro), within breccias, amphibolite, and quartz - chlorite (±tourmaline) felsic vein swarms. Disseminated mineralization accounts for roughly 90% of Troilus ore, while quartz veining accounts for the remainder.

2.2 Timeline of Previous Mining at Trolius

Detailed mineral exploration of the Troilus area began in the late 1950's after the discovery of many erratic blocks of rock containing copper and nickel anomalies. Thus, Troilus was also known at that time as a potential nickel deposit.

1985-1987	Kerr Addison stakes more than 1,500 claims in the Troilus area and discovers gold and copper.
1988	Minnova options 50% interest in Troilus from Kerr Addison and becomes operator.
1993	Metall Mining Corporation acquires 100% interest in Troilus. Positive Feasibility Study completed based on a 10 ktpd open-pit operation (Kilborn)
1994	Construction of the Troilus Mine commences.
1995	Metall Mining Corporation changes its name to Inmet Mining Corporation. A 44 km access road from Route du Nord, a 137 km power line and two substations are completed.
1996	Construction of the Troilus Mine completed, production commences.
1997	Commercial Production – mill achieves 10,000 tpd

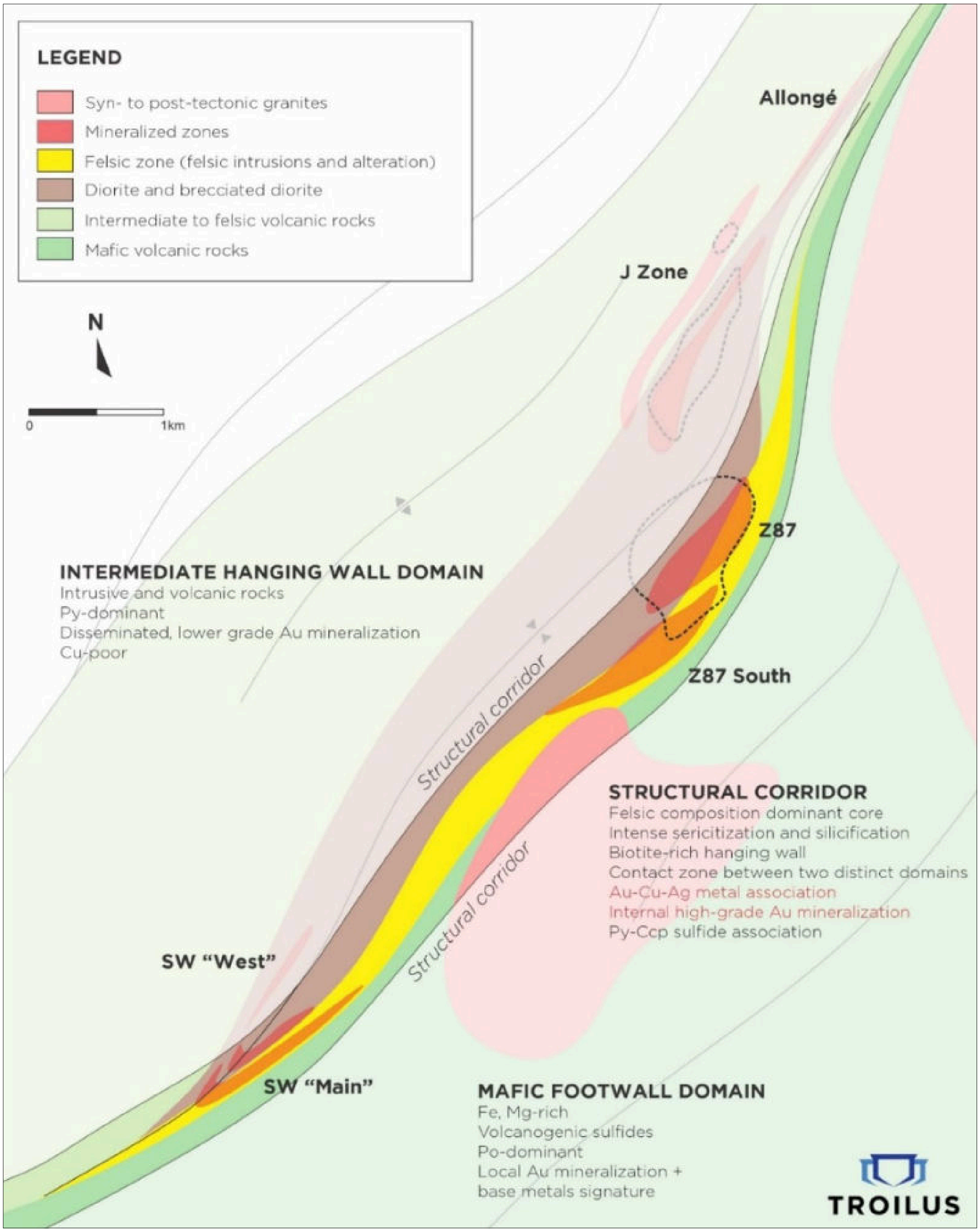


Figure 2-1. Map of the major ore zones and rock units at Troilus Gold (from AGP Mining Consultants, 2020a and 2020b).

1998-2005	Inmet completed two mill expansions, increasing throughput from 10,000 tpd to 20,000 tpd by 2005
2008-2009	Mining at J4 Pit completed in May 2008. Mining at Z87 Pit completed, last truck load in April 2009.
2010	Mill stops in June and is sold in September. Camp is sold in November, and subsequently dismantled.

2.3 Troilus Site Geology

Five main lithological units are recognized in the Troilus area (Figure 2-1):

1) mafic to felsic volcanic sequence;
2) diorite (metadiorite) and brecciated diorite;
3) cross-cutting felsic dikes;
4) mafic to ultramafic intrusive; and
5) younger, post-deformation granitic intrusions crosscutting these other rock units.

2.3.1 Mafic to felsic volcanic sequence

A thick sequence of volcanic rocks of variable composition occurs throughout the entire Troilus property and around the ore deposits. The southeastern region is dominated by mafic volcanics, essentially represented by massive and/or pillow basalts. Locally, the mafic volcanic rocks often display a compositional millimetric to centimetric banding, marked by alternating amphibole-rich, green-to-dark-green layers, with light-green or white-greyish feldspar and epidote-rich bands. This rock unit is seen on the footwall zones of 87 and 87South (87South is now considered part of 87).

This basaltic sequence is overlain, in gradual contact, with a more intermediate to felsic composition banded and laminated sequence. Quartz-feldspar-rich bands and layers are dominant over light-green amphibole layers. Local garnet-rich quartz-rich intervals resembling volcaniclastic rocks occur towards the top of the sequence, as well as amorphous quartz-bands that could represent exhalative horizons.

In the hanging wall portion of the J zones, the volcanic sequence is mainly represented by a finely laminated intermediate rock, grey to light-green in colour, often showing quartz and pink-garnet-rich horizons. In the southern portion of the J4 pit, an amphibole-rich, volcaniclastic brecciated unit contains intensely altered, irregularly shaped epidote-feldspar-rich clasts. The matrix is locally rich in magnetite.

Metric to decametric-scale lenses of rhyolite are identified within the volcanic sequence, and mainly occur bordering the diorite intrusion. White, massive rhyolite outcrops in the southwestern region of the deposit, in the SW and 86 Zones, have also been described in the hanging wall of the J4 pit.

The contact between the volcanic sequence and the diorite intrusion in the 87 and J Zones region is difficult to identify and appears to be gradational.

2.3.2 Diorite and brecciated diorite

This dioritic unit forms an elongated body oriented in the northeast-southwest direction with a six-kilometer strike length and a one kilometer width, entirely surrounded by the volcanic sequence. It represents the main host rock for the mineralization at the 87, 87S and J zones. It comprises a pale to greenish grey rock, composed predominantly of medium to coarse-grained crystals of plagioclase and hornblende dispersed in a fine-grained groundmass of feldspar, amphibole, epidote, and quartz.

The 87 hanging wall is mainly represented by brecciated diorite. Meter-scale intervals of massive, coarse- to fine-grained diorite, as well as porphyritic diorite, alternate with the typical brecciated diorite. In the J zones, the diorite is predominantly fine grained, and biotite-rich, particularly within the mineralized intervals. Deep drillholes in the southern portion of J4 contained thick packages of brecciated diorite, which are interpreted as the northern continuity of the 87 brecciated diorite sequence.

2.3.3 Felsic dikes

Felsic dikes crosscut the volcanic sequence, diorite, and brecciated diorite, with sharp contacts transposed parallel to the foliation. They occur predominantly around the margins of the dioritic intrusion, consisting of several discontinuous bodies, elongated parallel to subparallel to the main foliation. The felsic dikes vary from massive or aphanitic to phaneritic and strongly foliated depending on the amount of sericite.

Two main decameter-thick felsic dikes occur at 87, comprising the footwall and hanging wall of the main mineralized zone. In the J zone, the felsic dikes occur mainly in the immediate hanging wall of the mineralized diorite, are discontinuous, and occur in an anastomosing pattern, up to ten meters thick.

2.3.4 Mafic to ultramafic intrusive

Although this is listed as a significant rock unit, the Troilus references (AGP Mining Consultants, 2020a and 2020b) do not discuss or describe it.

2.3.5 Younger, post-deformation granitic intrusions

The Troilus deposit is located in the vicinity of major granitic intrusions to the east (the Parker pluton) and to the south (the Parker Junior pluton). Pegmatite, granite dikes, and large granite bodies are seen in Troilus drillcore, and in the existing 87 and J4 open pits. They are present over intervals measuring a few centimeters to more than 100 m in thickness.

The main granite bodies are observed at depth to the northeast of, and below, the 87 gold trend. They are referred to as the footwall granite.

2.4 Mineralization

The main mineralized zones at the Troilus Property occur around the margins of the Troilus Diorite, and comprise the 87 Zone including 87S, and the J4/J5 Zone. Other important mineralized zones discovered to date include the northern continuity of the J4/J5 Zone, named the Allongé Zone, and the southwestern margin of the metadiorite including the 86 Zone (see Figure 2-1).

Troilus is primarily a gold (Au) and copper (Cu) deposit. Nevertheless, it also contains minor amounts of silver (Ag), zinc (Zn), and lead (Pb), as well as traces of bismuth (Bi), tellurium (Te), and molybdenum (Mo). Ore grade rock is identified by its gold-equivalent content, which is a mathematical combination of gold, copper, and silver in a sample.

Gold-copper mineralization at the Troilus deposit comprises two distinct styles, (I) disseminated and (II) vein-hosted, described in more detail below. Gold mineralization is spatially correlated with the presence of sulphides, although the sulphide content does not directly correlate with gold and copper grade.

The matrix of the diorite breccia, the diorite and the felsic dikes represent the main host rocks for the mineralized intervals.

2.4.1 Type I - disseminated mineralization

Disseminated mineralization comprises the majority (>90%) of the deposit's copper content particularly in the 87 Zone. Gold and copper are predominantly associated with fine grained disseminated sulfides and/or millimeter wide sulfide streaks and stringers parallel to the main foliation, comprising between 1 wt. % and 5 wt. % of the rock. The most abundant sulfides are pyrite, chalcopyrite, and pyrrhotite. Gold occurs as fine grains of electrum, up to 20 µm wide along sulfide grain boundaries, and filling fractures within sulfide grains, containing up to 15 wt. % Ag.

2.4.2 Type II - vein-hosted mineralization

This mineralization style is characterized by gold-bearing veins, with gold mineralization restricted to veins and veinlets, and is classified as gold-only, since copper mineralization is rare and erratic. This type of mineralization is reported to be hosted in all rock types occurring within the mineralized envelope in the Troilus deposit. Several generations of gold-bearing veins have been identified and described.

The veinlets contain free gold and minor amounts of sulphide.

Locally, a second set of gold-bearing quartz veinlets cut the first. These carry fine-grained gold and minor pyrite, chalcopyrite, sphalerite, galena, and Te- and Bi-bearing minerals.

2.5 Alteration

Gold mineralization at Troilus is associated with various types of alteration.

2.5.1 Biotite

An early, pervasive, weak to strong biotite alteration affects the diorite, breccia, and felsic dykes. The matrix of the breccia is preferentially altered.

This alteration style is widespread in the deposit and can extend up to tens of meters away from the main gold zones. Sulphide content in drillcore increases with biotite alteration intensity, suggesting a genetic link between the two.

The biotite is transposed parallel to the foliation, indicating alteration occurred prior to or during the main deformation event. The foliation intensity increases in strongly biotite altered intervals, due to the lower competency of the biotite-bearing rocks.

2.5.2 Muscovite

The vein-hosted mineralization is spatially related to a strong sericitization within the high strain zones, better developed in the felsic dikes, reaching up to several centimeters. Sericitization is also present in the amphibolite and the matrix of the breccia.

A weak to strong muscovite alteration is present in some felsic dykes and varies in texture from pervasive to stockwork. It also locally alters the diorite and the breccia. Gold mineralization can be present in muscovite altered rocks, but sulphide content does not increase with the presence of muscovite alteration.

Muscovite stockwork-like textures are locally transposed by the main foliation, indicating muscovite alteration occurred after biotite alteration but prior to or during the main deformation event. Zones of higher foliation intensity, and thus of higher deformation, occur in strongly muscovite-altered rocks, probably due to the lower competency of these lithologies compared to unaltered rocks. The most highly deformed and sericitized parts of the rock are commonly surrounded by a silicified envelope that could reach several meters in width.

2.5.3 Calcic metasomatism

A syn-deformation epidote-amphibole alteration occurs both pervasively and as veins in the deposit area. It consists of pervasive calcium-rich minerals such as calcium amphiboles, epidote, or calcite occurring in two meter to ten meter intervals in drillcore, or in discrete layers or bands measuring less than 20 cm. Veins of quartz, calcite, epidote, grossular garnet, and diopside may also be locally present.

Gold mineralization is present locally in calc-silicate altered rocks, however, barren calc-silicate altered rocks also occur. Calc-silicate bands and veins can be parallel to the foliation, folded by the main deformation event, or can crosscut the foliation, all indicating that calc-silicate alteration occurred during the main deformation event.

3. THE J4 AND ADJACENT J5 ZONES

3.1 Geology and Mineralogy

Most of the following information in this chapter is taken from AGP Mining Consultants (2020a), the Technical Report and Mineral Resource Estimate, and from AGP Mining Consultants (2020b), the Preliminary Economic Assessment.

The J Zone orebody hosts two mineral zones: J4 and J5. For the two existing open pits now containing water, J4 is the smaller of the two after the main 87 Zone. The existing J4 pit is a small portion of the proposed J4 pit (Figure 3-1), with potential pit expansion into J5 to the west.

The ore bodies in the J4 zone are hosted in the northern continuity of the Troilus Diorite (Figure 2-1). Similar to what is observed in the 87 and 87S Zones, they are elongated parallel to a northeast trending foliation, moderately to steeply dipping to the north west.

From top to bottom, the J4/J5 rock sequence is:

1) a volcaniclastic unit (discussed above in Section 2.3.1), occurring along the hanging wall of the mineralization, and composed of well-laminated intermediate to felsic rocks, locally mineralized, with semi-massive sulfide occurrences; and

2) a thick metadioritic unit (discussed above in Section 2.3.2), comprising fine- to coarse-grained diorites that are locally brecciated.

These are commonly crosscut by decametric to metric-scale felsic dikes, which are mostly concentrated in the upper parts of the sequence, in the immediate hanging wall of the mineralized intervals. Towards the bottom of the sequence, in the footwall, typical diorite breccias are present, displaying intense silicification and being locally importantly mineralized.

The main mineralized intervals in the J4 zone are characterized by sulfide stringers and fine sulfide disseminations along the foliation occurring within a very fine grained biotite-rich and silicified diorite.

Pyrite is the main sulfide mineral, and it is intrinsically associated with gold mineralization. Results from hole TLG-J419-092 (Figure 3-1) extended the limits of the gold-rich mineralization outside the known mineral resource envelope both at depth and to the east. This zone located in the footwall of the main gold zone of J4 is characterized by a far less deformed texture than typical J Zone mineralization with clear brecciation and disseminated sulphides. Troilus Diorite was identified in the stratigraphic footwall.

Figure 10-7: Cross Section 14150N – J4/J5 Zone; looking north

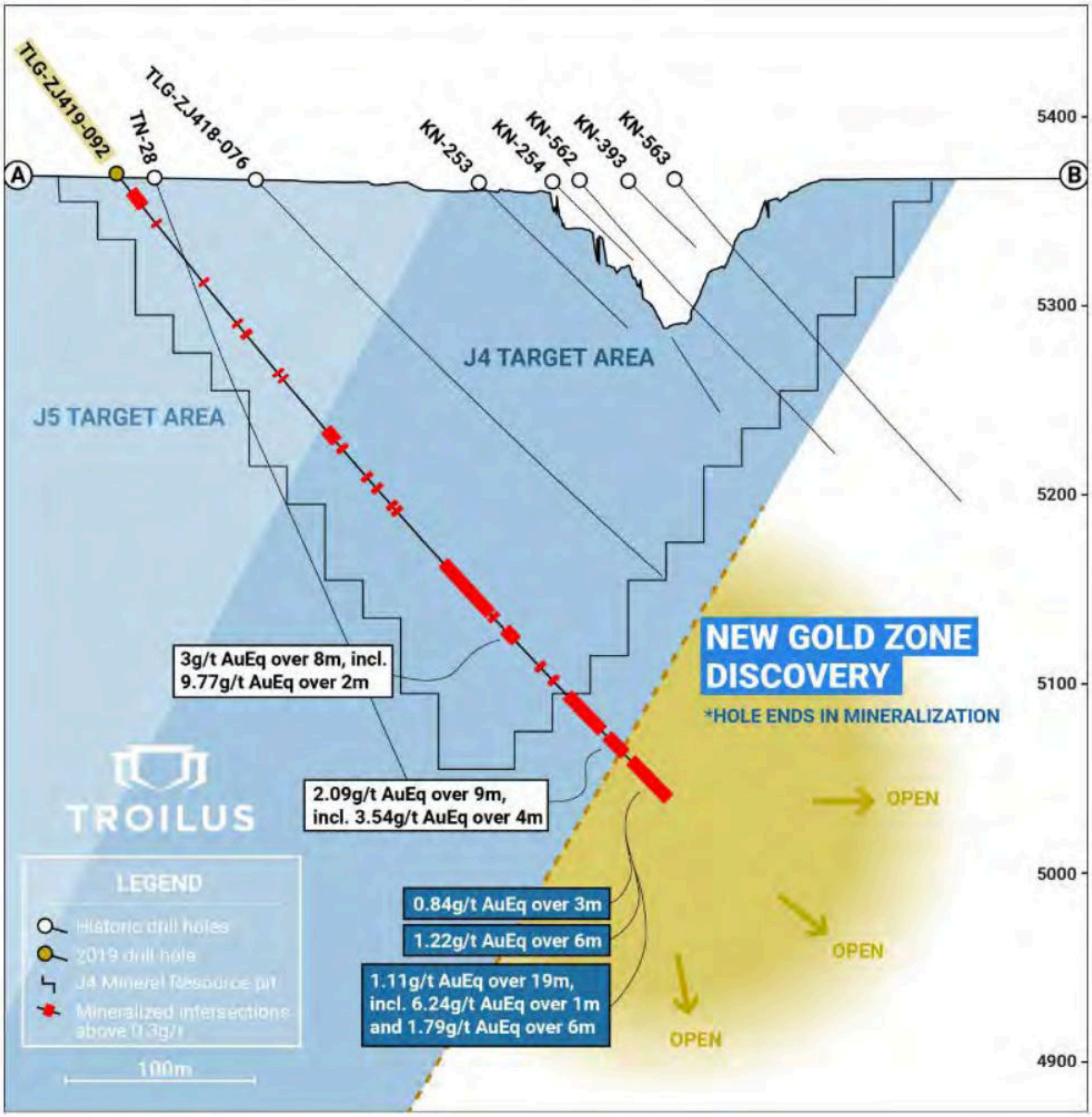


Figure 3-1. Vertical cross-section through the J4 and J5 Zones looking north, with the profile of the existing J4 Pit at the top (from AGP Mining Consultants, 2020a and 2020b).

3.2 Assay Database and Preliminary ML-ARD Information

Since approximately 2018, more than 100 new drillholes have provided core of future J4 rock. Troilus Gold provided the assay database for J4, containing geochemical analyses of more than 32,500 core intervals (nominally 1 m long) involving dozens of chemical elements. Core logs allowed each assayed interval to be assigned a rock unit ("lithology"), and the spatial location of each core interval in three dimensions.

The number of core intervals for each of the 13 main rock units is shown in Figure 3-2 (arithmetic scale) and Figure 3-3 (logarithmic scale). Based on more than 32,500 intervals of nominal 1 m length, the four largest rock units in the J4 Zone are: non-brecciated diorite, brecciated diorite, undifferentiated volcanics, and felsic intrusives (Table 3-1). These four rock units comprise roughly 90% of all J4 rock, with approximately 3.6% of remaining rock undefined at this time.

Ore intervals in Table 3-1 are based on gold-equivalent values in grams per tonne (gpt) based on the equation for J4 in the 2020 Preliminary Economic Assessment (AGP Mining Consultants Inc., 2020b) with 0.3 gpt cutoff. It is important to note that some ore intervals will inevitably be mixed with waste rock and vice versa during mining.

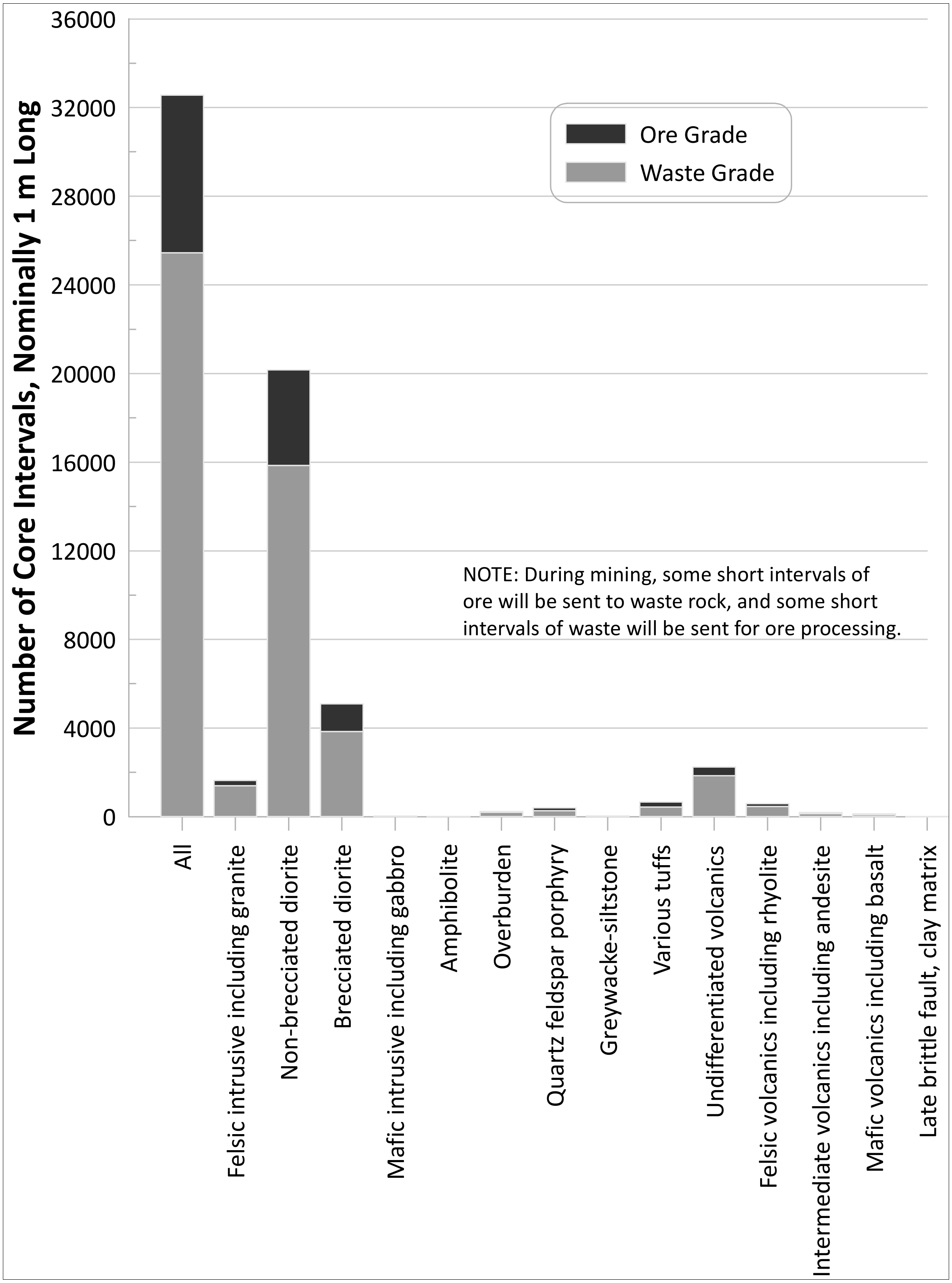
Based on approximately 25,000 assays of future J4 waste rock and approximately 100 analyses of existing J4 waste rock, the future waste rock will have less sulphur and Acid Potential on average than existing waste rock (Figure 3-4). The future J4 pit and waste rock will be much larger than the existing J4 pit and waste rock, and the existing J4 waste rock will be moved during future mining.

The solid-phase elements reportedly at relatively high levels in J4 rock, based on a much smaller dataset (Lawrence Consulting, 2019), were bismuth, copper, molybdenum, selenium, and silver. For the more than 32,500 J4 assays, bismuth and selenium were not measured.

Based on logarithmic Gaussian distributions, the means and standard deviations were calculated for each element in each rock unit in the J4 assay database. An important objective was to define "average" mean geochemical solid-phase concentrations and the statistical standard deviation for selecting samples for the on-site ML-ARD columns and for ABA.

For J4 waste rock, many solid-phase elements were generally lognormally distributed. This included potentially acid-generating sulphur (Figure 3-4), although sulphur is variable along the length of each drillhole (Figure 3-9). Sulphur was also lognormally distributed, in both waste rock and ore, in the major rock units of non-brecciated diorite (I2J, Figure 3-5), brecciated diorite (I2J;BR, Figure 3-6), and others.

Nevertheless, the average sulphur level and lognormal standard deviations do vary from rock unit to rock unit in the waste-rock intervals (Figure 3-7). This is also true of metal levels like copper (Figure 3-8).



NOTE: During mining, some short intervals of ore will be sent to waste rock, and some short intervals of waste will be sent for ore processing.

Figure 3-2. Abundances of rock units on an arithmetic scale based on more than 32,500 core intervals of recent J4 core.

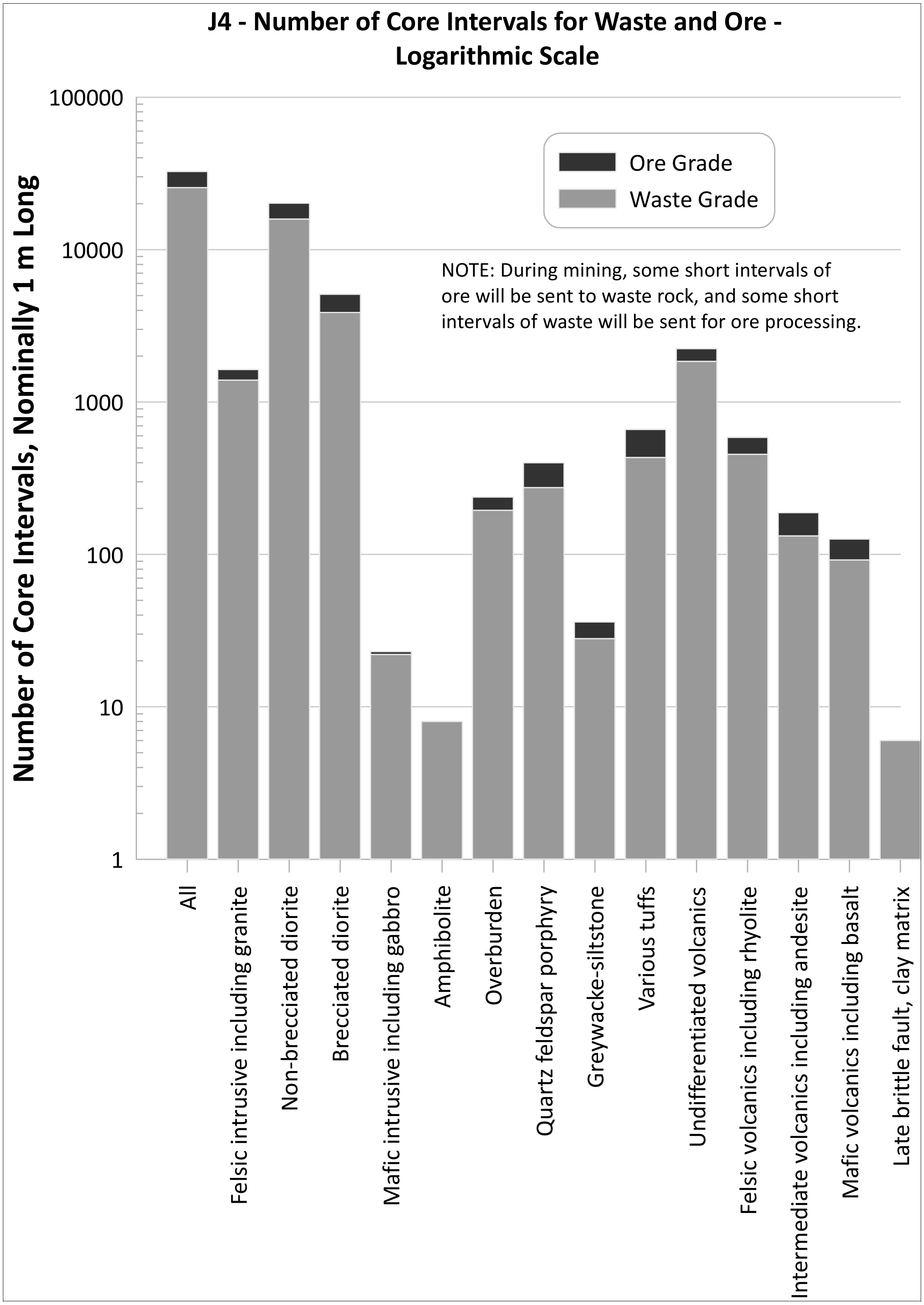


Figure 3-3. Abundances of rock units on a logarithmic scale based on more than 32,500 core intervals of recent J4 core.

Table 3-1. Percentages of rock units in the J4 Zone based on more than 32,500 core intervals

			Percentage of Total (%)[1]		
Code	Rock Unit	Number	Ore + Waste	Waste	Ore
I2J	Non-brecciated diorite	20160	61.9	62.3	60.7
I2J;BR	Brecciated diorite	5098	15.7	15.1	17.5
V	Undifferentiated volcanics	2237	6.9	7.3	5.5
I1	Felsic intrusive including granite	1635	5	5.5	3.4
-	Assay data but no rock unit	1161	3.6		
T	Various tuffs	661	2	1.7	3.2
V1	Felsic volcanics including rhyolite	584	1.8	1.8	1.8
QFP	Quartz Feldspar Porphyry	398	1.2	1.1	1.7
MT	Overburden	238	0.73	0.77	0.61
V2	Intermediate volcanics including andesite	188	0.58	0.52	0.79
V3	Mafic volcanics including basalt	126	0.39	0.36	0.48
S3	Greywacke-siltstone	36	0.11	0.11	0.11
I3	Mafic intrusive including gabbro	23	0.071	0.086	0.01
M16	Amphibolite	8	0.025	0.031	0
Fnum	Late brittle fault, clay matrix	6	0.018	0.024	0
TOTAL COUNT			32559	25455	7104

[1] Ore intervals were defined as gold-equivalent at and above 0.3 gpt (AGP Mining Consultants Inc., 2020b).

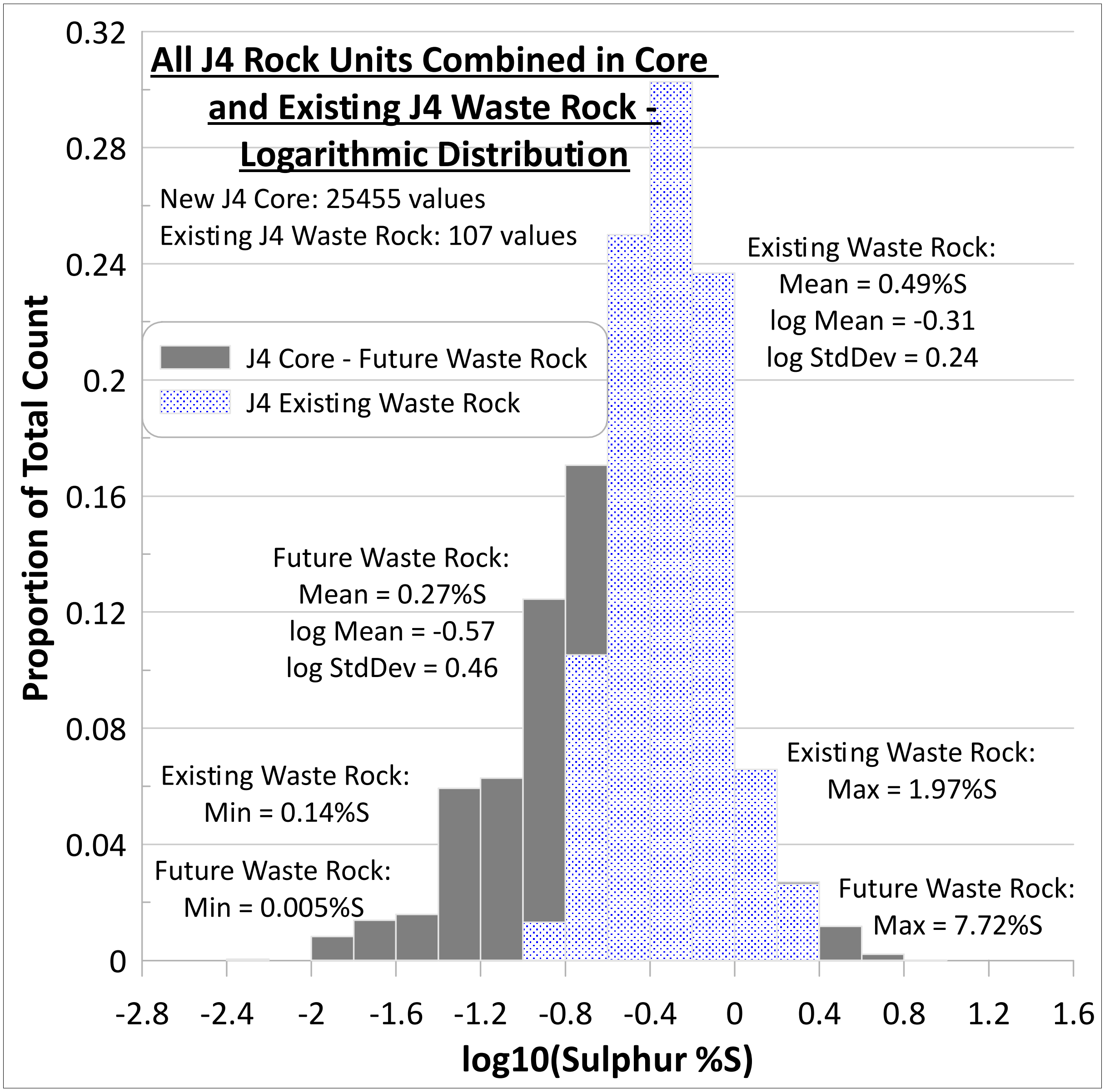


Figure 3-4. Comparison of lognormal distributions of sulphur in existing J4 waste rock and future J4 waste rock, showing future waste rock will contain on average lower sulphur based on relatively fewer existing analyses.

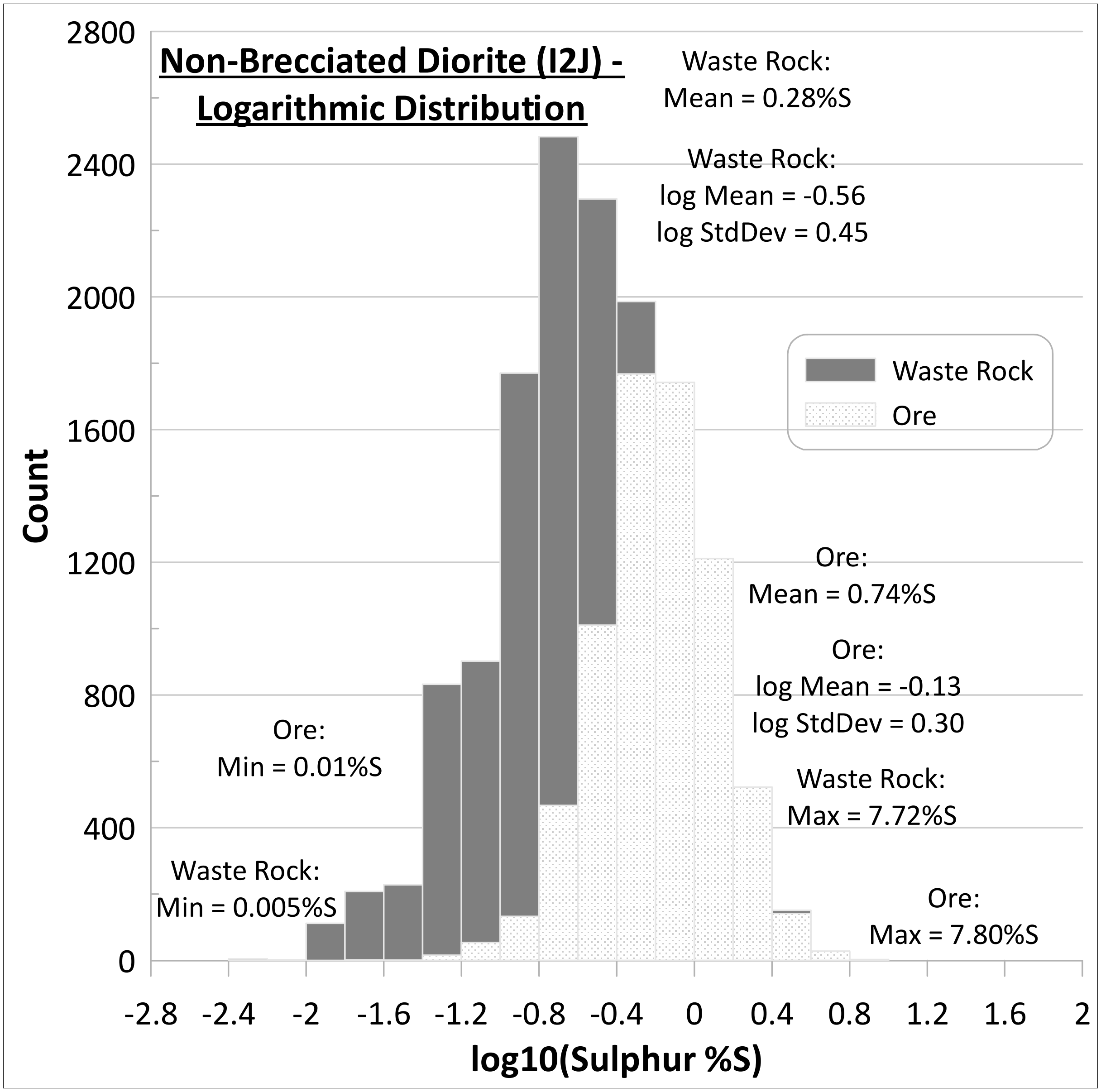


Figure 3-5. Lognormal distributions of sulphur in future J4 waste rock and ore in major rock unit Non-Brecciated Diorite (I2J).

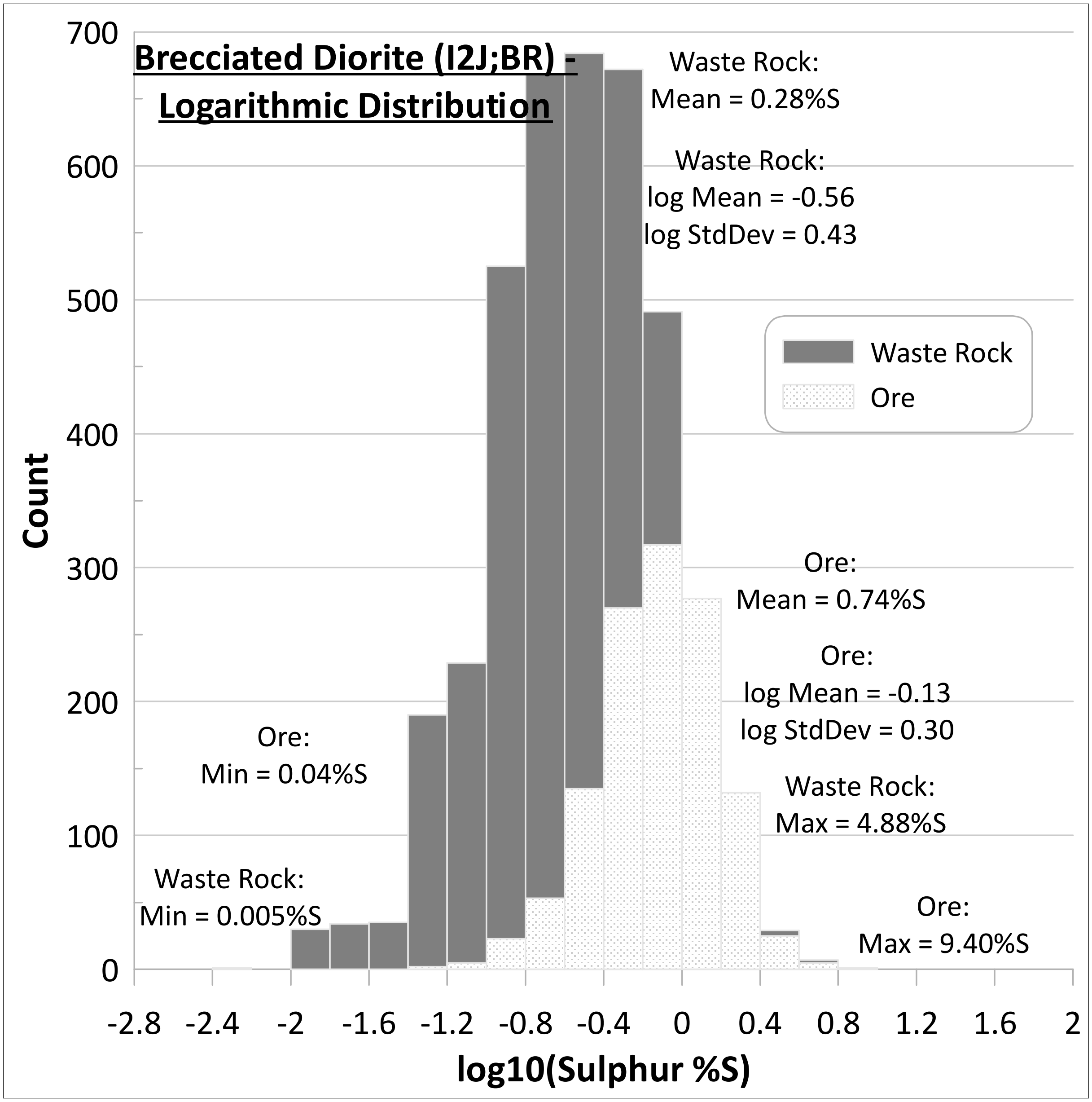


Figure 3-6. Lognormal distributions of sulphur in future J4 waste rock and ore in major rock unit Brecciated Diorite (I2J;BR).

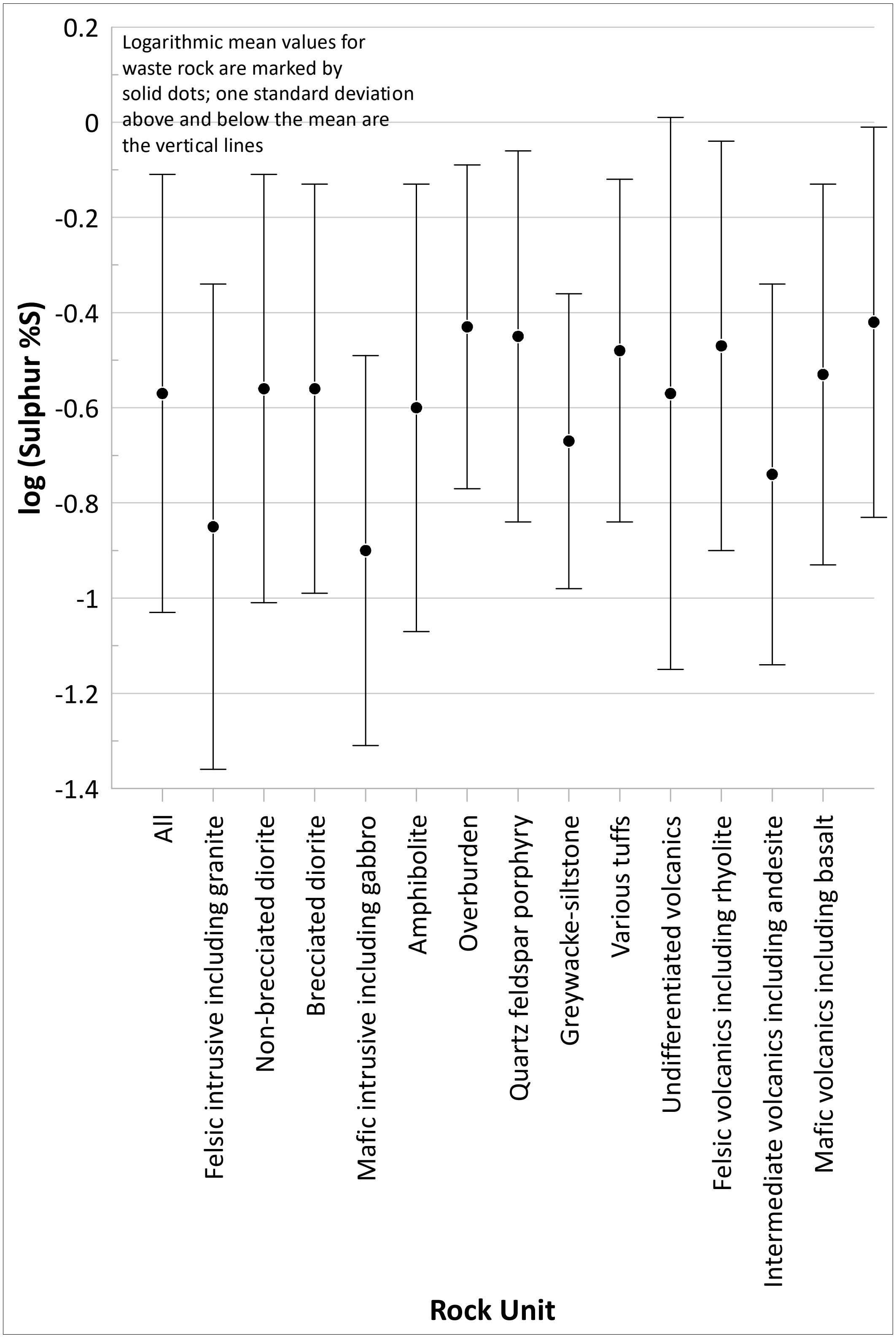


Figure 3-7. Logarithmic mean values (solid dots) and plus-minus one log standard deviation (vertical lines) for sulphur in future J4 waste rock.

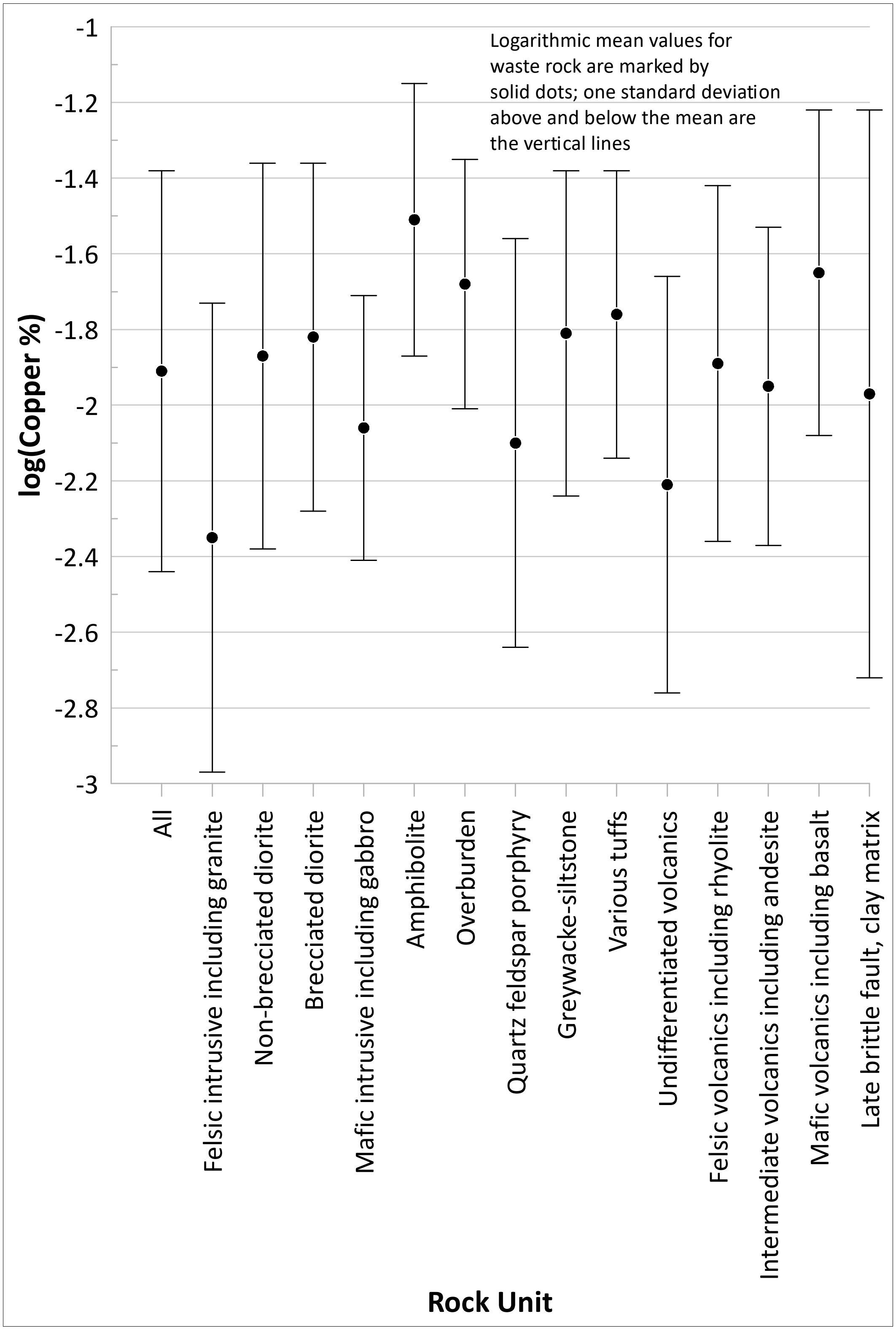


Figure 3-8. Logarithmic mean values (solid dots) and plus-minus one log standard deviation (vertical lines) for copper in future J4 waste rock.

3.3 Three-Dimensional ML-ARD Model

The J4 assay database and drillhole information like collar locations, azimuths, and dips were entered into Golden Software's Voxler software. This allows each assayed element to be plotted, like total sulphur in Figure 3-9. This also ensured the ML-ARD sample selection (Table 3-2) was distributed throughout the J4 Zone. As a result, environmental planning for any required ML-ARD control can be aligned with the mine plan and its time schedule.

This ML-ARD information can be exported to Troilus mining software.

3.4 Selection of ML-ARD Core Samples from the J4 Zone

Based on information on the general geology of Troilus (Chapter 2) and on more detailed information including geostatistics for J4 Zone (above), Troilus asked that 30 core intervals be selected from the J4 database for ML-ARD analyses.

The previous information in this Chapter 3 ensured samples could be selected that were well distributed in three dimensions and from all major rock units in the J4 Zone. In case some drillcore samples were no longer available, MDAG opted to include two alternates for each primary selection. The ML-ARD analyses for the 30 samples collected by Troilus staff are listed in Table 3-2 and Appendix A.

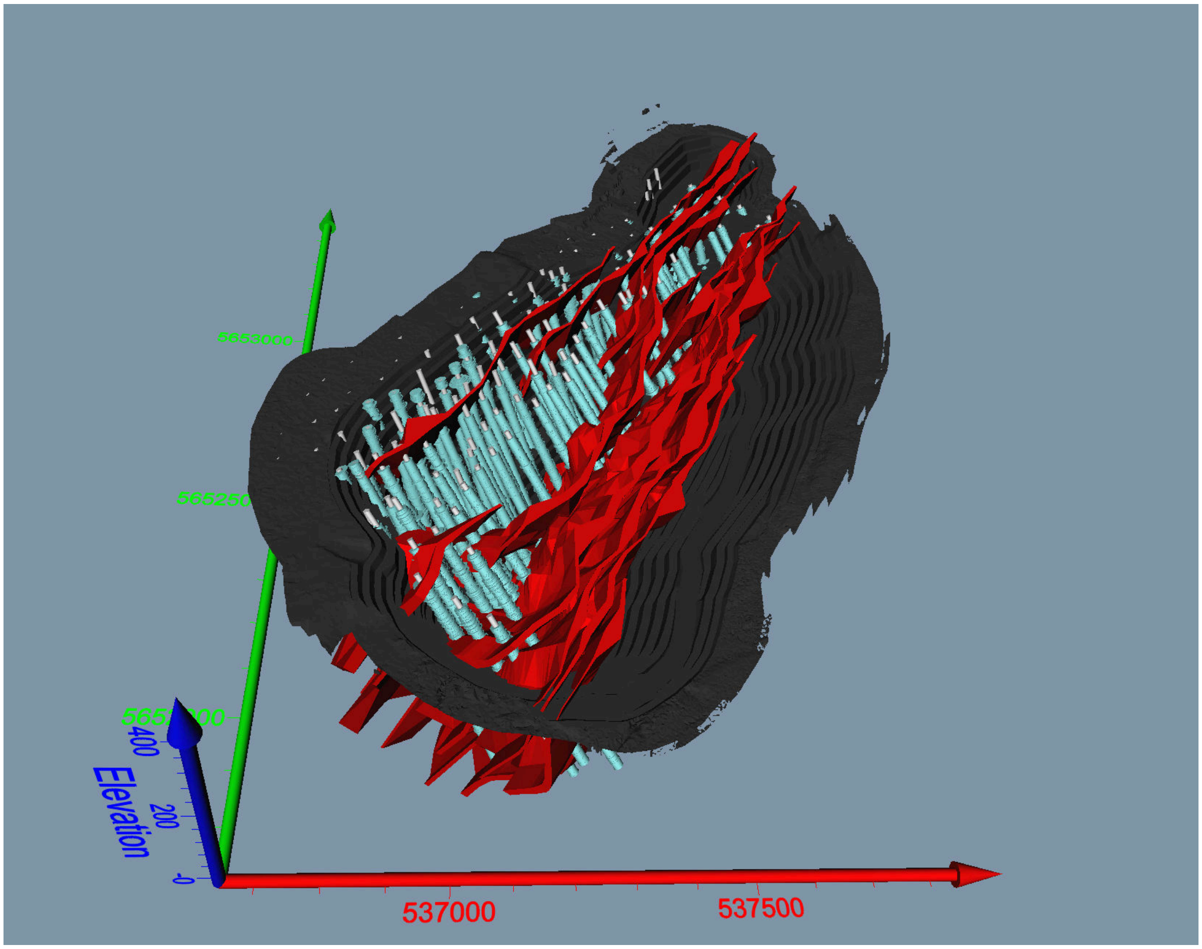


Figure 3-9. A screenshot of the existing J4 three-dimensional ML-ARD model; relative sulphur level in each interval of drillcore is shown as a light-blue disc along each drillhole in white, the red "ribbons" are ore-grade zones defined by Troilus.

Table 3-2. ML-ARD samples collected from rock units in the J4 Zone relative to mean total sulphur in each significant rock unit (see also Appendix A)

Code	Rock Unit	Percent of Waste + Ore[1]	Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Drillhole Sample	ML-ARD Sample Number
I2J	Non-brecciated diorite	62%	+2.0	TLG-ZJ21-249 69-70 m	Y936654
			+1.5	TLG-ZJ418-056 90-91	Y936655
			+1.0	TLG-ZJ419-156 69-71	Y936656
			+0.5	TLG-ZJ418-052 111-112	Y936657
			0.0	TLG-ZJ418-060112-113	Y936658
			-0.5	TLG-ZJ418-069 24-25	Y936659
			-1.0	TLG-ZJ419-113 66-88	Y936660
			-1.5	TLG-ZJ21-236 96-97	Y936661
			-2.0	TLG-ZJ419-099 75-76	Y936662
I2J; BR	Brecciated diorite	16%	+2.0	TLG-ZJ419-148 154-156	Y936663
			+1.0	TLG-ZJ419-166 85-87	Y936664
			0.0	TLG-ZJ419-169 86-88	Y936665
			0.0	TLG-ZJ21-240 195-196	Y936666
			-1.0	TLG-ZJ419-163 63-65	Y936667
			-2.0	TLG-ZJ419-111 61-63	Y936668
V	Undifferentiated volcanics	6.9%	+2.0	TLG-ZJ21-242 84-85	Y936672
			+1.0	TLG-ZJ21-242 43-44	Y936673
			0.0	TLG-ZJ21-237 37-38	Y936674
			0.0	TLG-ZJ21-227 49-50	Y936675
			-1.0	TLG-ZJ21-285 128-129	Y936676
			-2.0	TLG-ZJ21-232 103-104	Y936677
I1	Felsic intrusive including granite	5.0%	+1.0	TLG-ZJ419-157 199-201	Y936651
			0.0	TLG-ZJ419-151 260-262	Y936652
			-1.0	TLG-ZJ418-051 125-126	Y936653
T	Various tuffs	2.0%	0.0	TLG-ZJ418-071 190-191	Y936671

Code	Rock Unit	Percent of Waste + Ore[1]	Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Drillhole Sample	ML-ARD Sample Number
V1	Felsic volcanics including rhyolite	1.8%	0.0	TLG-ZJ419-163 171-173	Y936678
QFP	Quartz Feldspar Porphyry	1.2%	0.0	TLG-ZJ21-241 95-96	Y936670
V2	Intermediate volcanics including andesite	0.58%	0.0	TLG-ZJ418-077 114-115	Y936679
V3	Mafic volcanics including basalt	0.39%	0.0	TLG-ZJ419-094 7.1-8	Y936680
I3	Mafic intrusive including gabbro	0.071%	0.0	TLG-ZJ419-091 158-160	Y936669

[1] See Table 3-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

4. THE 87 ZONE

4.1 Geology and Mineralogy

Most of the following information is taken from AGP Mining Consultants (2020a), the Technical Report and Mineral Resource Estimate, and from AGP Mining Consultants (2020b), the Preliminary Economic Assessment.

The larger of the two existing pits at Troilus, operated by Inmet from 1996 to 2010, was developed in the 87 Zone orebody. The mineralization in the 87 Zone occurs as a series of anastomosing lenses, extending for approximately 1,300 m along strike from 12,900N to 14,200N with variable thickness and locally reaching over 100m wide. With increasing depth, individual mineralized lenses coalesce to form a single sheet-like body that was approximately 40 m thick on average.

The long axis in the 87 Zone is oriented N35°E with the orebody dipping to 55° to 65° northwest, from southwest to northeastern portions, respectively. Detailed studies of 87 blasthole data and diamond drill intersections revealed the presence of higher-grade shoots, which plunge to the west-northwest at -30° to -50°.

The north and south extensions of 87 "horsetail" out into narrower branches of mineralization. Two branches are well defined in the north, whereas three branches are less defined to the south.

In 87 Zone, the peaks of enrichment in gold and copper overlap but are not exactly coincident. A metal zonation is observed, associated with sulphide content. The structural footwall is enriched in a chalcopyrite-pyrrhotite assemblage, with copper more abundant than gold. This zone grades into an intermediate pyrite-chalcopyrite zone, which comprises the main ore zone of the deposit and contains gold and copper. The structural hanging wall is dominated by pyrite, and it is gold-rich relative to copper.

The mineralization at 87South Zone (now considered part of 87 Zone) is visually comparable to what is seen in the main zone of 87. However, the geology can be characterized as more felsic (silicic) alteration and is distinctly transitioning into a unit of massive sulphides (primarily pyrite with chalcopyrite) in the footwall. This zone also exhibits the same structural pinch and swell nature of mineralization as the other main mineralized zones at Troilus.

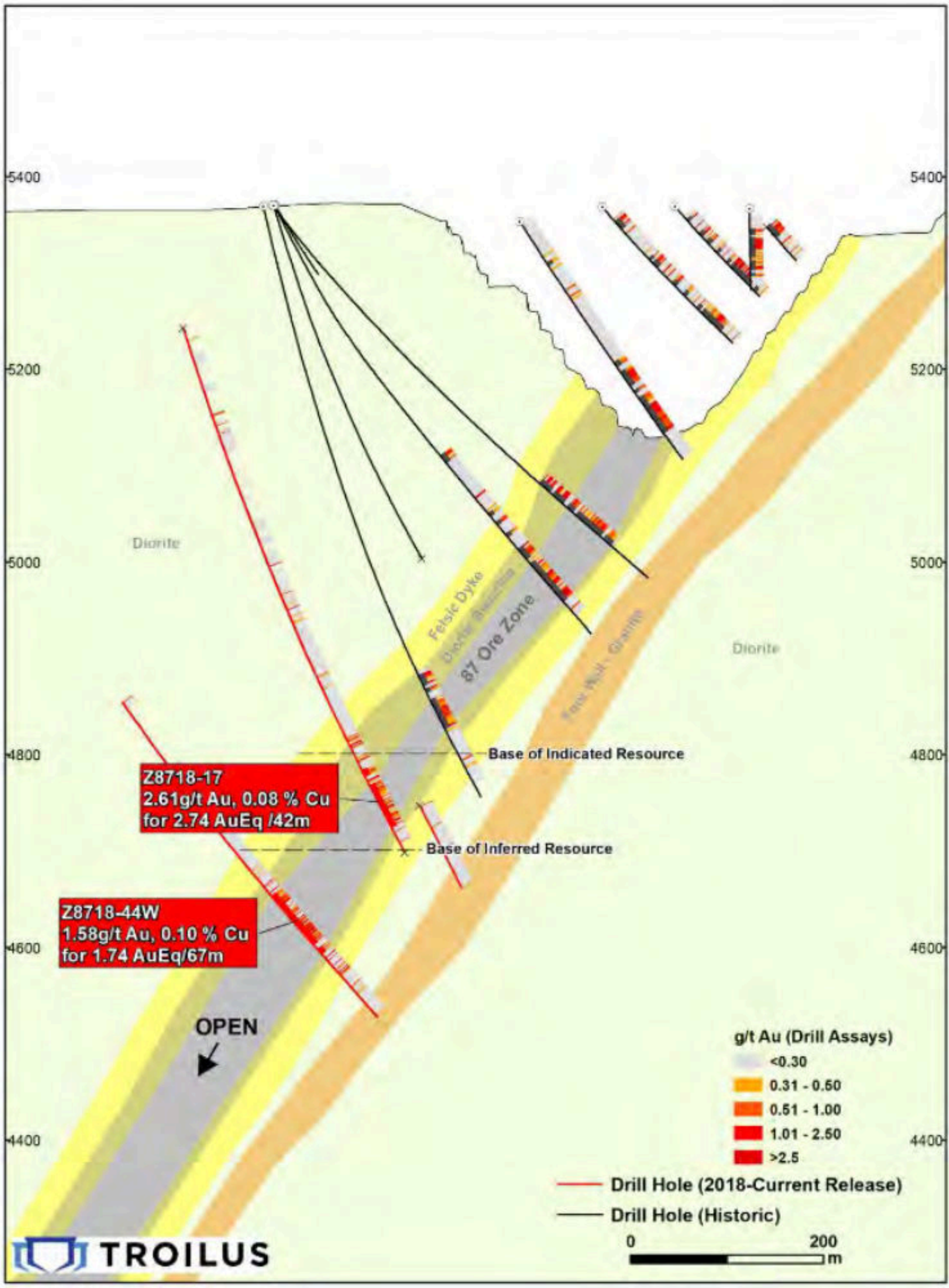


Figure 4-1. Vertical cross-section through the 87 Zone looking southwest, with the profile of the existing 87 Pit at the top (from AGP Mining Consultants, 2020a and 2020b).

4.2 Assay Database and Preliminary ML-ARD Information

Since 2018, more than 100 new drillholes have provided core of future 87 Zone rock. Troilus Gold provided the assay database for 87, containing geochemical analyses of more than 27,700 core intervals (nominally 1 m long) involving dozens of chemical elements. Core logs allowed each assayed interval to be assigned a rock unit ("lithology"), and the spatial location of each core interval in three dimensions.

The number of core intervals for each of the 16 main rock units is shown in Figure 4-2 (arithmetic scale) and Figure 4-3 (logarithmic scale). Based on more than 27,700 intervals of nominal 1 m length, the four largest rock units in the 87 Zone are: non-brecciated diorite, brecciated diorite, felsic intrusives, and various tuffs (Table 4-1). These four rock units comprise roughly 86% of all 87 Zone rock, with approximately 1% of remaining rock undefined at this time.

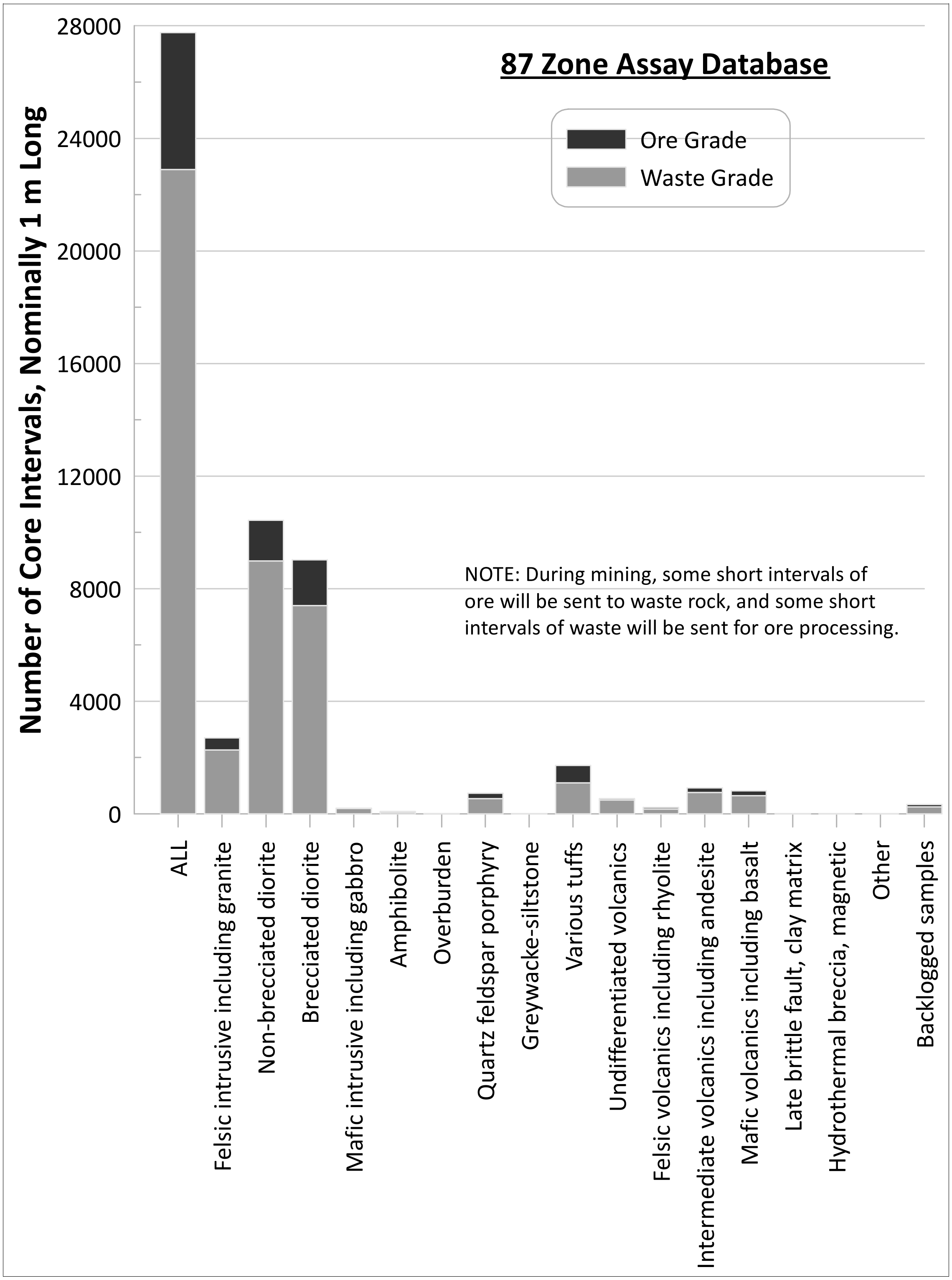
Ore intervals in Table 4-1 are based on gold-equivalent values in grams per tonne (gpt) based on the equation for 87 in the 2020 Preliminary Economic Assessment (AGP Mining Consultants Inc., 2020b) with 0.3 gpt cutoff. It is important to note that some ore intervals will inevitably be mixed during mining with waste rock and vice versa.

Based on approximately 22,900 assays of future 87 Zone waste rock, the logarithmic mean total sulphur content is 0.12%S (Figure 4-4). The range of total sulphur is <0.01%S (numerically set at 0.005%S) to 8.5%S.

Based on logarithmic Gaussian distributions, the means and standard deviations were calculated for each element in each rock unit in the 87 Zone assay database. An important objective was to define "average" mean geochemical solid-phase concentrations for selecting samples for laboratory kinetic tests reflecting the variabilities above and below those means.

For 87 waste rock, many solid-phase elements were generally lognormally distributed. Thus, based on logarithmic Gaussian distributions, the means and standard deviations were calculated for each element in each rock unit in the 87 Zone assay database. This included potentially acid-generating sulphur (Figure 4-4), even though sulphur is variable along the length of each drillhole (Figure 4-10). This also included acid-neutralizing carbon included in less than 200 assays (Figure 4-5). Additionally, total sulphur was also lognormally distributed in the waste rock of the major rock units of non-brecciated diorite (I2J, Figure 4-6), brecciated diorite (I2J;BR, Figure 4-7), and others.

Nevertheless, the average sulphur level and lognormal standard deviations do vary from rock unit to rock unit in the waste-rock intervals (Figure 4-8). This is also true of metal levels like copper (Figure 4-9).



NOTE: During mining, some short intervals of ore will be sent to waste rock, and some short intervals of waste will be sent for ore processing.

Figure 4-2. Abundances of rock units on an arithmetic scale based on more than 27,700 core intervals of recent 87 core.

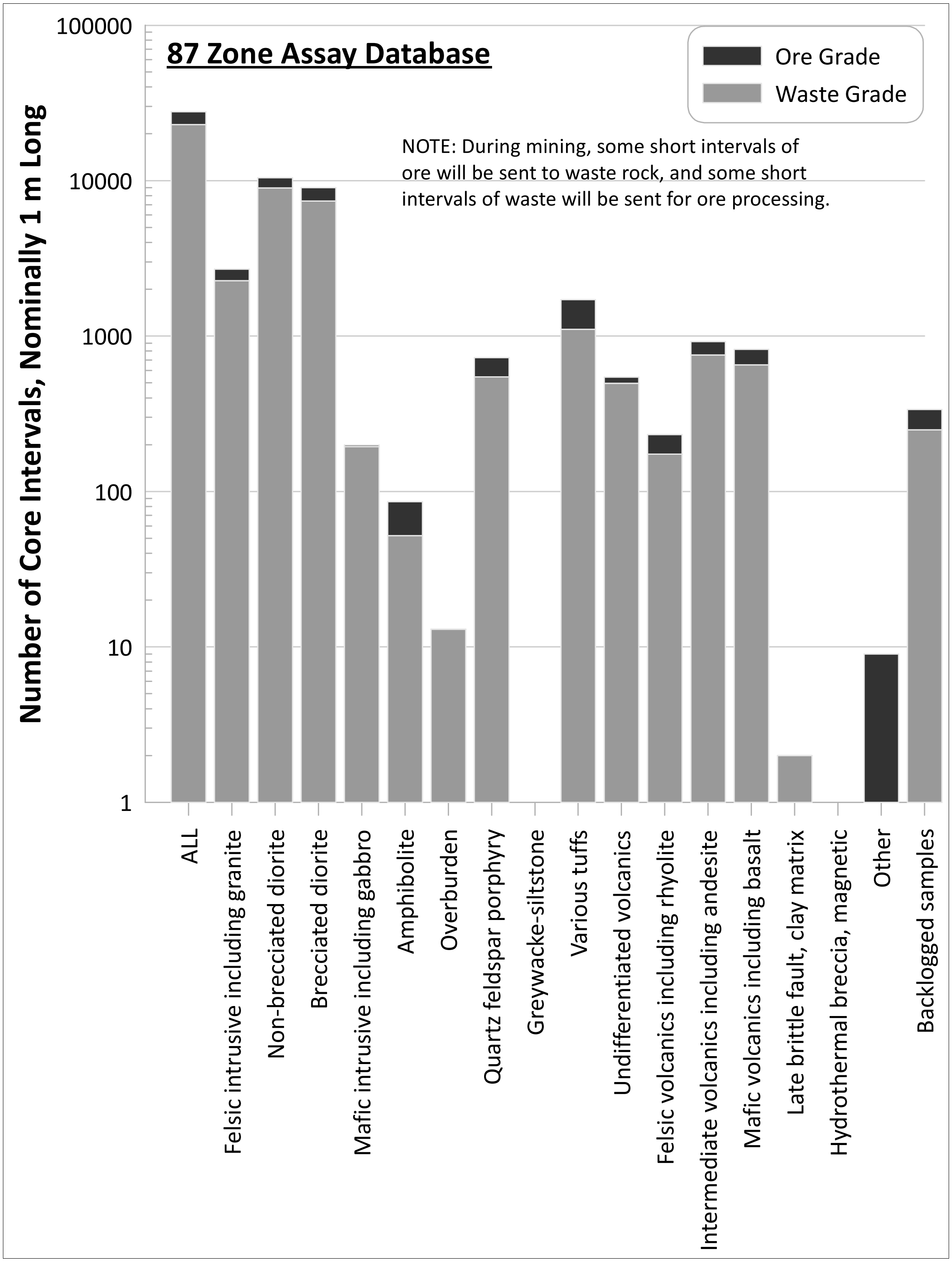


Figure 4-3. Abundances of rock units on a logarithmic scale based on more than 27,700 core intervals of recent 87 core.

Table 4-1. Percentages of rock units in the 87 Zone based on more than 27,700 core intervals

Code	Rock Unit	Number	Percentage of Total (%)[1] Ore + Waste	Waste	Ore
I2J	Non-brecciated diorite	10433	38%	39%	30%
I2J;BR	Brecciated diorite	9026	33	32	33
I1	Felsic intrusive including granite	2697	9.7	9.9	8.8
T	Various tuffs	1715	6.2	4.8	13
V2	Intermediate volcanics including andesite	922	3.3	3.3	3.4
V3	Mafic volcanics including basalt	819	3.0	2.9	3.4
QFP	Quartz Feldspar Porphyry	726	2.6	2.4	3.7
V	Undifferentiated volcanics	542	2.0	2.2	0.95
-	Assay data but no rock unit	336	1.2	1.1	1.8
V1	Felsic volcanics including rhyolite	232	0.84	0.76	1.2
I3&I4	Mafic intrusive including gabbro	199	0.72	0.85	0.10
M16	Amphibolite	86	0.31	0.23	0.70
MT	Overburden	13	0.047	0.057	0
Other	Other (e.g., IFP)	9	0.032	0.0044	0.16
Fnum	Late brittle fault, clay matrix	2	0.0072	0.0087	0
S3	Greywacke-siltstone	0	0	0	0
HyBr	Hydrothermal breccia, magnetic	0	0	0	0
TOTAL COUNT			27757	22893	4864

[1] Ore intervals were defined as gold-equivalent at and above 0.3 gpt (AGP Mining Consultants Inc., 2020b).

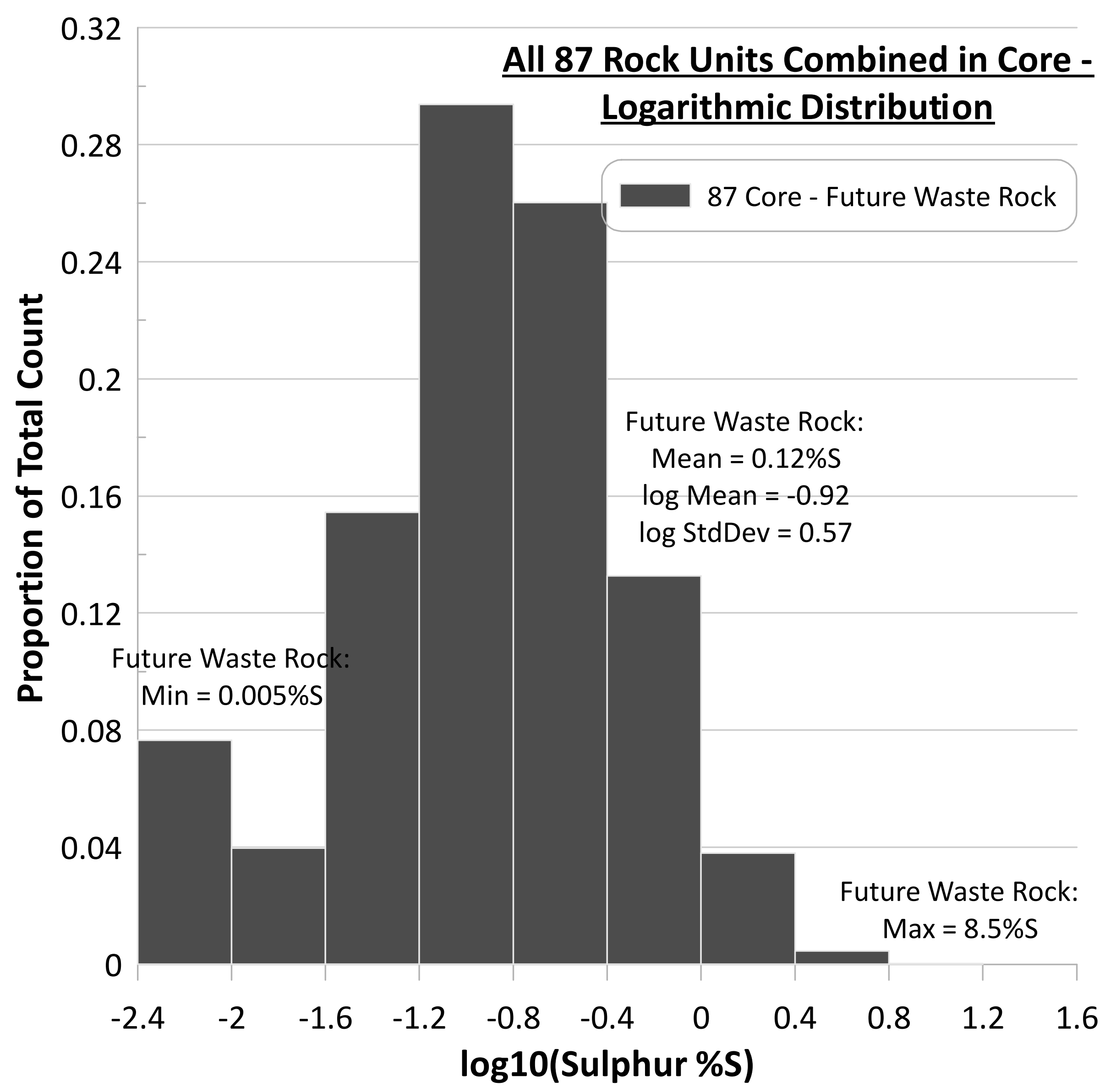


Figure 4-4. Lognormal distribution of sulphur in future 87 Zone waste rock with all rock units combined.

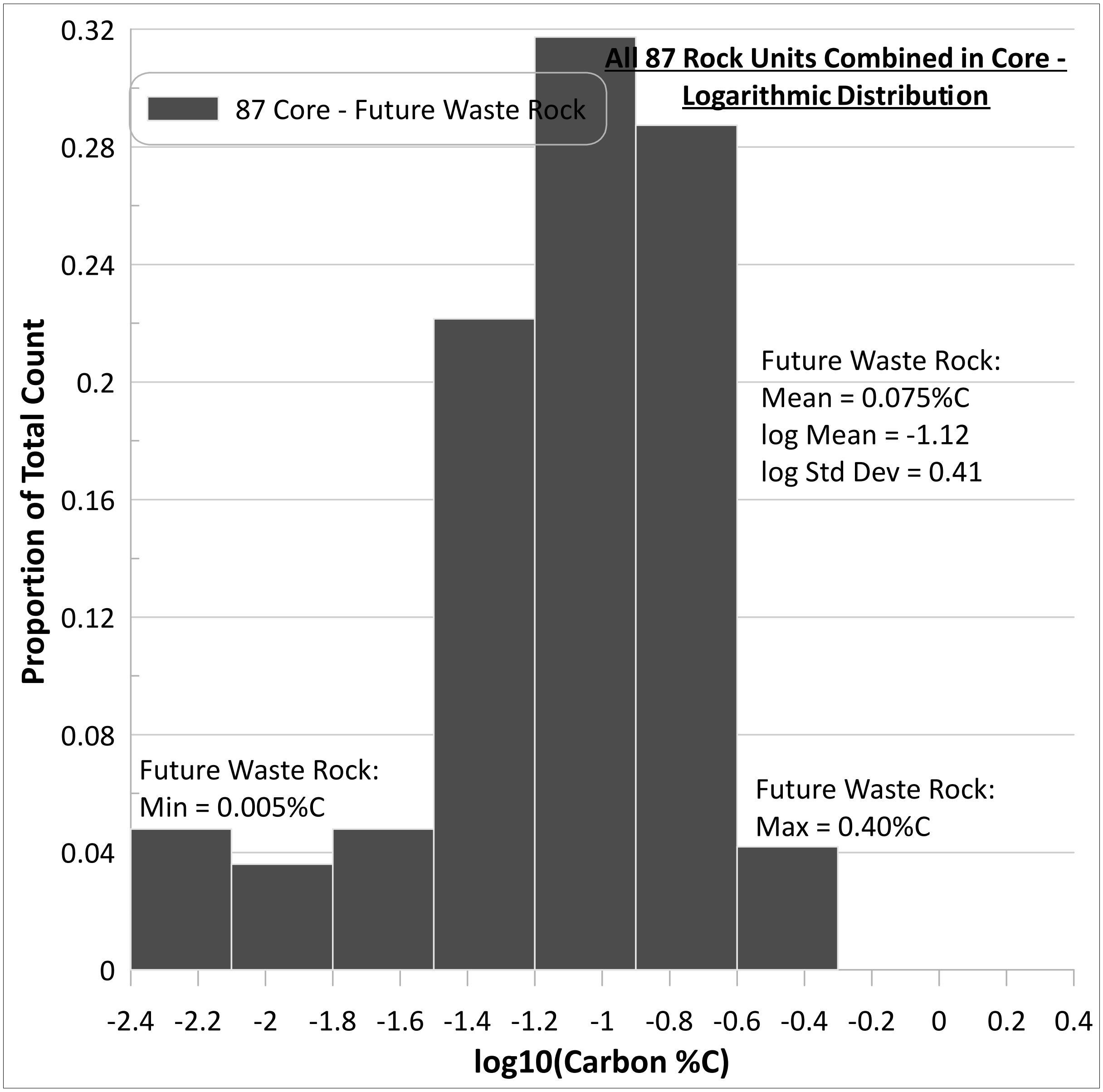


Figure 4-5. Lognormal distribution of carbon in future 87 Zone waste rock with all rock units combined.

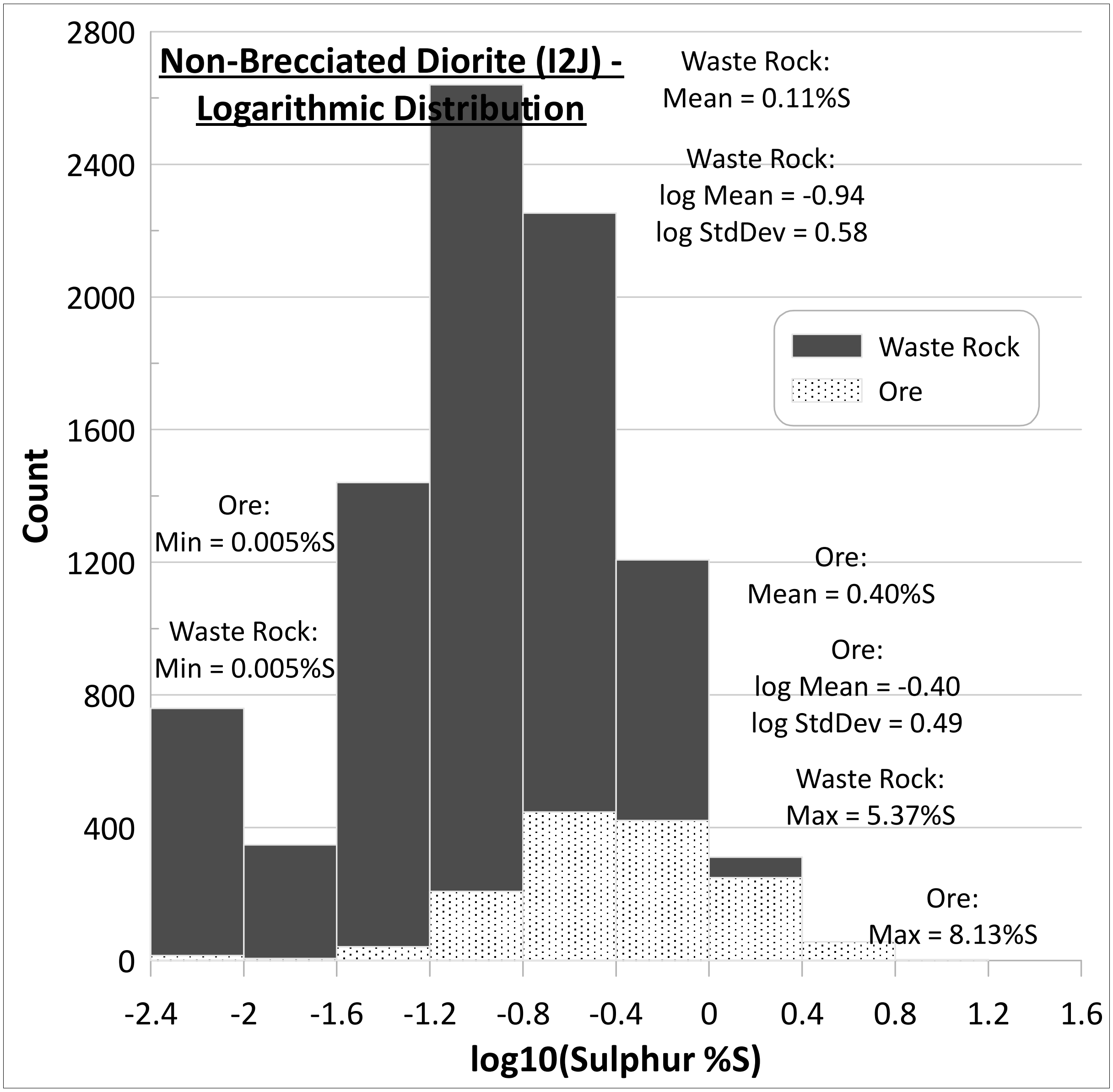


Figure 4-6. Lognormal distributions of sulphur in future waste rock and ore in major rock unit Non-Brecciated Diorite (I2J).

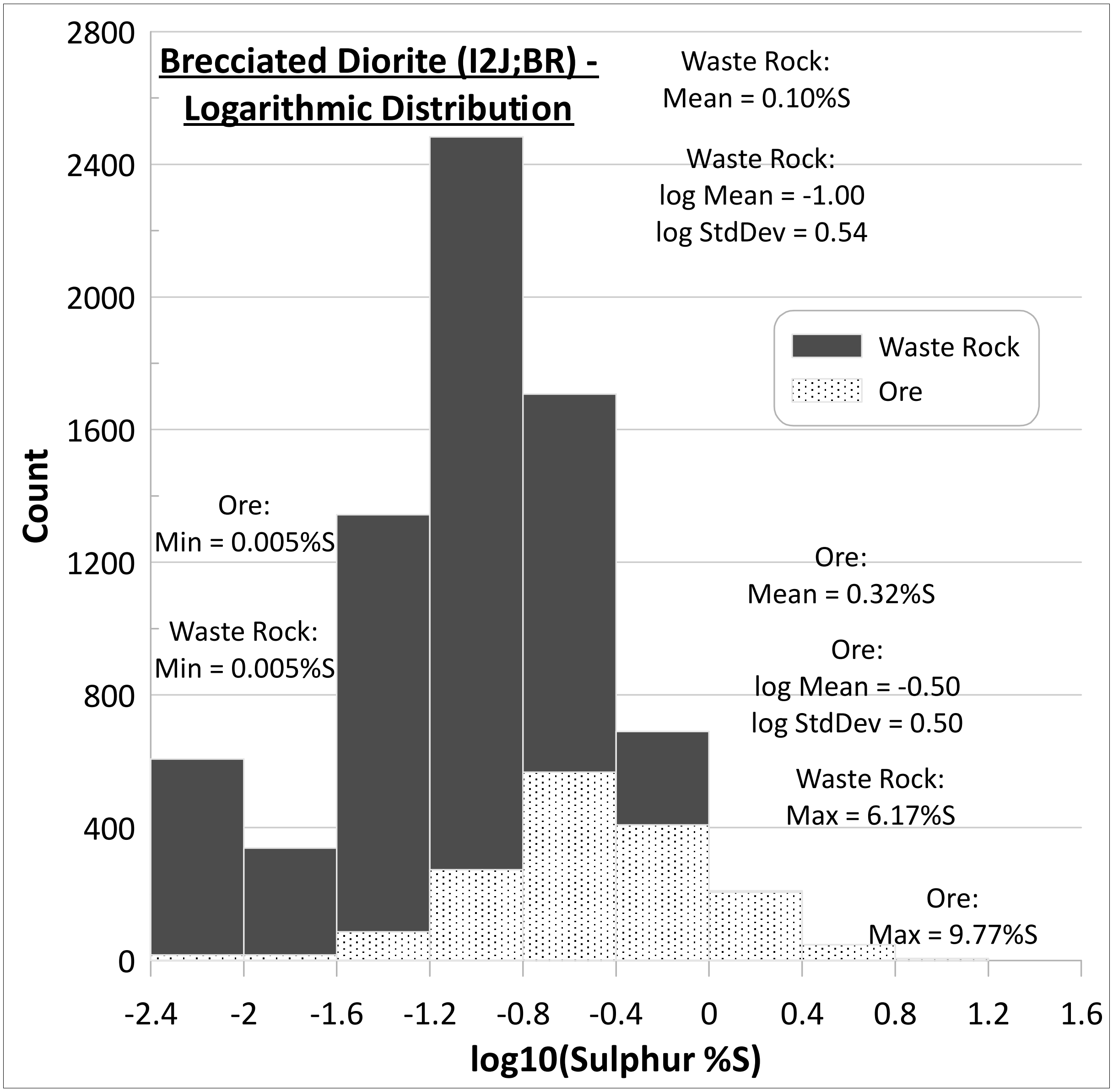


Figure 4-7. Lognormal distributions of sulphur in future waste rock and ore in major rock unit Brecciated Diorite (I2J;BR).

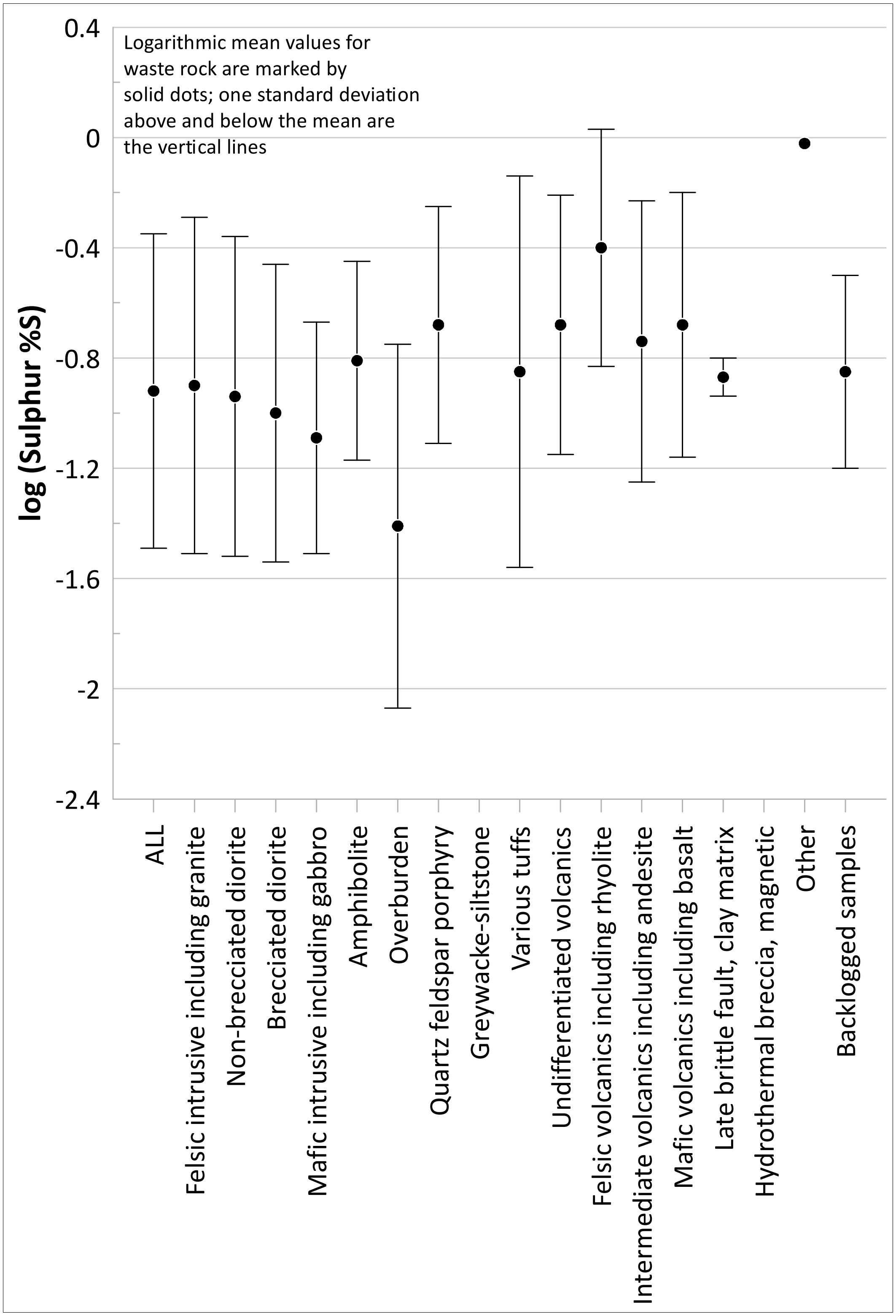


Figure 4-8. Logarithmic mean values (solid dots) and plus-minus one log standard deviation (vertical lines) for sulphur in future 87 Zone waste rock.

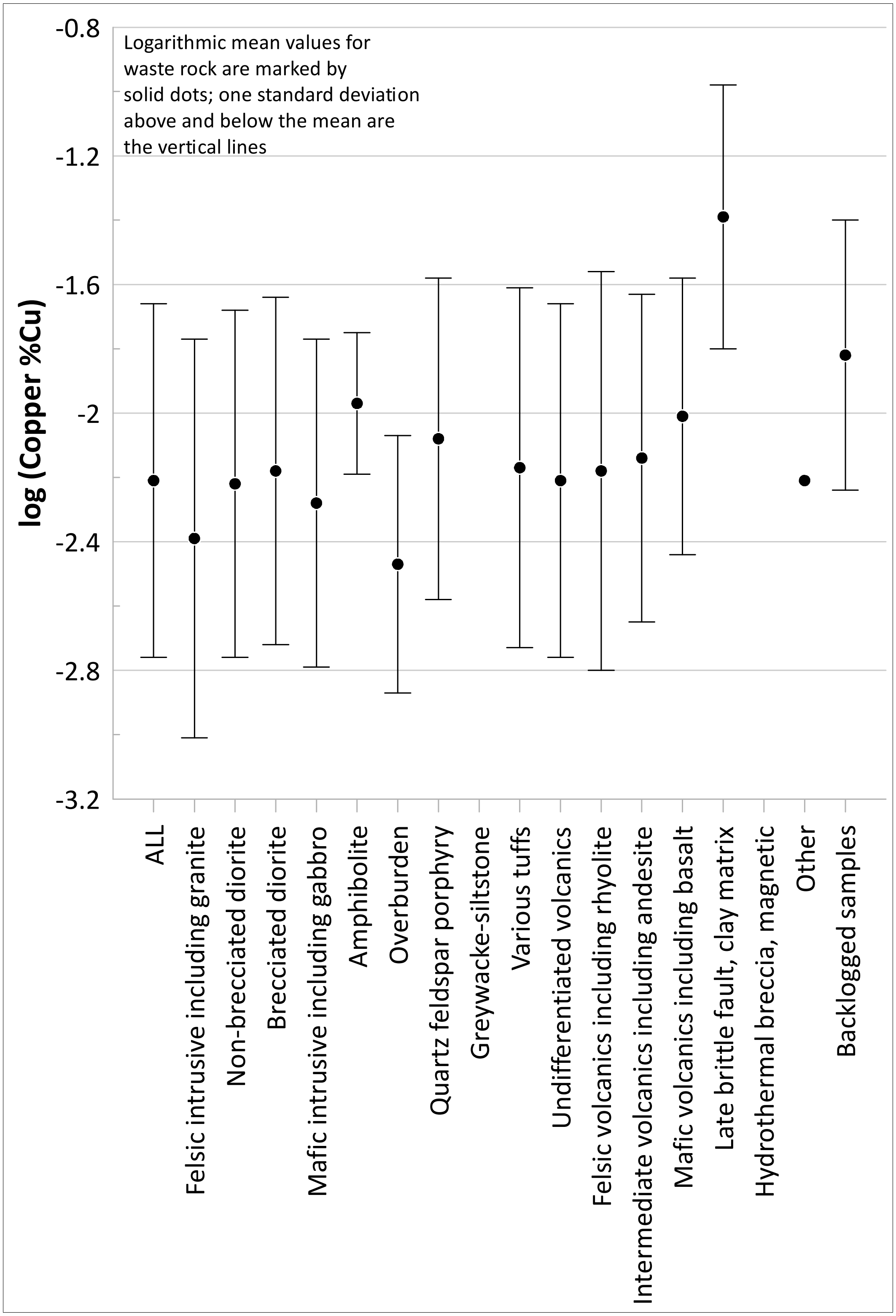


Figure 4-9. **Logarithmic mean values (solid dots) and plus-minus one log standard deviation (vertical lines) for copper in future 87 Zone waste rock.**

4.3 Three-Dimensional ML-ARD Model

The 87 Zone assay database and drillhole information like collar locations, azimuths, and dips were entered into Golden Software's Voxler software. This allows each assayed element to be plotted, like sulphur in Figure 4-10. This also ensured the ML-ARD sample selection (Table 4-2) was spatially distributed through the 87 Zone. As a result, environmental planning for any required ML-ARD control of 87 rock can be aligned with the mine plan and time schedule.

This ML-ARD information can be exported to Troilus mining software.

4.4 Selection of ML-ARD Core Samples from the 87 Zone

Based on information on the general geology of Troilus (Chapter 2) and on more detailed information including geostatistics for 87 Zone (above), Troilus asked that 30 core intervals be selected from the 87 database for ML-ARD analyses.

The previous information in this Chapter 4 ensured samples could be selected that were well distributed in three dimensions and from all major rock units in the 87 Zone. In case some drillcore samples were no longer available, MDAG opted to include two alternates for each primary selection. The ML-ARD analyses for the 30 samples collected by Troilus staff are listed in Table 4-2 and Appendix B.

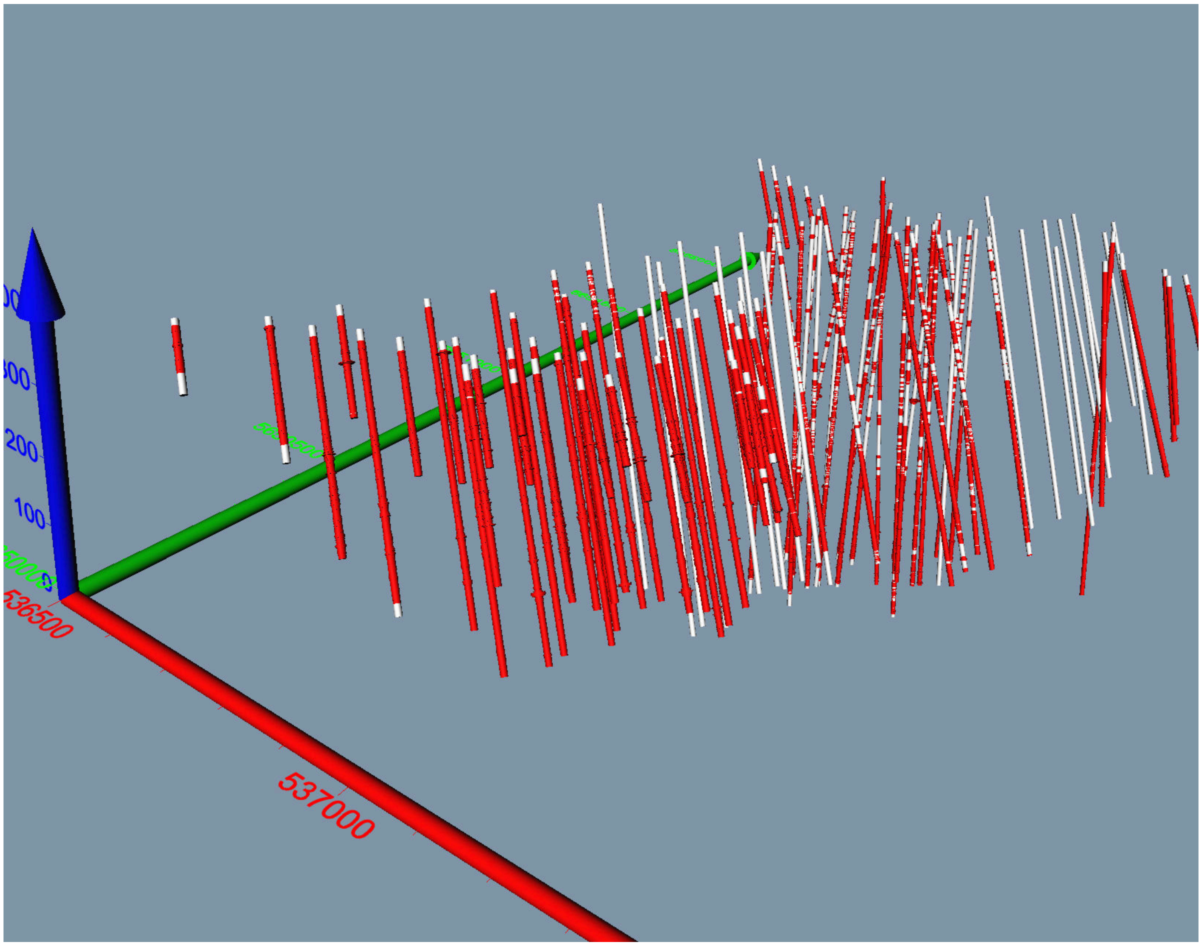


Figure 4-10. A screenshot of the 87 Zone three-dimensional ML-ARD model; relative sulphur level in each interval of drillcore is shown as a red disc along each drillhole in white, with white intervals having no sulphur analyses.

Table 4-2. ML-ARD samples collected from rock units in the 87 Zone relative to mean total sulphur in each significant rock unit (see also Appendix B)

Code	Rock Unit	Percent of Waste + Ore[1]	Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Drillhole Sample	ML-ARD Sample Number
I2J	Non-brecciated diorite	38%	+2.0	TLG-Z8718-086 189-190	A00488501
			+1.0	TLG-Z8718-042 64-65	A00488502
			0.0	TLG-GT20-Z87-05 24-25	A00488503
			-1.0	TLG-Z8718-044W 22-23	A00488504
			-2.0	TLG-Z8718-041 59-60	A00488505
I2J; BR	Brecciated diorite	33%	+2.0	TLG-Z8718-088	A00488506
			+1.0	TLG-Z87N21-256	A00488507
			0.0	TLG-Z8718-044W	A00488508
			0.0	TLG-Z87S19-132	A00488509
			-1.0	TLG-Z8718-004	A00488510
			-2.0	TLG-Z87N21-265	A00488511
I1	Felsic intrusive including granite	9.7%	+2.0	TLG-Z87S19-134 180-182	A00488512
			+1.0	TLG-Z87N21-261 261-262	A00488513
			0.0	TLG-Z87S19-132 316-318	A00488514
			0.0	TLG-Z8718-011 143-144	A00488515
			-1.0	TLG-Z8718-037 265-266	A00488516
			-2.0	TLG-Z87N21-260 174-175	A00488517
T	Various tuffs	6.2%	+2.0	TLG-Z8718-014 144.9-145.9	A00488518
			0.0	TLG-Z8718-011 151-152	A00488519
			-2.0	TLG-Z8718-010 370-371	A00488520
V2	Intermediate volcanics including andesite	3.3%	+2.0	87-21-401 180-181	A00488521
			0.0	TLG-Z8718-007 364-365	A00488522
			-2.0	TLG-Z8718-007 327-328	A00488523
V3	Mafic volcanics including basalt	3.0%	+2.0	87-21-404 21-22	A00488524
			0.0	87-21-403 54-55	A00488525
			-2.0	TLG-Z8718-002 374-375	A00488526

Code	Rock Unit	Percent of Waste + Ore[1]	Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Drillhole Sample	ML-ARD Sample Number
QFP	Quartz Feldspar Porphyry	2.6%	0.0	TLG-Z87N21-264 162-163	A00488527
V	Undifferentiated volcanics	2.0%	0.0	TLG-Z87N21-263 341-342	A00488528
V1	Felsic volcanics including rhyolite	0.84%	0.0	87-21-400 336-337	A00488529
I3 & I4	Mafic intrusive including gabbro	0.72%	0.0	TLG-Z8718-039 80-81	A00488530

[1] See Table 4-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

5. THE SOUTHWEST (SW) ZONE

5.1 Geology and Mineralogy

The Southwest (SW) Zone is situated approximately 3 km southwest of the 87 Zone (Figure 2-1). The current interpretation, based on recent drilling, is that the SW Zone appears to be the nose of a synclinal fold with a gentle plunge to the northwest (Figure 5-1).

As observed in all main mineralized zones at Troilus, the SW Zone lithological sequence is comprised by a dominantly mafic footwall volcanic sequence, and a more intermediate to felsic hanging wall (Figure 5-1). This volcanic package is intruded by syn-volcanic dioritic and felsic rocks. Mineralization is mainly associated with diorites, brecciated diorites, and felsic rocks.

The SW Zone is located within the hinge zone of the interpreted Troilus Syncline, in a zone of tight folding. It has been divided in two distinct structural domains (Figure 5-2):

- the Eastern Domain, named the “Main Zone”, which hosts the largest part of the mineralized horizons, and received most of the drilling executed so far, and
- the Western Domain, named the “West Zone”, which shows a narrower mineralized horizon.

The Eastern Domain, or Main Zone, dominantly strikes east-northeast and comprises the eastern limb of the interpreted syncline. The Western Domain clearly offset the eastern portion, striking slightly more northeasterly. A major strike-slip shear zone is interpreted to have overprinted the folding system and characterizes a northeast dominant structure parallel to the fold axis, as can be observed in the local geological map and schematic block model (Figure 5-2). This shear zone is interpreted to be parallel to the main bedding and foliation, dipping to southwest. This structure is well marked by the geological distinction between east and west domains, as well as by a clear distinct strike angle of both limbs.

The footwall mafic volcanic sequence in the Southwest zone represents a homogeneous package, composed of dark green, amphibole-rich, fine- to locally coarse-grained rocks. Locally, it contains sericite and sulfide-rich metric to decametric intervals, laminated/banded, occurring mainly within the upper part of the sequence. These intervals are normally anomalous in gold, zinc, silver, and sulphur. The dominant sulfide is pyrrhotite.

Intrusive felsic rocks occurring in the SW Zone comprise mainly two different lithotypes: (i) feldspar porphyry and (ii) felsic dikes. They share similar compositional and textural characteristics and are often mistaken due to the lithological similarities and alteration pattern. Both felsic dikes and feldspar porphyry units show porphyritic textures, with felspar phenocrysts dispersed in a quartz-rich groundmass. Intense silica and sericite alteration are commonly observed in both units.

Felsic dikes are thinner and occur as “arrays” of several “dikes”, cross cutting the sequence, and often concentrated in the contact zone between mafic footwall and more intermediate to felsic hanging wall.

Figure 5-1. Geologic map of the SW Zone (from AGP Mining Consultants, 2020a and 2020b).

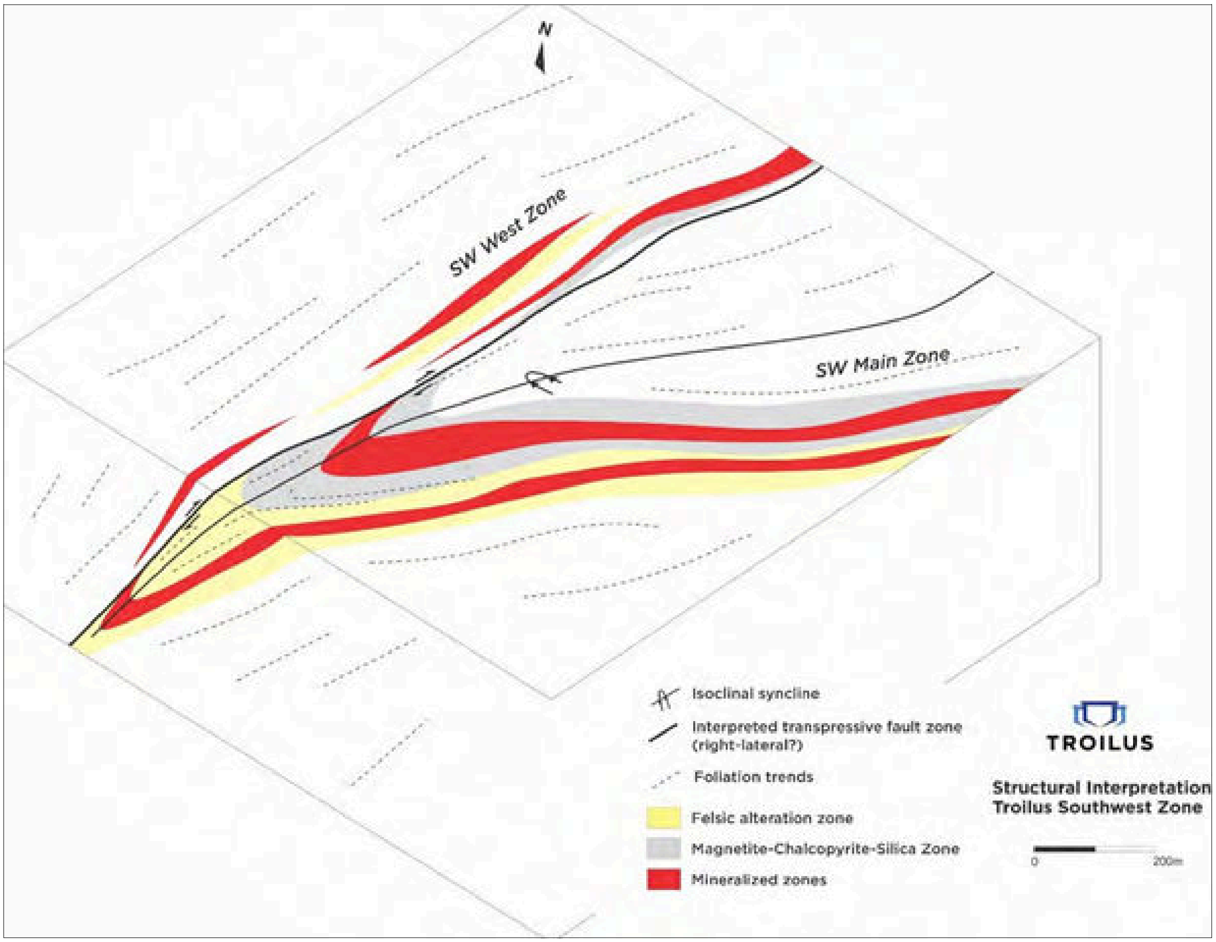


Figure 5-2. Geologic block model of the SW Zone (from AGP Mining Consultants, 2020a and 2020b).

The feldspar porphyry defines a continuous unit, tens of meters thick, occurring immediately above the mafic footwall sequence. It hosts an important part of the mineralization found in the Eastern Domain of SW Zone. It is generally lower grade, and relatively copper-poor, compared to the mineralized intervals observed in the magnetite-rich breccia occurring in the hanging wall of the feldspar porphyry unit.

A magnetite-rich and highly silicified brecciated unit represents the main host rock for gold and copper mineralization at the SW Zone and occurs within typical fine-grained, locally porphyritic diorites. The original textures and composition have completely been replaced by an intense silica alteration. The brecciated texture is characterized by dark grey, highly silicified fragments or pseudo-fragments, occurring in a chalcopyrite-, pyrite-, and magnetite-rich biotitic “matrix”.

Sulfides and quartz are often filling fractures and locally forming stockwork-like textures within the magnetite-rich silicified fragments. High-grade zones are copper-rich and reach up to 10-20 meters thick.

Fine-grained, porphyritic diorites occur intercalated with the brecciated, sulphide- and magnetite-rich intervals.

The Main and West SW Zones are predominantly differentiated by gold content and have been interpreted to represent opposite limbs of a major regional syncline (Figure 5-2) that has likely been subjected to a primary, regionally emplaced phase of gold bearing mineralization (the first major gold event). The Main Zone distinguishes itself from the West Zone by being highly altered by a secondary/later gold and copper bearing event, which is characterized by dark silica (quartz) flooding, brecciated (fractured) fragments, and intense fracture-filling chalcopyrite (the main source of copper) and pyrite, pervasive magnetite, as well as free gold.

Higher grade intervals appear associated with the highly altered Main Zone resulting from local, focused structural controls and fluid traps acting as a conduit for alteration/mineral deposition.

The SW Zone and the 87 Zone (Chapter 4) show important similarities in terms of host rocks, mineralization style and geochemistry:

- similar gold-copper-silver metal association;
- high-grade Au associated with chalcopyrite (filling micro-fracturing and in sulfide margins);
- zoning: pyrite-rich hanging wall, pyrite-chalcopyrite core zone, pyrite-pyrrhotite footwall;
- main host rocks:
    - · brecciated/pseudo-brecciated upper ore body: higher grade, gold-copper association, and
    - · felsic unit/alteration: bottom ore body, lower grade, relatively copper-poor; (“felsic dike” with porphyritic textures at 87 and feldspar porphyry at SW).
- least altered, medium to coarse-grained typical diorite in the hanging wall; and
- mafic, amphibole-rich, volcanic sequence in the footwall.

Both 87 and SW Zones are located within the same structural corridor represented by the eastern limb of the interpreted Troilus Syncline, comprising an intensely altered and deformed sequence, with a dominantly felsic "core" separating two distinct domains: a mafic-dominant footwall, and the intermediate intrusive package at the hanging wall.

The similarities between the two zones reinforce the potential to expand mineralization towards the underexplored 3.5km linear trend that separate 87 and SW Zones, also called the "Gap Zone".

5.2 Assay Database and Preliminary ML-ARD Information

Since 2018, more than 230 new drillholes have provided core of future SW Zone rock. Troilus Gold provided the assay database for SW, containing geochemical analyses of more than 98,000 core intervals (nominally 1 m long) involving dozens of chemical elements. Core logs allowed each assayed interval to be assigned a rock unit ("lithology"), and the spatial location of each core interval in three dimensions.

The number of core intervals for each of the 16 main rock units is shown in Figure 5-3 (arithmetic scale) and Figure 5-4 (logarithmic scale). Based on more than 98,000 intervals of nominal 1 m length, the five largest rock units in the SW Zone based on current drilling are: mafic volcanics, non-brecciated diorite, intermediate volcanics, undifferentiated volcanics, and quartz feldspar porphyry (Table 5-1). These five rock units comprise roughly 87% of all SW Zone rock, with approximately 0.01% of remaining cored rock undefined at this time.

Ore intervals in Table 5-1 are based on gold-equivalent values in grams per tonne (gpt) based on the equation for SW in the 2020 Preliminary Economic Assessment (AGP Mining Consultants Inc., 2020b) with 0.3 gpt cutoff. It is important to note that some ore intervals will inevitably be mixed with waste rock and vice versa during mining.

Based on approximately 89,400 assays of future SW Zone waste rock, the logarithmic mean sulphur content is 0.14%S (Figure 5-5). The range of total sulphur is <0.01%S (numerically set at 0.005%S) to >10%S (numerically set at 10%S).

Based on logarithmic Gaussian distributions, the means and standard deviations were calculated for each element in each rock unit in the SW Zone assay database. An important objective was to define "average" mean geochemical solid-phase concentrations for selecting samples for the laboratory-based kinetic tests reflecting the variabilities above and below those means.

For SW waste rock, many solid-phase elements were generally lognormally distributed. Thus, based on logarithmic Gaussian distributions, the means and standard deviations were calculated for each element in each rock unit in the SW Zone assay database. This included potentially acid-generating sulphur (Figure 5-5), even though sulphur is variable along the length of each drillhole (Figure 5-11). This also included acid-neutralizing carbon for only roughly 7000 core intervals that included it (Figure 5-6). Furthermore, sulphur is generally lognormally distributed in the waste rock of the major rock units of mafic volcanics (Figure 5-7), non-brecciated diorite (I2J, Figure 5-8), and others.

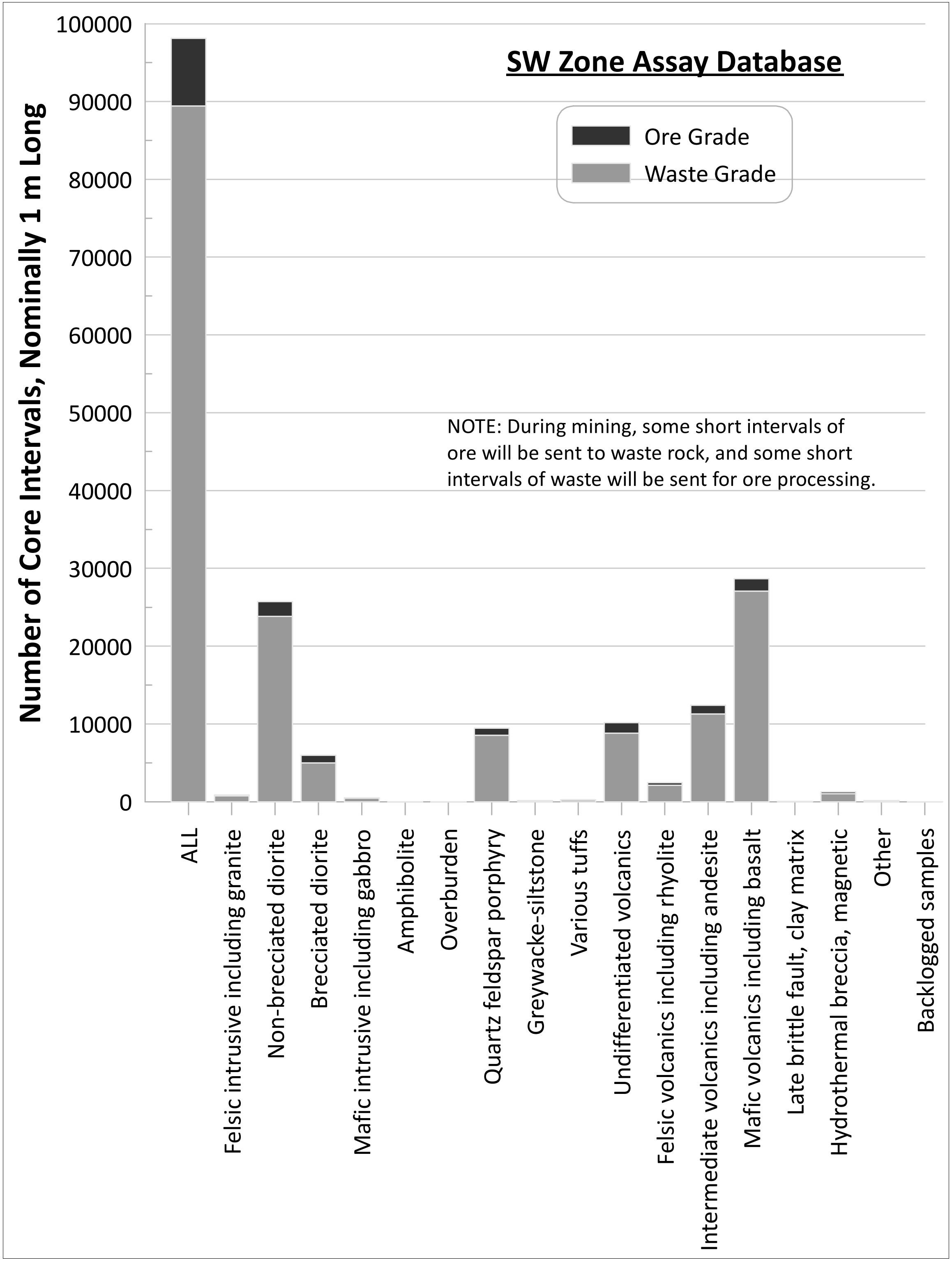
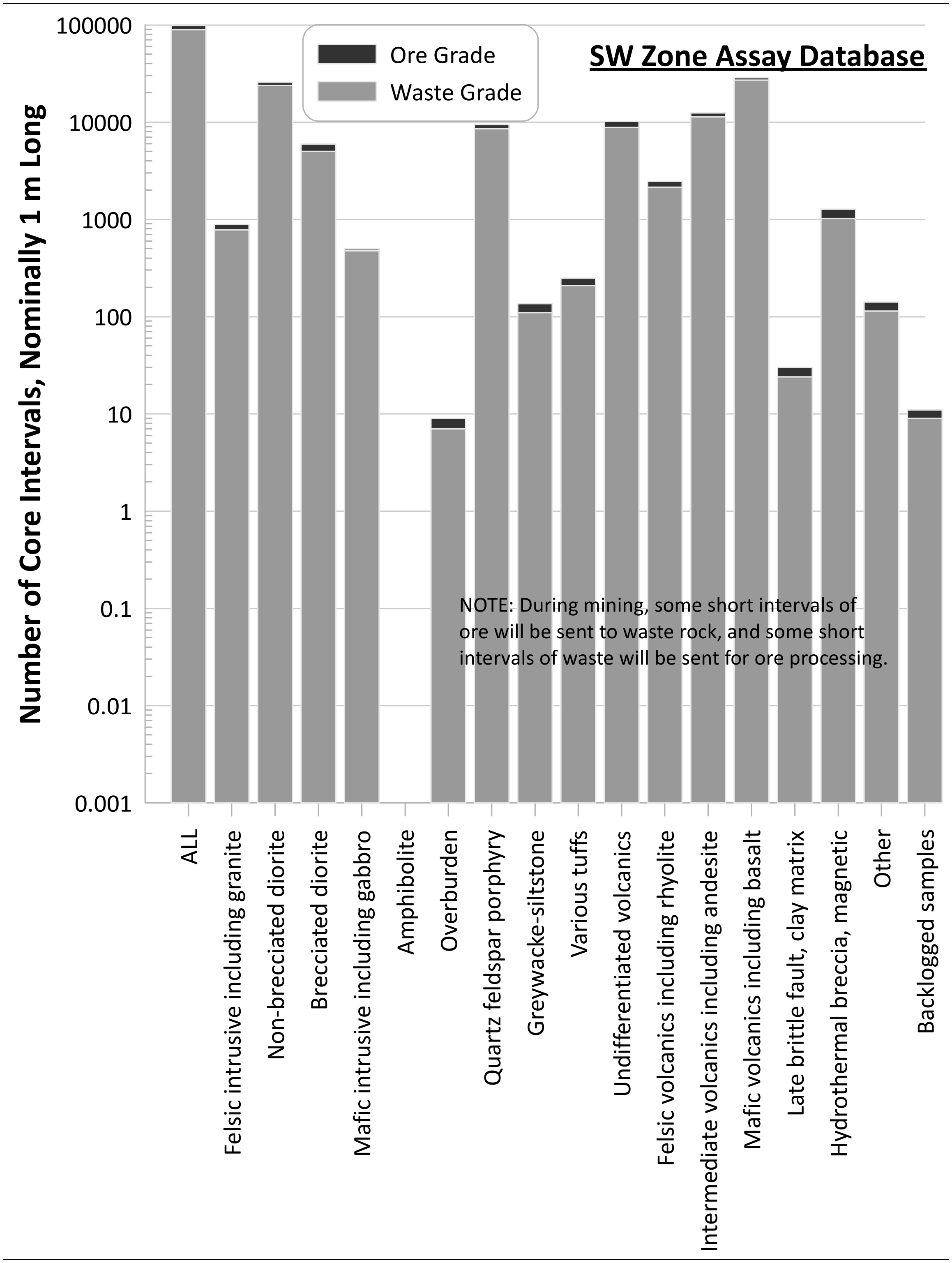


Figure 5-3. Abundances of rock units on an arithmetic scale based on more than 98,100 core intervals of recent SW core.



NOTE: During mining, some short intervals of ore will be sent to waste rock, and some short intervals of waste will be sent for ore processing.

Figure 5-4. Abundances of rock units on a logarithmic scale based on more than 98,100 core intervals of recent SW core.

Table 5-1. Percentages of rock units in the SW Zone based on more than 98,100 core intervals

Code	Rock Unit	Number	Percentage of Total (%)[1] Ore + Waste	Waste	Ore
V3	Mafic volcanics including basalt	28690	29%	30%	19%
I2J	Non-brecciated diorite	25750	26	27	22
V2	Intermediate volcanics including andesite	12385	13	13	13
V	Undifferentiated volcanics	10182	10	9.8	16
QFP	Quartz Feldspar Porphyry	9451	9.6	9.5	11
I2J;BR	Brecciated diorite	5983	6.1	5.6	12
V1	Felsic volcanics including rhyolite	2454	2.5	2.4	3.5
HyBr	Hydrothermal breccia, magnetic	1267	1.3	1.1	2.8
I1	Felsic intrusive including granite	885	0.90	0.87	1.2
I3&I4	Mafic intrusive including gabbro	495	0.50	0.53	0.22
T	Various tuffs	249	0.25	0.23	0.46
Other	Other (e.g., IFP)	141	0.14	0.13	0.31
S3	Greywacke-siltstone	136	0.14	0.12	0.30
Fnum	Late brittle fault, clay matrix	30	0.03	0.03	0.07
-	Assay data but no rock unit	11	0.01	0.01	0.02
MT	Overburden	9	0.009	0.008	0.02
M16	Amphibolite	0	0	0	0
TOTAL COUNT			98118	8713	89405

[1] Ore intervals were defined as gold-equivalent at and above 0.3 gpt (AGP Mining Consultants Inc., 2020b).

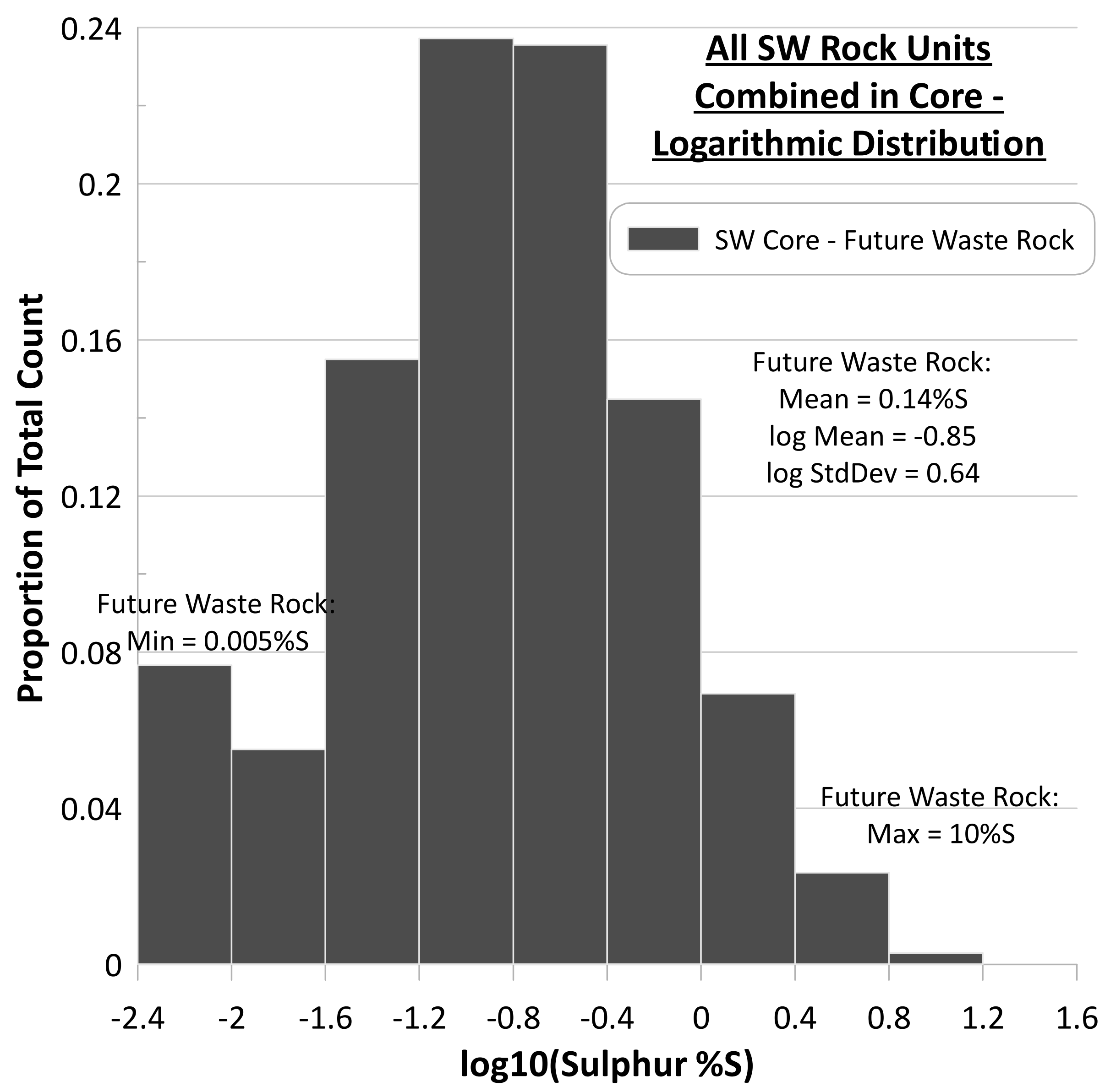


Figure 5-5. Lognormal distribution of sulphur in future SW Zone waste rock with all rock units combined.

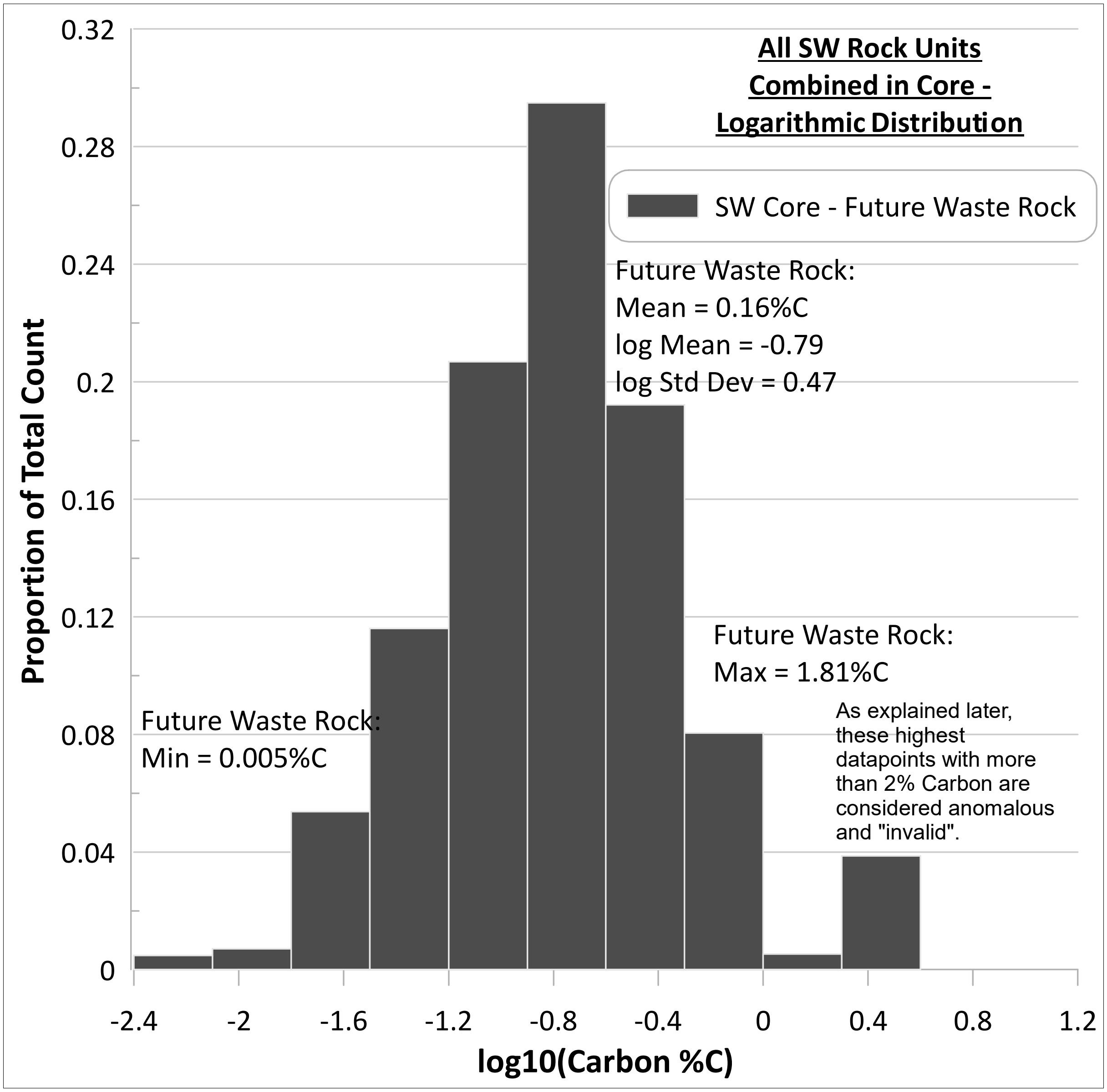


Figure 5-6. Lognormal distribution of carbon in future SW Zone waste rock with all rock units combined.

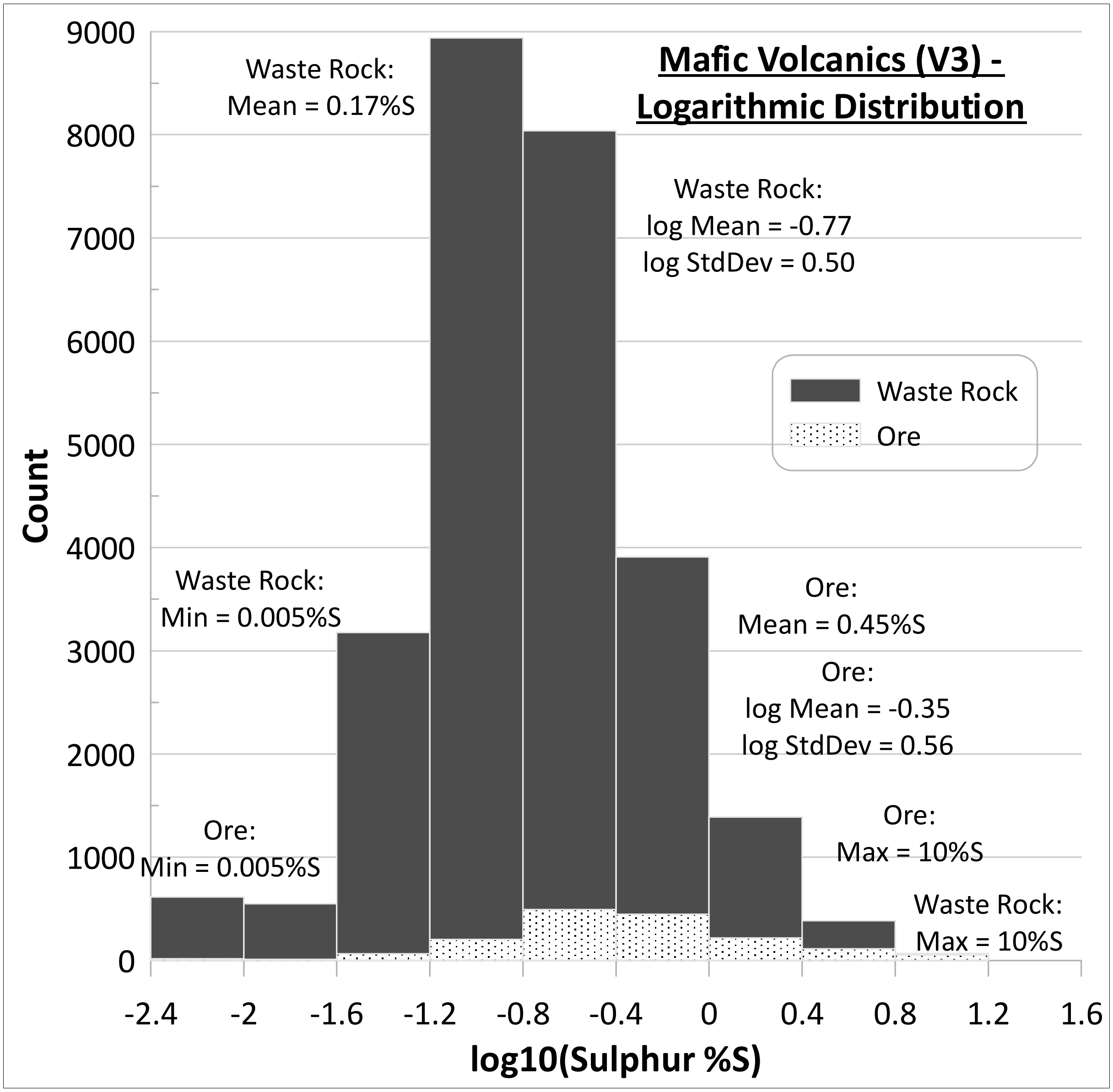


Figure 5-7. Lognormal distributions of sulphur in future waste rock and ore in major rock unit Mafic Volcanics (V3).

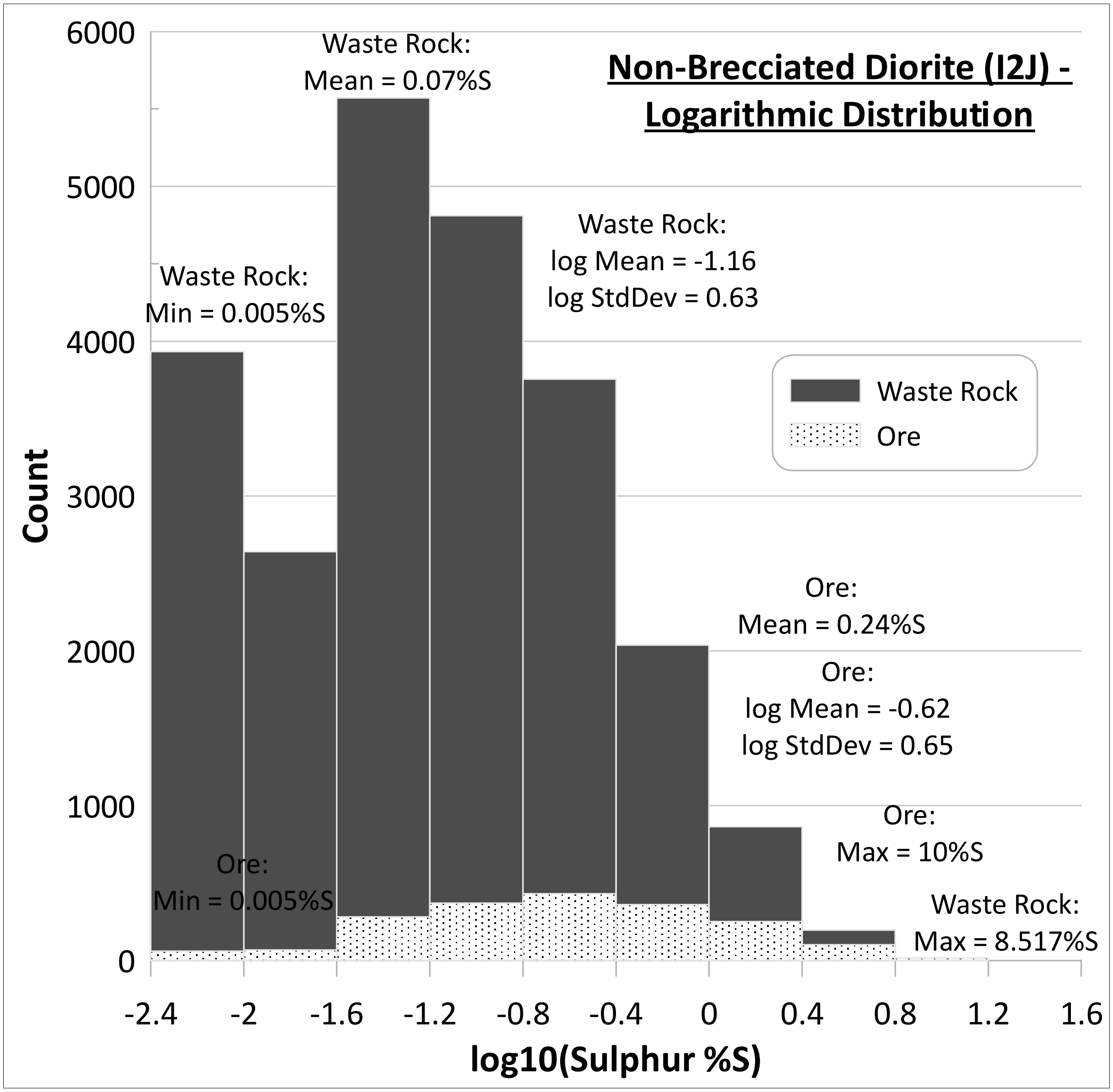


Figure 5-8. Lognormal distributions of sulphur in future waste rock and ore in major rock unit Non-Brecciated Diorite (I2J).

Nevertheless, the average sulphur level and lognormal standard deviations do vary from rock unit to rock unit in the waste-rock intervals (Figure 5-9). This is also true of metal levels like copper (Figure 5-10).

5.3 Three-Dimensional ML-ARD Model

The SW Zone assay database and drillhole information like collar locations, azimuths, and dips were entered into Golden Software's Voxler software. This allows each assayed element to be plotted, like sulphur in Figure 5-11. This also ensured the ML-ARD sample selection (Table 5-2) was spatially distributed through the SW Zone. As a result, environmental planning for any required ML-ARD control for SW rock can be aligned with the mine plan and its time schedule.

This ML-ARD information can be exported to Troilus mining software.

5.4 Selection of ML-ARD Core Samples from the Southwest Zone

Based on information on the general geology of Troilus (Chapter 2) and on more detailed information including geostatistics for SW Zone and spatial distributions (above), Troilus asked that 30 core intervals be selected from the SW database for ML-ARD analyses.

The previous information in this Chapter 5 ensured samples could be selected that were well distributed in three dimensions and from all major rock units in the SW Zone. In case some drillcore samples were no longer available, MDAG opted to include two alternates for each primary selection. Nevertheless, in the one case for HyBr (hydrothermal breccia), none of the three potential samples were available, so only 29 samples of SW rock were analyzed. The ML-ARD analyses for the 29 samples collected by Troilus staff are listed in Table 5-2 and Appendix C.

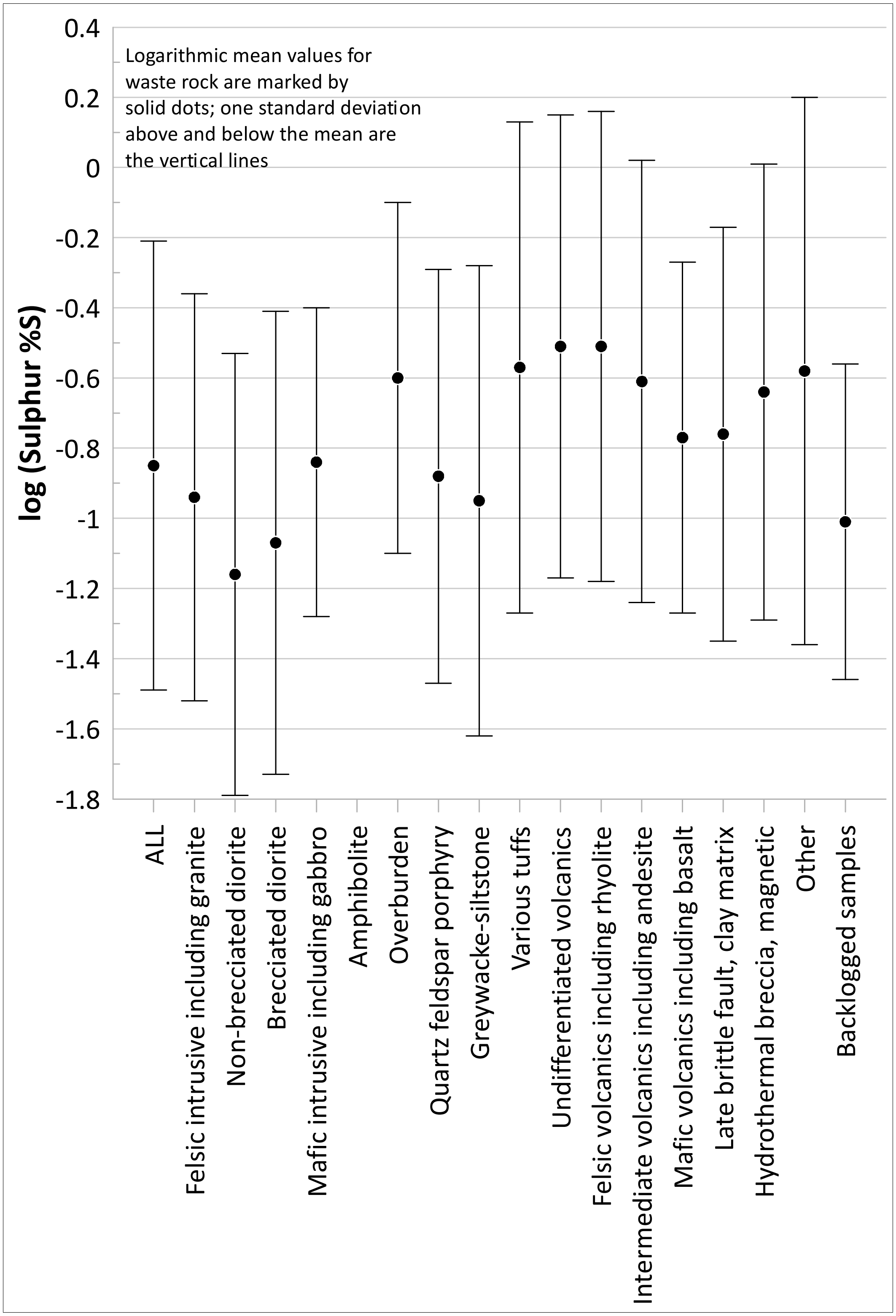


Figure 5-9. Logarithmic mean values (solid dots) and plus-minus one log standard deviation (vertical lines) for sulphur in future SW Zone waste rock.

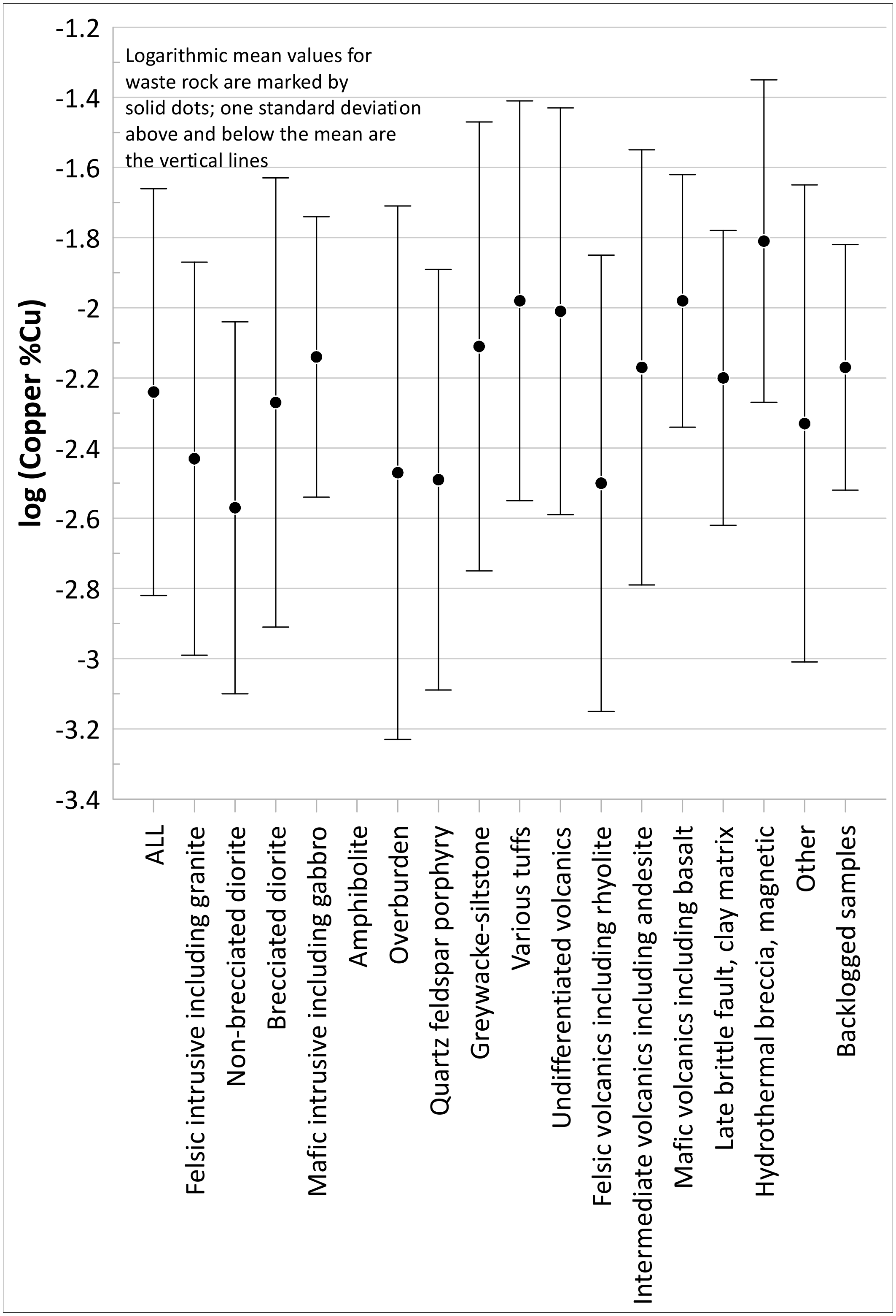


Figure 5-10. Logarithmic mean values (solid dots) and plus-minus one log standard deviation (vertical lines) for copper in future SW Zone waste rock.

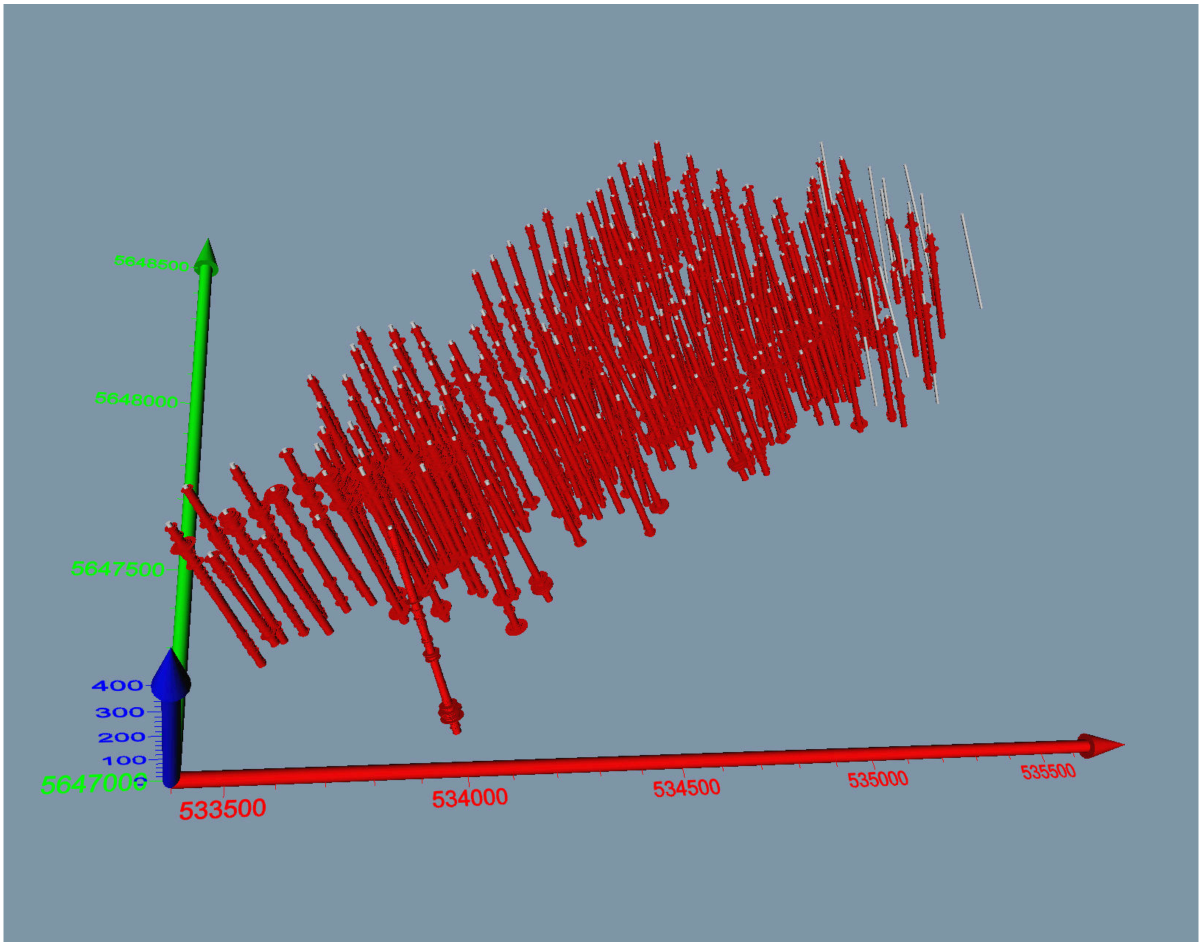


Figure 5-11. A screenshot of the SW Zone three-dimensional ML-ARD model; relative sulphur level in each interval of drillcore is shown as a red disc along each drillhole in white, with white intervals having no sulphur analyses.

Table 5-2. ML-ARD samples collected from rock units in the SW Zone relative to mean total sulphur in each significant rock unit (see also Appendix C)

Code	Rock Unit	Percent of Waste + Ore[1]	Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Drillhole Sample	ML-ARD Sample Number
V3	Mafic volcanics including basalt	29%	+2.0	SW-22-575 254-255	A00488531
			+1.0	SW-21-567 212-213	A00488532
			0.0	SW-22-647 200-201	A00488533
			0.0	SW-22-574 93-94	A00488534
			-1.0	SW-21-598 104-105	A00488535
			-2.0	SW-21-619 164-165	A00488536
I2J	Non-brecciated diorite	26%	+2.0	TLG-ZSW20-210 76-77	A00488537
			+1.0	SW-22-607 267-268	A00488538
			0.0	TLG-ZSW20-201 55-56	A00488539
			-1.0	SW-22-603 143-144	A00488540
			-2.0	TLG-ZSW20-198 198-199	A00488541
V2	Intermediate volcanics including andesite	13%	+2.0	SW-21-548 110-111	A00488542
			+1.0	SW-21-562 49-50	A00488543
			0.0	SW-21-556 34-35	A00488544
			0.0	SW-21-554 110-111	A00488545
			-1.0	SW-22-629 166-167	A00488546
			-2.0	SW-21-561 38-39	A00488547
V	Undifferentiated volcanics	10%	+2.0	SW-21-596 125-126	A00488548
			0.0	SW-21-540 125-126	A00488549
			-2.0	SW-22-603 34-35	A00488550
QFP	Quartz Feldspar Porphyry	9.6%	+2.0	SW-22-585 200-201	A00488551
			0.0	SW-21-511 38-39	A00488552
			-2.0	SW-22-587 231-232	A00488553
I2J;BR	Brecciated diorite	6.1%	+2.0	SW-22-605 63-64	A00488554
			0.0	TLG-ZSW21-283 141-142	A00488555
			-2.0	TLG-ZSW20-183 41-42	A00488556

Code	Rock Unit	Percent of Waste + Ore[1]	Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Drillhole Sample	ML-ARD Sample Number
V1	Felsic volcanics including rhyolite	2.5%	0.0	TLG-ZSW19-179 245-246	A00488557
I1	Felsic intrusive including granite	0.90%	0.0	TLG-ZSW20-185 67-67.6	A00488558
I3 & I4	Mafic intrusive including gabbro	0.50%	0.0	SW-21-537 215-216	A00488559

[1] See Table 5-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

6. RESULTS OF ABA ANALYSES FOR J4, 87, AND SW ZONES

As explained above in Chapter 3 for the J4 Zone, Chapter 4 for the 87 Zone, and Chapter 5 for the SW Zone, drillcore samples were selected for ML-ARD analyses:

- generally proportional to the dominant rock units in each ore zone,
- based on tens of thousands of assays in each zone, particularly of potentially acid-generating sulphur with well-defined means and standard deviations, and
- collected over wide three-dimensional distributions in each zone.

This is summarized in Table 6-1.

These 89 samples were then subjected to geochemical solid-phase analyses to characterize their current and future potential to release ML-ARD. These analyses are collectively known as expanded Acid-Base Accounting (ABA) using the standardized (non-modified) Sobek (U.S. EPA 600 standard compliant; Sobek et al., 1978) procedure. These analyses are consistent with the federal ML-ARD prediction manual (Price, 2009).

The ABA procedure used for the 89 Troilus samples of Table 6-1 provided measured and/or calculated values of:

1) acid-base accounting:
    - paste pH in a mixture of pulverized rock and water,
    - total sulphur,
    - leachable sulphate by two methods (carbonate leach and HCl leach),
    - calculated sulphide by subtracting sulphate from total sulphur,
    - measured sulphide,
    - barium-bound sulphate calculated from barium analyses,
    - calculation of acid potentials based on total-sulphur levels (Total-Sulphur Acid Potential, TAP),
    - calculation of acid potentials based on sulphide levels plus any unaccounted-for sulphur (Sulphide Acid Potential, SAP),
    - Sobek (U.S. EPA 600 standard compliant) neutralization potential (NP) by acid bath and base titration,
    - inorganic carbonate for mathematical conversion to Carbonate NP (Inorg Carbon NP),
    - total carbon for mathematical conversion to Carbonate-equivalent NP (Total Carbon NP),
    - excess carbon calculated from the difference between total carbon and inorganic carbon,
    - CaNP calculated from calcium ((Ca) CaNP),
    - CaNP calculated from Ca + Mg ((Ca+Mg) CaNP),
    - various Net Neutralization Potential (NNP) balances of acid neutralizing capacities minus various acid generating capacities, and
    - various Net Potential Ratio (NPR) balances of acid neutralizing capacities divided by various acid generating capacities.

2) total-element contents by:
    - multi-element ICP-MS analysis after strong four-acid digestion, and
    - XRF (x-ray-fluorescence) whole rock for multiple elements and parameters.

These results are compiled in Appendices A, B, and C, with similar analyses for on-site columns in Appendix D.

Table 6-1. Rock units and numbers of ML-ARD samples by ore zone at Troilus (see also Appendices A, B, and C)

		J4 Zone[1]		87 Zone[2]		SW Zone[3]	
Code	Rock Unit	Percent of Core Intervals	No. of ML-ARD Samples	Percent of Core Intervals	No. of ML-ARD Samples	Percent of Core Intervals	No. of ML-ARD Samples
I2J	Non-brecciated diorite	62%	9	38%	5	26%	5
I2J; BR	Brecciated diorite	16%	6	33%	6	6.1%	3
V	Undifferentiated volcanics	6.9%	6	2.0%	1	10%	3
I1	Felsic intrusive including granite	5.0%	3	9.7%	6	0.90%	1
T	Various tuffs	2.0%	1	6.2%	3		
V1	Felsic volcanics including rhyolite	1.8%	1	0.84%	1	2.5%	1
QFP	Quartz Feldspar Porphyry	1.2%	1	2.6%	1	9.6%	3
V2	Intermediate volcanics including andesite	0.58%	1	3.3%	3	13%	6
V3	Mafic volcanics including basalt	0.39%	1	3.0%	3	29%	6
I3 & I4	Mafic intrusive including gabbro	0.071%	1	0.72%	1	0.50%	1
	TOTAL FOR ML-ARD	~96%	30	~99%	30	~98%	29

[1] See Tables 3-1 and 3-2, and Appendix A.

[2] See Tables 4-1 and 4-2, and Appendix B.

[3] See Tables 5-1 and 5-2, and Appendix C.

6.1 Paste pH

Paste pH was measured in a mixture of deionized water and pulverized sample of rock. Paste pH values in the 89 ML-ARD rock samples from Troilus drillcore ranged from 8.4 to 10.1 (Figure 6-1). Therefore, all samples were alkaline at the time of analysis, with no acidic conditions detected.

There are two important observations from Figure 6-1.

First, most paste pH values were above 9.0, which is about the upper limit for neutralization by typical carbonate minerals. Therefore, Troilus rock contains non-carbonate neutralizing minerals. Such minerals tend to react slower than carbonate minerals and thus are not fully detected by the hours-long Neutralization Potential (see Figure 1-1, Section 6.3, and Chapter 7). This non-detection of all neutralizing minerals in Troilus rock by ABA has been known for many years.

Second, the lowest values of paste pH, between 8.2 and 8.8, are detected only at the highest levels of potentially acid-generating sulphur. This suggests that any acidic conditions that could arise at Troilus may require more than 1-2%S solid-phase levels in the rock. This is discussed further in Section 6.4.

6.2 Sulphur Species and Acid Potentials

Possible sulphur species in Troilus rock are: sulphide including acid-generating iron-bearing sulphide minerals like pyrite (reported in all three ore zones at Troilus, see Chapters 2-5 above), leachable sulphate, non-leachable sulphate such as barite, and elemental sulphur. The sum of these species theoretically equals total sulphur, although analytical inaccuracy rarely yields an exact mass balance. Elemental and organic-bound sulphur species were not measured directly, and are probably rare in Troilus rock. They would nevertheless still be detected by the total-sulphur analyses of this study and would thus be included in total acid-generating potential. In this study, total sulphur was typically measured by a Leco furnace, with some analyses by four-acid-digestion ICP-MS.

The range of total sulphur in the 89 ML-ARD samples spans about three orders of magnitude, from 0.01%S to 7.15%S (Figure 6-1), with a mean and median for all three zones combined of 0.55%S and 0.16%S, respectively. This large range is expected, because the samples were selected based on standard deviations above and below the mean sulphur level in each rock unit in each zone (Tables 3-2, 4-2, and 5-2).

As a general observation for Figure 6-1, the intrusive rock units (diorite, granite, and gabbro) generally have lower total-sulphur levels than the extrusive rock units (various volcanics and tuffs, plus QFP). This is consistent with the mean total-sulphur levels of these individual rock units in each ore zone (solid dots in Figures 3-7, 4-8, and 5-9). In turn, this confirms that these 89 ML-ARD samples generally reflect the variabilities of total sulphur seen in more than 158,000 Troilus assays, which was in fact a major objective of these ML-ARD samples (Tables 3-2, 4-2, and 5-2).

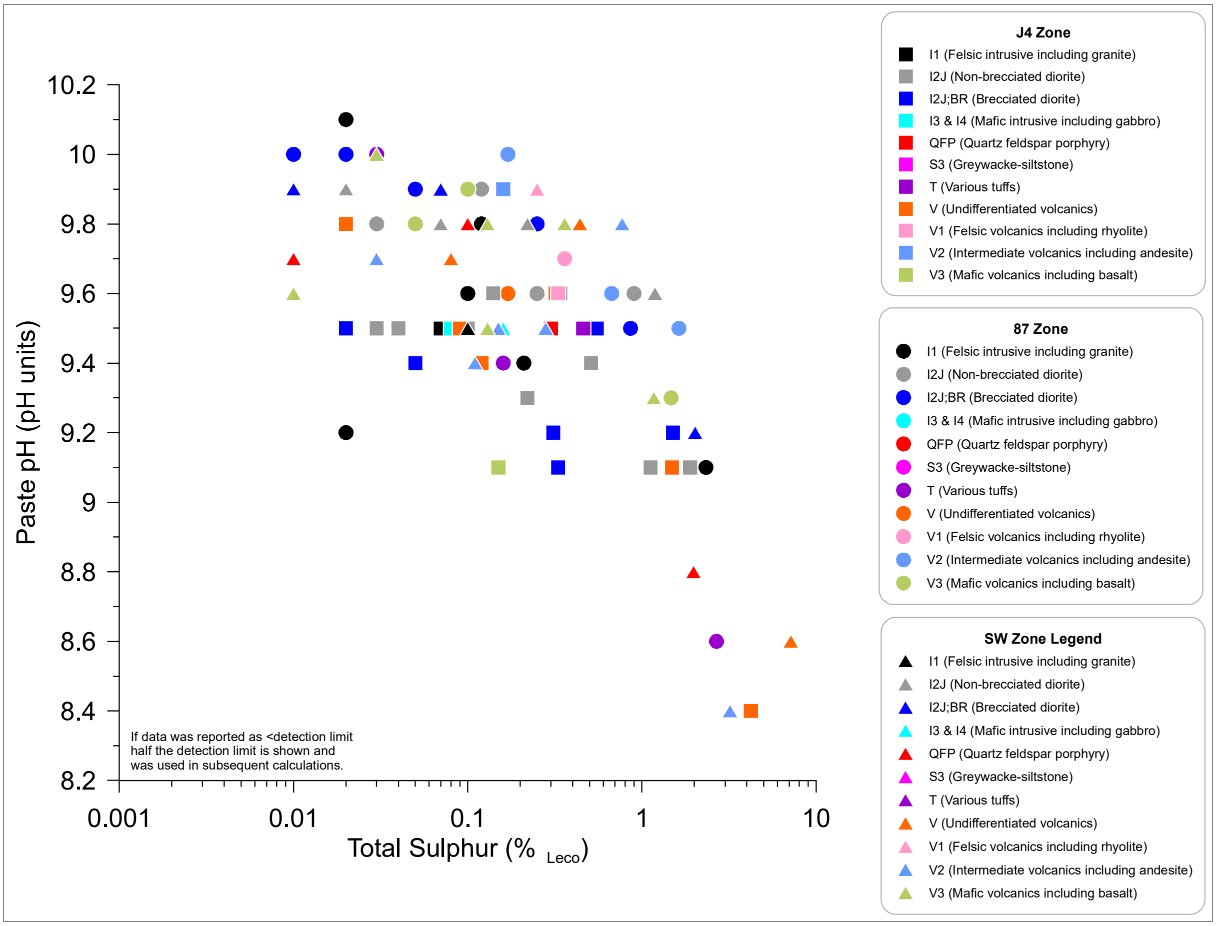


Figure 6-1. Paste pH vs. total sulphur in the 89 ML-ARD samples.

As explained above, total sulphur consists of one or more sulphur species. One example is leachable sulphate (Figure 6-2) which is a relatively small portion of total sulphur in Troilus rock, except at the lowest levels around 0.01%S where geochemical analyses were not as accurate.

On the other hand, most of the total sulphur consists of potentially acid generating sulphide (Figure 6-3). Therefore, total sulphur and sulphide in Troilus rock are equivalent.

This shows that total sulphur in the Troilus assay databases reliably represents the maximum capacity for Troilus rock to generate acidity by sulphide oxidation. Thus, the equation applicable to all Troilus rock units and ore zones is:

Total Acid Potential (TAP, kg $CaCO_3$ equivalent/ t) = %S(total) * 31.25 (Eq. 6-1)

This is discussed further in Section 6.4.

In summary, the range of total sulphur in the 89 ML-ARD samples spans about three orders of magnitude, from 0.01%S to 7.15%S. This large range is expected because the samples were selected based on standard deviations above and below the mean sulphur level in each rock unit in each zone. In general, the intrusive rock units (diorite, granite, and gabbro) generally have lower total-sulphur levels than the extrusive rock units (various volcanics and tuffs, and QFP). This confirms that these 89 ML-ARD samples generally reflect the variabilities of total sulphur seen in more than 158,000 Troilus assays, which was in fact a major objective of these ML-ARD samples. Most of the total sulphur is composed of potentially acid-generating sulphide, and thus total sulphur and sulphide can be used interchangeably. For the 89 ML-ARD samples and the more than 158,000 drillcore assays, Total Acid Potential (TAP) is calculated by: %S(total) * 31.25.

6.3 Neutralization Potentials

There are various types of neutralizing capacities in rock samples, all expressed in units of kg $CaCO_3$ equivalent/tonne (kg/t). These include (see Figure 1-1 and Appendices A, B, and C):

(1) short-term standardized Sobek "bulk neutralization potential" (U.S. EPA 600 Sobek NP) based on an hours-long acid bath to determine how much acid was neutralized in the short term, although Troilus rock contains more NP than the Sobek NP (Figure 1-1);

(2) carbon neutralization potential (Carbon NP) calculated mathematically from measured solid-phase levels of inorganic carbonate or total carbon as $CaCO_3$ (calcite, Chapters 2 through 5 above), although Troilus rock contains more NP than Carbon NP (Figure 1-1); and

(3) Fast-Neutralizing Silicate NP that cannot be reliably detected by ABA and requires additional information (discussed further in Chapter 7).

Each type of NP (Figure 1-1) can reveal important aspects of a sample's capacity to neutralize the acidity generated by sulphide oxidation (Sections 6.2 and 6.4). NP values for the 89 Troilus ML-ARD samples are compiled in Appendices A to C, and are discussed in more detail here in this subsection.

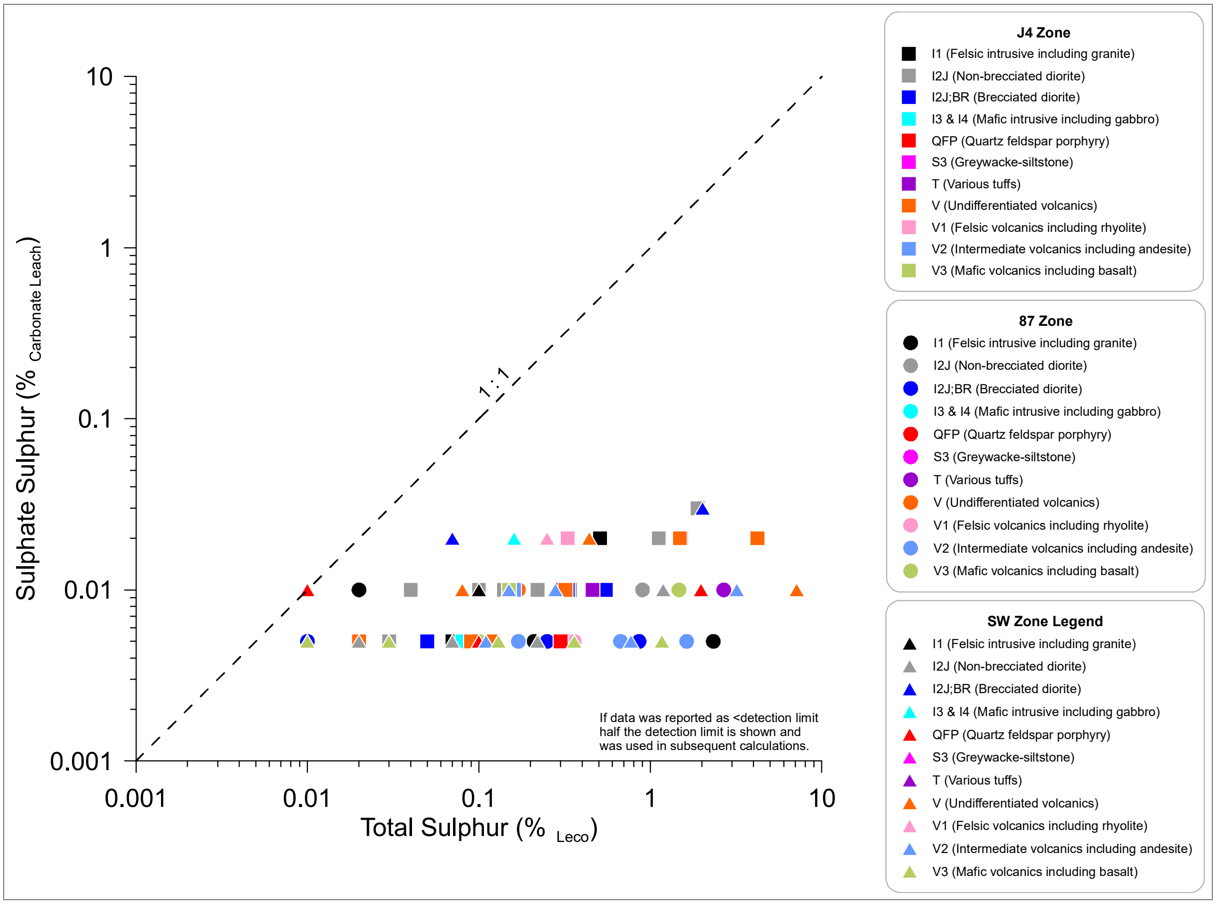


Figure 6-2. Leachable sulphate vs. total sulphur in the 89 ML-ARD samples.

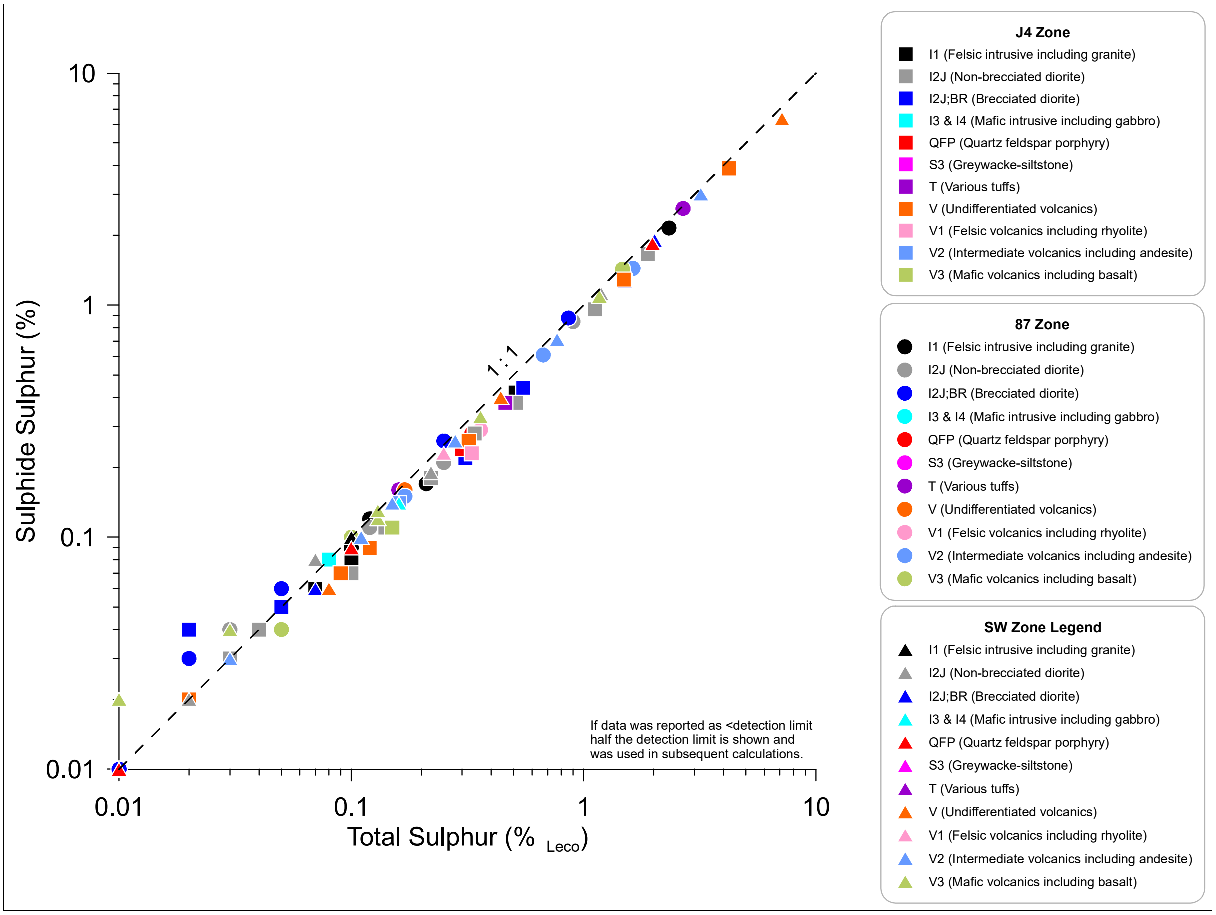


Figure 6-3. Potentially acid-generating sulphide sulphur vs. total sulphur in the 89 ML-ARD samples.

Of great importance for Troilus rock, the measured Sobek NP values and Carbon NP values do not reflect all reactive and effective neutralization in Troilus rock. Thus, these NP values currently underestimate NP and overestimate ARD potential using generic criteria as given in this Phase 1 MDAG report. These various forms of NP are related by the following mathematical equations.

Troilus Rock Fast-Neutralizing Carbon NP (kg $CaCO_3$/t) = %C * 83.33 (Eq. 6-2)

[Note: This equation for Carbon NP is divided by 2 in some cases depending on site conditions and the definition of aqueous alkalinity; see Morin and Hutt, 2006.]

Sobek NP (kg $CaCO_3$/t) = Fast-Neutralizing Carbon NP + Some Fast-Neutralizing Silicate NP (Eq. 6-3)

[Note: Equations 6-2 and 6-3 are compared to Equation 6-1 in the following Subsection 6.4 to calculate Net Potential Ratios (NPRs); Fast-Neutralizing Silicate NP (Figure 1-1) varies with local pH and other conditions as explained in Chapter 7.]

Troilus Rock Total NP (kg $CaCO_3$/t) = Fast-Neutralizing Carbon NP + Fast-Neutralizing Silicate NP (Eq. 6-4)

Troilus Rock Total NP (kg $CaCO_3$ equivalent/ t) = Sobek NP + Additional Neutralizing Silicate NP (Eq. 6-5)

Equations 6-2 and 6-3 based on fast-reacting NP are used in this Phase 1 study with generic criteria, and Equations 6-4 and 6-5 become useable based on Chapter 7 below. Geochemical studies (e.g., National Research Council Canada, 2023) are ongoing to detect more reliably all neutralization in Troilus rock (Figure 1-1). When completed, this MDAG report will be updated to improve site-specific Total NP estimates. Therefore, the current focus in this Phase 1 study is to understand Carbon NP, Sobek NP, and Total NP (Figure 1-1 and Chapter 7) and their effects on ARD predictions based on currently available information.

Carbon NP for the 89 ML-ARD samples can be calculated from inorganic carbon or total carbon (Appendices A to C). For Troilus rock, virtually all total carbon is inorganic carbon (Figure 6-4), except at the lowest values where the lower detection limit for total carbon provides more accurate values than inorganic carbon. Thus, total carbon is used here for Carbon NP calculations (Equation 6-2).

Carbon NP for the 89 ML-ARD samples ranged from 1.67 to 72.5 kg $CaCO_3$ equivalent/tonne (Figure 6-5), with a mean and median of 9.7 and 5.0 kg/t, respectively. The highest values were found in the SW Zone. These relatively low values are typical of granitoid rocks around the world (White et al., 2005; Jambor et al., 2006). They can reflect the "residual" sequestration of atmospheric carbon dioxide as carbonate minerals, which would explain some smaller-scale Troilus tests becoming acidic while the full-scale site does not.

Notably, paste pH showed no significant correlation with Carbon NP (Figure 6-5). In fact, the lowest values of paste pH were from samples with Carbon NP similar to other samples, and even one of the lowest pH values (around 8.8) had the second highest measured Carbon NP. This is in contrast to the lowest paste pH values having the highest acid-generating sulphur levels (Figure 6-1). This implies that higher amounts of solid-phase acid-generating sulphur (and by implication the unit-weight rates of oxidation per tonne) are neutralized only by the fast-reacting minerals (neutralizing to pH < 9).

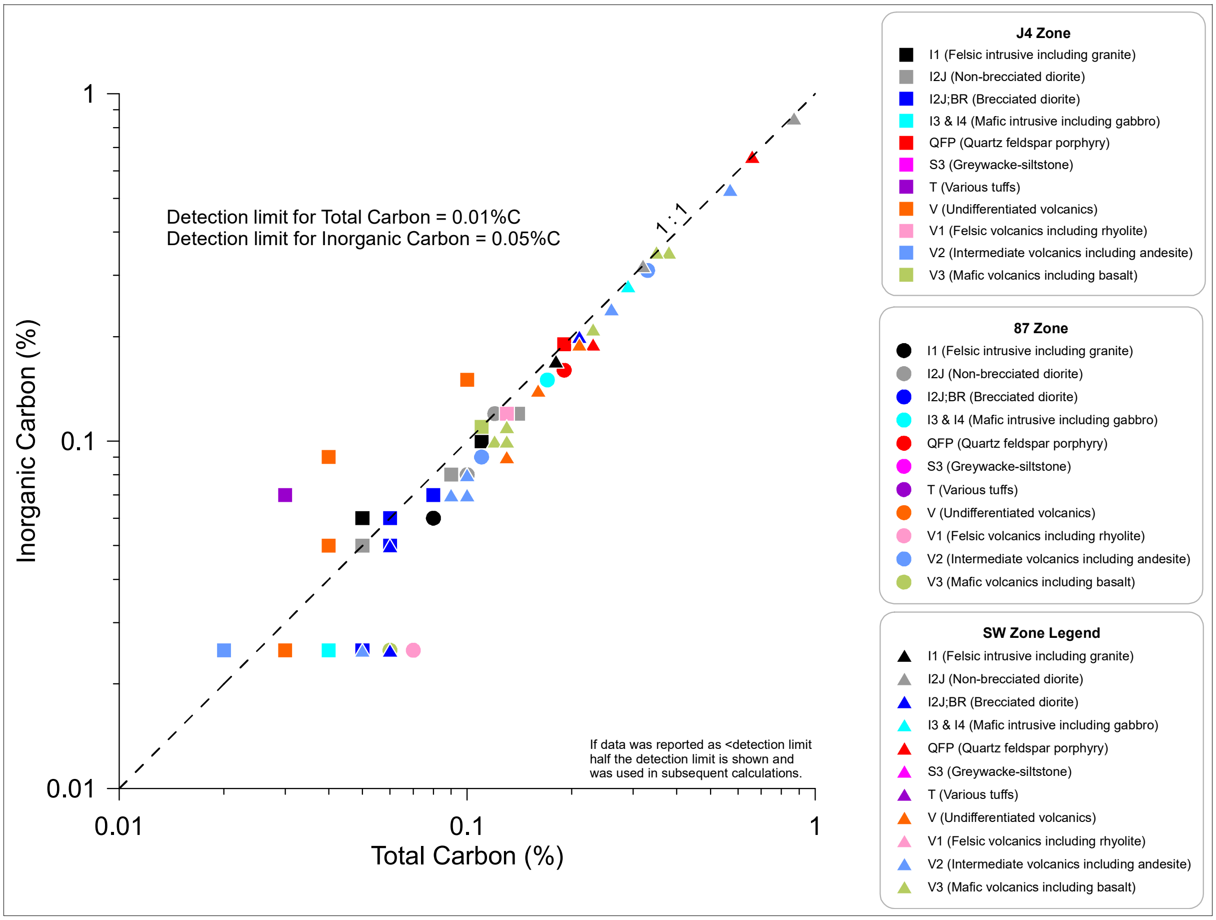


Figure 6-4. Total carbon vs. inorganic carbon in the 89 ML-ARD samples, showing virtually all carbon is inorganic carbon.

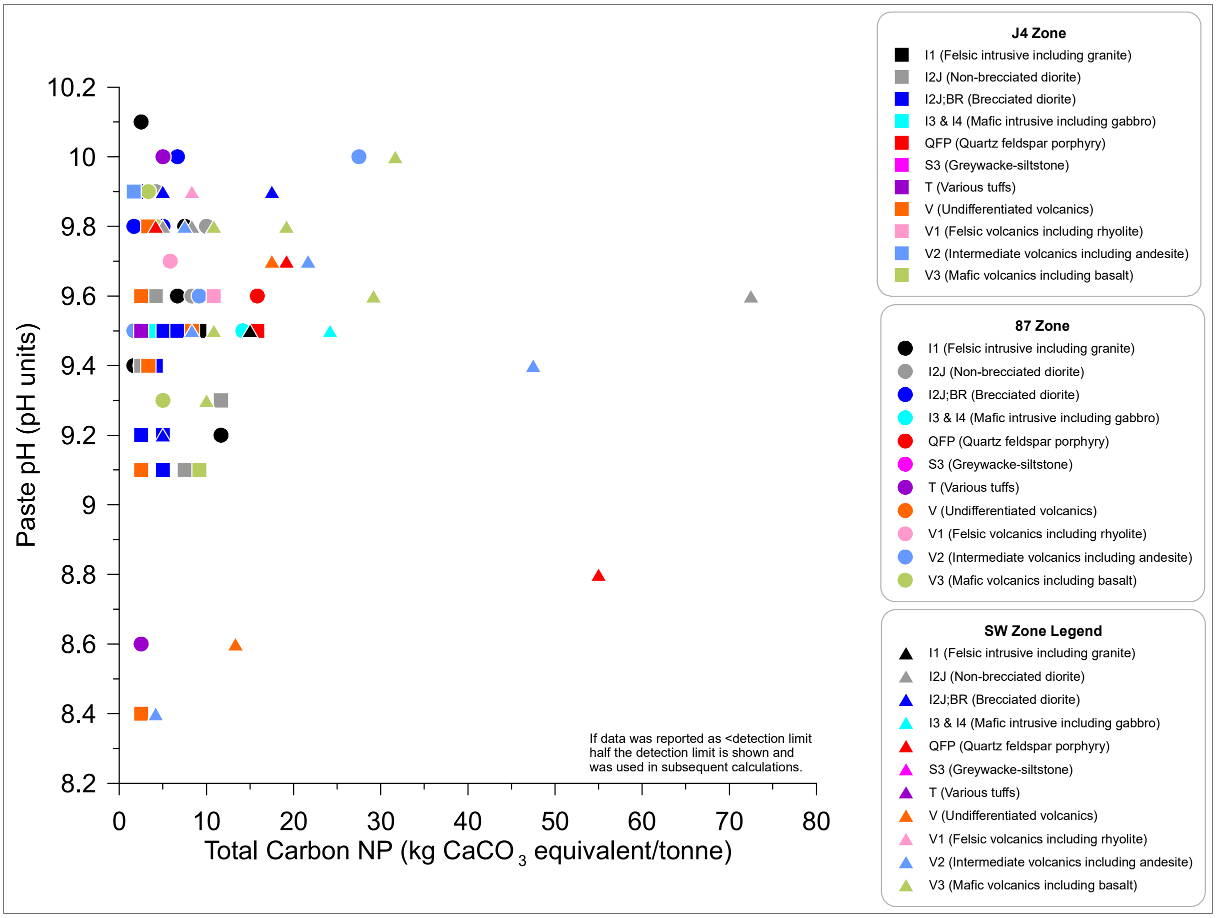


Figure 6-5. Paste pH vs. total-carbon-based Neutralization Potential (NP) in the 89 ML-ARD samples.

In turn, lower amounts of sulphur (and lower unit-weight oxidation rates) are neutralized by carbonate minerals plus the additional non-carbonate neutralizing minerals (neutralizing to pH > 9) in Troilus rock. This is discussed further in Chapter 7 below.

Carbon NP did not show any significant correlation with sulphur (Figure 6-6) discussed above in Section 6.2. Thus, sulphur and Carbon NP in Troilus rock are statistically independent and require separate evaluations and interpretations, as done in this report. These two parameters are combined in Section 6.4 below to obtain net potentials and corresponding predictions of ARD potentials using generic criteria in Chapter 7.

Sobek NP for the 89 ML-ARD samples ranged from 4 to 81 kg $CaCO_3$ equivalent/tonne (Figure 6-7 and Appendices A to C). The highest NP values are predominantly from SW Zone. The mean and median Sobek NP for all three zones combined were 21 and 18 kg/t, respectively.

The correlation of Sobek NP with Total Carbon NP, both using the same units of measurement (Figure 6-8), shows that some, but not all, Sobek NP is composed of fast-neutralizing carbonate minerals (see also Figure 1-1). The remaining Sobek NP reflects the presence of non-carbonate minerals, like some silicate minerals, which are not fully detected by the hours-long Sobek procedure. Below a Carbon NP of 16 kg/t and a Sobek NP of 24 kg/t, non-carbon NP is the major portion of Sobek NP. This is a critical issue for ARD predictions at Troilus, and discussed further in Chapter 7 below.

In summary, Neutralization Potential (NP) represents the amount of acidity that Troilus rock can neutralize upon the oxidation of sulphur. As part of ABA, NP is typically measured by procedures that require less than 24 hours and thus primarily detect fast-neutralizing minerals like carbonates. However, kinetic studies and on-site monitoring at Troilus show that Troilus rock contains more NP than detected by these short-term methods, which will be addressed in Chapter 7 below.

6.4 Net Balances of Acid Potentials and Neutralization Potentials

The acid-generating and acid-neutralizing capacities of the Troilus ML-ARD rock samples (Table 6-1) were calculated from:

1) total sulphur to obtain Total Acid Potential (TAP, Section 6.2), and
2) Neutralization Potential, namely Sobek NP or Carbon NP (Section 6.3 and Figure 1-1), with Total NP discussed later in Chapter 7.

Net balances of these two potentials were calculated to predict whether a Troilus rock sample would become net acid generating, perhaps after a long near-neutral "lag time" during continual oxidation, or whether a sample would remain net acid neutralizing indefinitely. Net balances can be calculated using division (Net Potential Ratio, NPR = NP / AP) or subtraction (Net Neutralization Potential, NNP = NP - AP). Both calculations lead to similar ARD predictions (Appendices A to D), so NPR is used here.

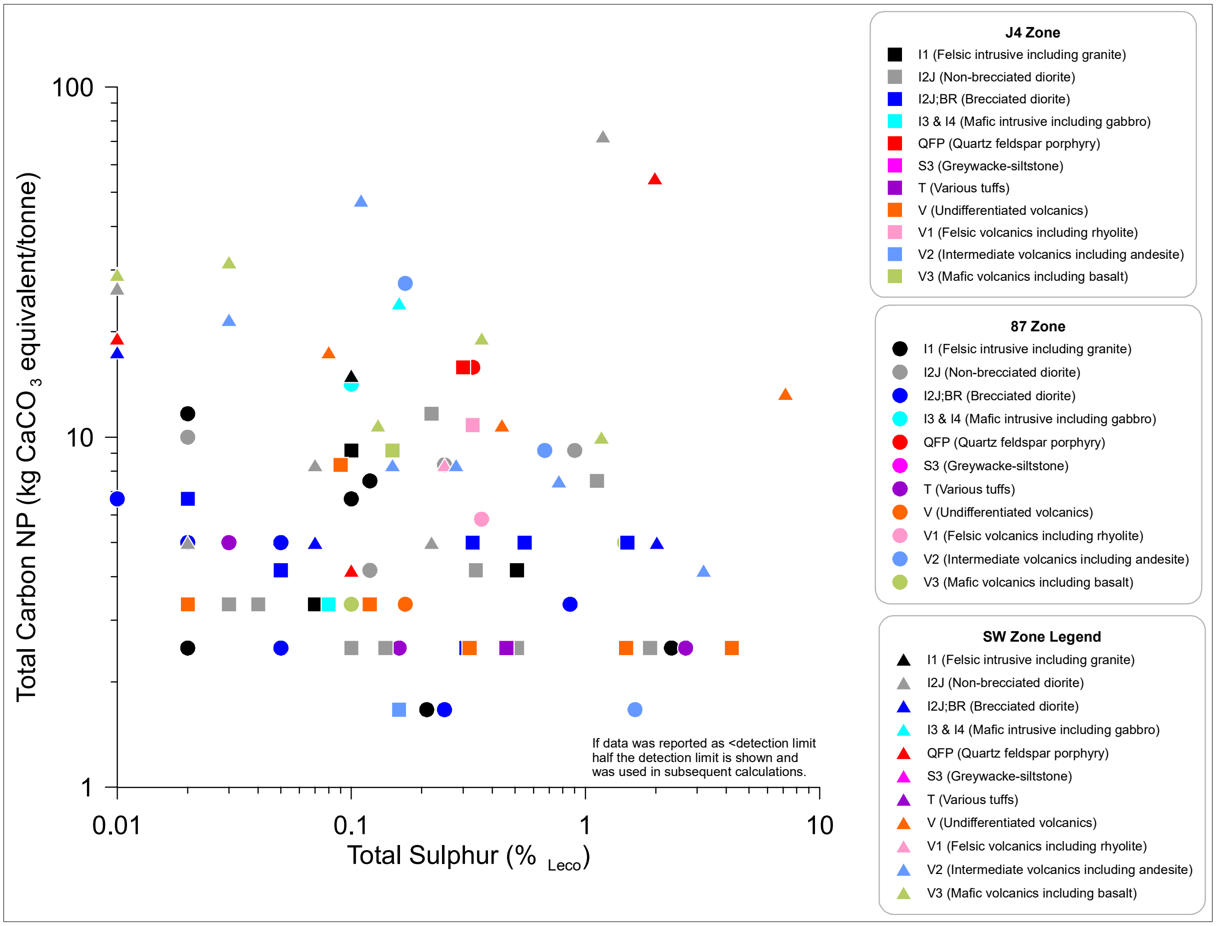


Figure 6-6. Carbon NP vs. total sulphur in the 89 ML-ARD samples, showing these two parameters are statistically independent.

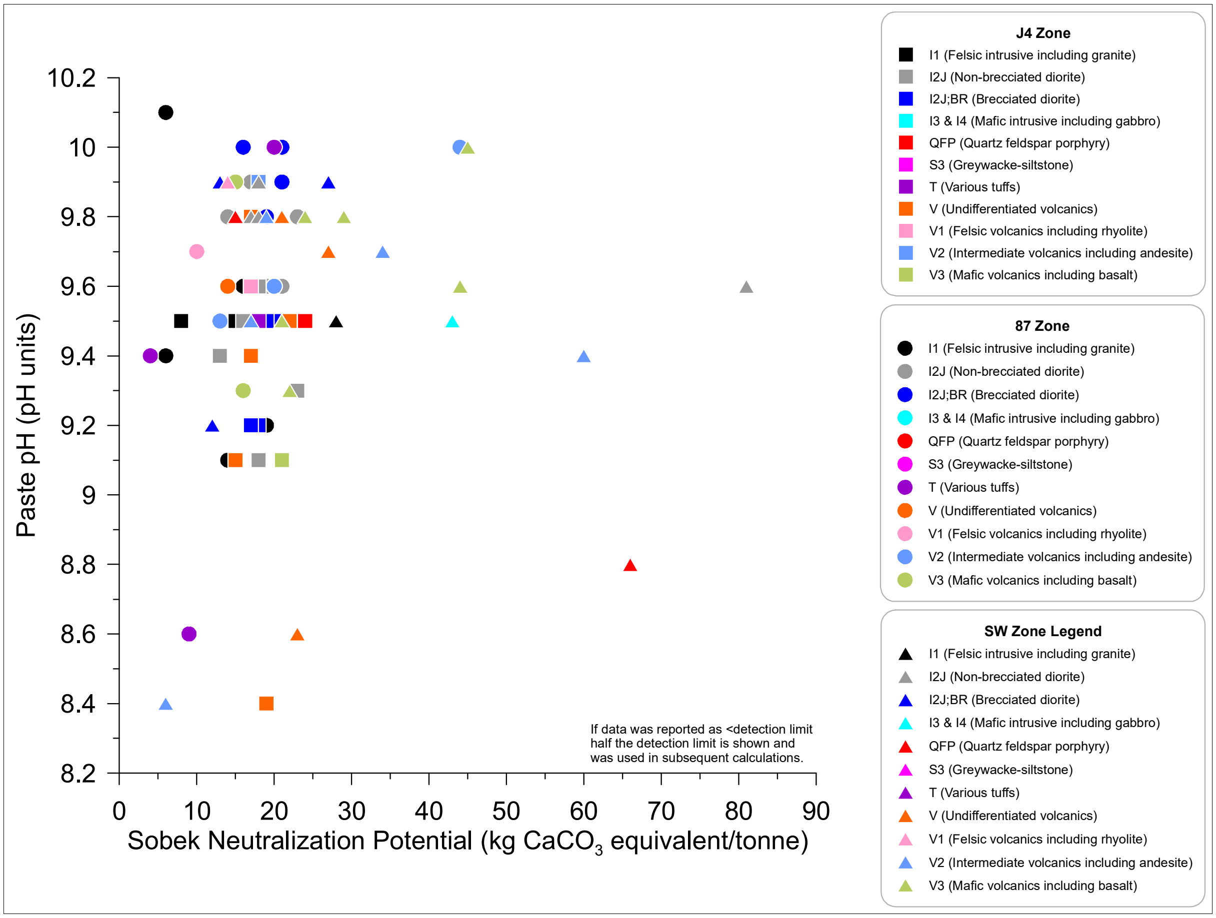


Figure 6-7. Paste pH vs. Sobek Neutralization Potential (NP) in the 89 ML-ARD samples.

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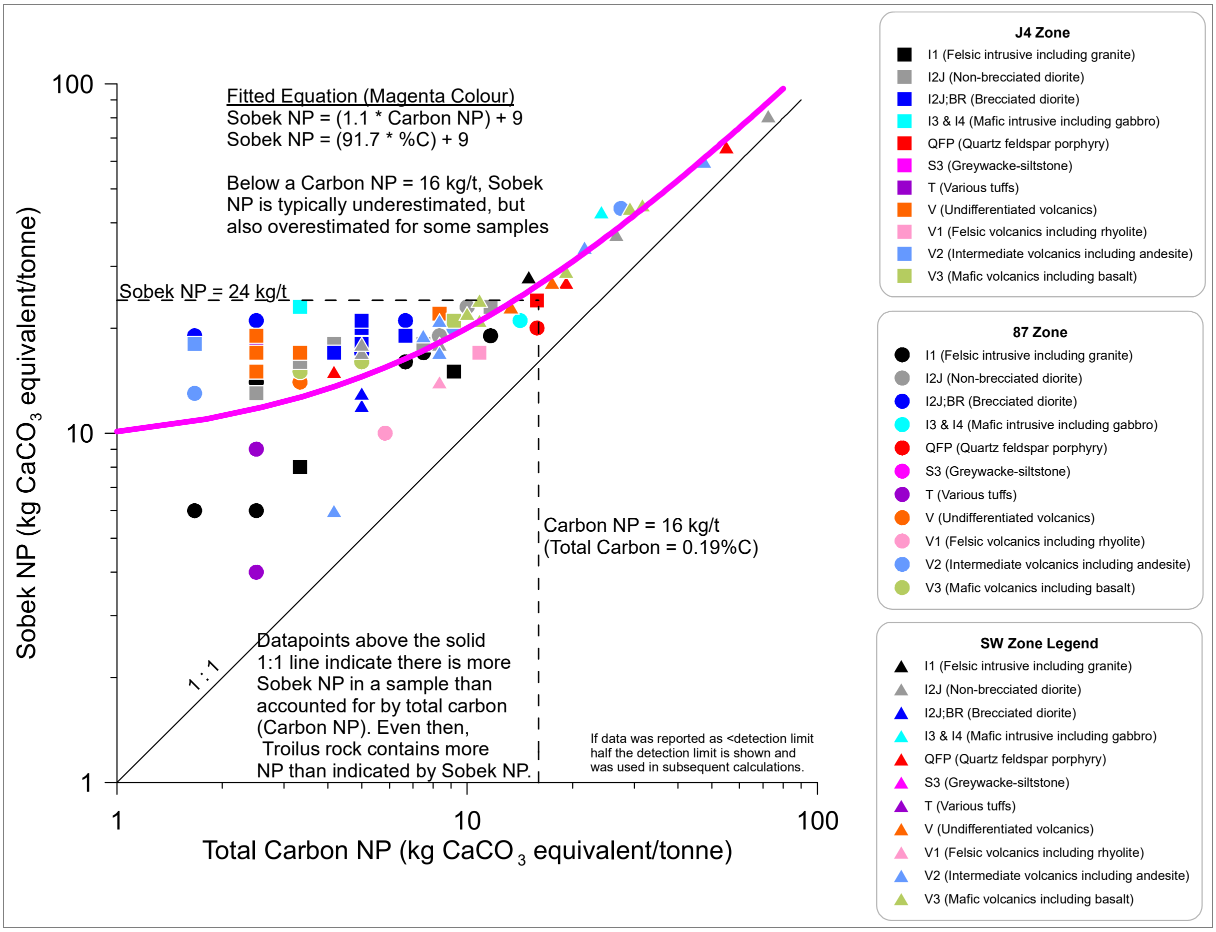


Figure 6-8. Total-carbon-based Neutralization Potential (Carbon NP) vs. Sobek Neutralization Potential (Sobek NP) in the 89 ML-ARD samples.

The relevant NPR equations are:

Sobek TNPR = [Sobek NP] / [%S(total) * 31.25] (Eq. 6-6)
Carbon TNPR = [%C(total) * 83.33] / [%S(total) * 31.25] (Eq. 6-7)
Total TNPR = [Total NP] / [%S(total) * 31.25] (Eq. 6-8)
[NOTE: Total NP in Troilus rock is illustrated in Figure 1-1 and discussed in Chapter 7 below.]

In this Phase 1 report, all measured Sobek NP in Troilus rock is considered available and reactive, recognizing there is more NP than detected by the hours-long NP procedure. At this time, Sobek NP already includes some of this additional NP beyond the NP represented by carbon (Figures 1-1 and 6-8). The better alternative for Troilus rock of Total NP is discussed in Chapter 7.

Generic ABA criteria for carbonate NP systems are used here, with TNPR < 2.0 considered net acid generating (sometimes called "PAG"), capable of releasing ARD after some "lag time" when all Effective NP is consumed. TNPR ≥ 2.0 is predicted to remain net acid neutralizing long after the acid-generating sulphur is exhausted (sometimes called "non-PAG").

Sobek Total-sulphur-based Net Potential Ratio (TNPR) < 2.0
will eventually release ARD (Eq. 6-9)
Sobek Total-sulphur-based Net Potential Ratio (TNPR) ≥ 2.0 will not release ARD (Eq. 6-10)

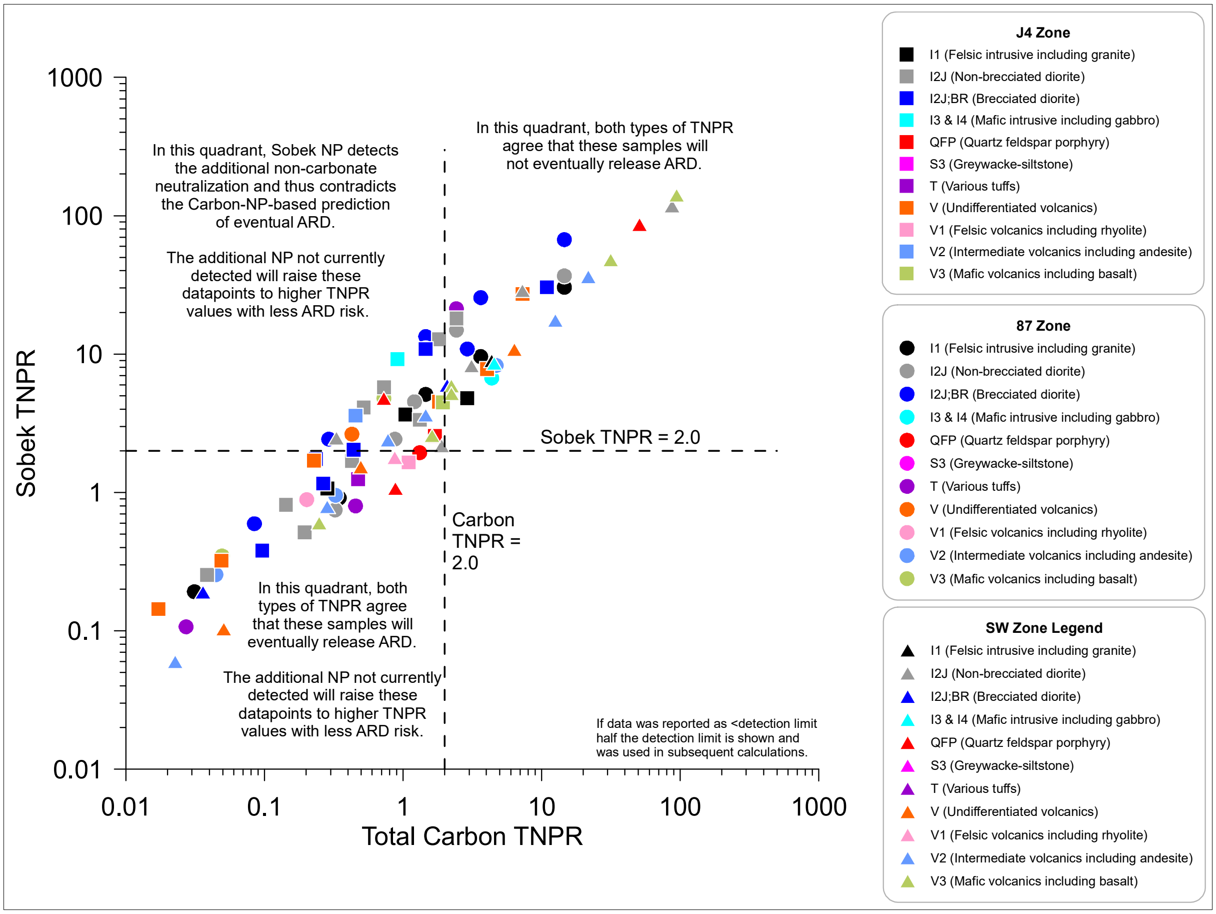
The comparison of Sobek TNPR and Carbon TNPR shows that the two types of TNPR agree on 39% of the 89 ML-ARD samples not generating ARD (upper right quadrant of Figure 6-9). They also currently agree that 36% of the 89 samples will eventually release ARD after various lag times (lower left quadrant of Figure 6-9), although the currently undetected additional non-carbon NP will increase some TNPR values so that some datapoints will eventually have TNPR values above 2.0. The upper left quadrant shows the disagreement where the partially detected non-carbon NP from Sobek already says 25% of the 89 samples will not release ARD.

Therefore, 36% of the 89 ML-ARD samples is predicted to eventually release ARD after lag times. This percentage decreases as additional NP is detected (Chapter 7). At this point, Sobek NP is taken as the initial Phase 1 generic ARD prediction. For samples where only Carbon NP is available, like drillcore discussed in Chapters 7 and 8, an interim criterion appears reasonable at this time based on Figure 6-9:

Carbon TNPR criterion: Carbon-based TNPR ≥ 0.5 will not release ARD (Eq. 6-11)

Sobek TNPR values showed some correlation with total sulphur (Figure 6-10). This indicates that Troilus rock samples with less than 0.15%S are predicted to have Sobek TNPR above 2.0 and thus will not release ARD. All samples with more than 1.3%S (Sobek TNPR < 2.0) are predicted to release ARD after various lag times, but only if no additional NP exists beyond Sobek NP (see Chapter 7). Between 0.15%S and 1.3%S, sulphur alone is not a reasonable surrogate estimate of TNPR and ARD risk. An equation that generalizes this correlation based on a Sobek NP of 19 kg/t close to the mean and median Sobek NP is (Figure 6-10):

Calculated Sobek TNPR = [19 / (31.25 * %S)] - 0.08, for 0.01 < %S < 1.3 (Eq. 6-12)
When compared to measured Sobek TNPR for each sample, calculated Sobek TNPR is typically within ±2.0 of measured Sobek TNPR (Figure 6-11).



In this quadrant, Sobek NP detects the additional non-carbonate neutralization and thus contradicts the Carbon-NP-based prediction of eventual ARD.

The additional NP not currently detected will raise these datapoints to higher TNPR values with less ARD risk.

In this quadrant, both types of TNPR agree that these samples will not eventually release ARD.

In this quadrant, both types of TNPR agree that these samples will eventually release ARD.

The additional NP not currently detected will raise these datapoints to higher TNPR values with less ARD risk.

If data was reported as <detection limit half the detection limit is shown and was used in subsequent calculations.

Figure 6-9. Sobek Total-Sulphur-Based Net Potential Ratio (Sobek TNPR) vs. Carbon Total-Sulphur-Based Net Potential Ratio (Carbon TNPR) in the 89 ML-ARD samples.

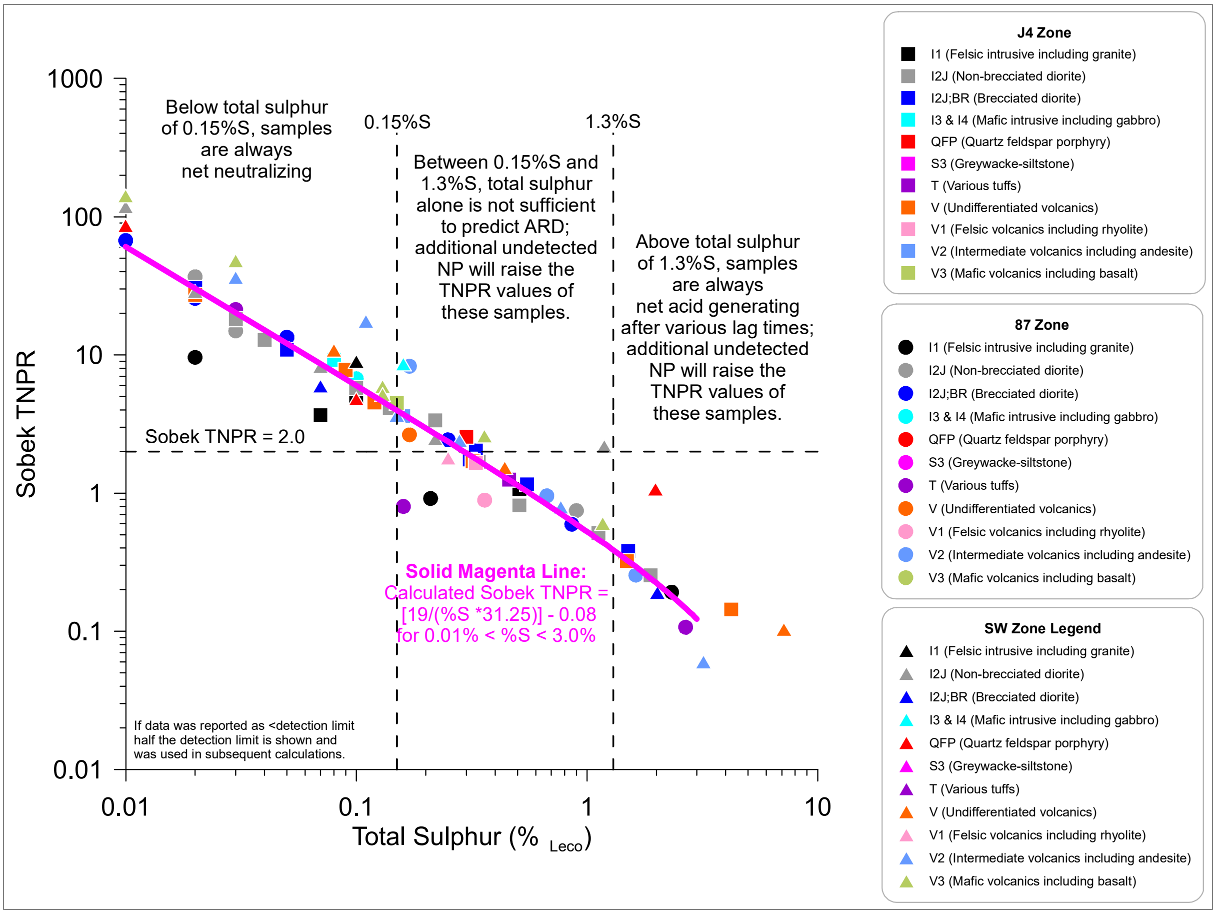


Figure 6-10. Sobek TNPR vs. total sulphur in the 89 ML-ARD samples.

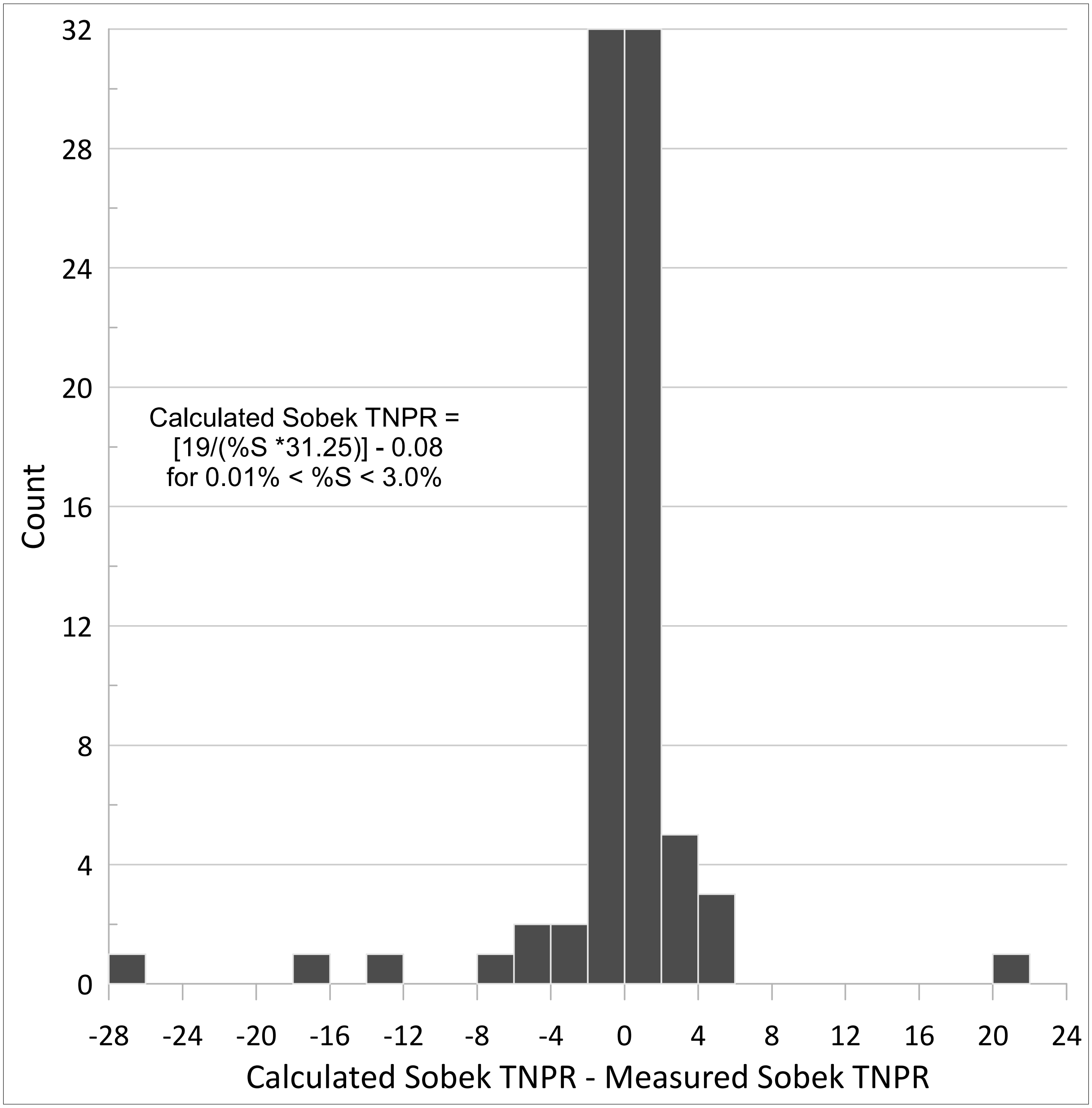


Figure 6-11. Statistically normal distribution of calculated Sobek TNPR minus measured Sobek TNPR based on the solid line in Figure 6-10.

This same range of sulphur generally applies to the Carbon TNPR criterion of 0.5 (Equation 6-11) as shown in Figure 6-12. In this way, carbon measurements in drillcore assays can be used for approximate indications of their ARD potential (clarified in Chapter 7 below).

The 89 ML-ARD samples examined here were selected based on ore zone, rock unit, spatial distribution, and logarithmic standard deviations around mean rock-unit total sulphur (Chapters 3, 4, and 5, and Table 6-1). As shown in Tables 6-2, 6-3, and 6-4, the sulphur level in each sample was acceptably close to the statistical sulphur level, except one sample of V2 Intermediate volcanics in 87 Zone (Table 6-3). Thus, the 89 ML-ARD samples appropriately span a large range of sulphur in all the dominant rock units in each ore zone. This is important because total sulphur representing Total Acid Potential (TAP) is shown above to be a major predictor of ARD potential in Troilus rock.

Tables 6-2 to 6-4 show that, on average based on the logarithmic mean, some rock units will not release ARD (with green fill) and others will (with red fill) based on Sobek TNPR. However, ARD prediction is not predicted so simply and the following observations should be kept in mind.

- Troilus rock contains additional Neutralization Potential not detected by the hours-long Sobek procedure. As a result, Chapter 7 below shows higher TNPR values for many of these ML-ARD samples and less ARD risk.

- Unlike normal distributions, the mean and median for lognormal distributions are significantly different with the median much lower than the mean. Thus, the mean sulphur levels in Tables 6-2 to 6-4 represent less than half of each rock unit. In other words, a mean sulphur level capable of eventually releasing ARD indicates that less than one-half of that rock unit will do so based on Sobek NP.

In summary, net balances of acid potential and neutralization potential were calculated mathematically by division to obtain values of Total-Sulphur-Based Net Potential Ratio (TNPR) using both Sobek NP ("Sobek TNPR") and Carbon NP ("Carbon TNPR"). The generic criterion to distinguish net-acid-generating from net-neutralizing samples was found to be 2.0 for Sobek TNPR and 0.5 for Carbon TNPR. These TNPR values showed that nearly two-thirds (64%) of the 89 ML-ARD samples were not predicted to release ARD at anytime. The remaining 36% are predicted to release ARD eventually after various lag times, but this is based on the false assumption that measured Sobek NP represents all neutralization in Troilus rock (shown in Figure 1-1). In general, total sulphur levels below 0.15%S were consistently associated with higher TNPR values that would not release ARD, while total sulphur levels above 1.3%S were consistently associated with lower TNPR values that would eventually release ARD after various lag times. By individual ore zone and rock unit, the mean sulphur levels of some but not most rock units corresponded to a Sobek TNPR less than 2.0 and are thus capable of eventually releasing ARD. Due to logarithmic statistics this means that less than 50% of many rock units would release ARD. Next, Chapter 7 addressed the "missing" Silicate Neutralization Potential in these ML-ARD samples in detail based on site-specific information for Troilus.

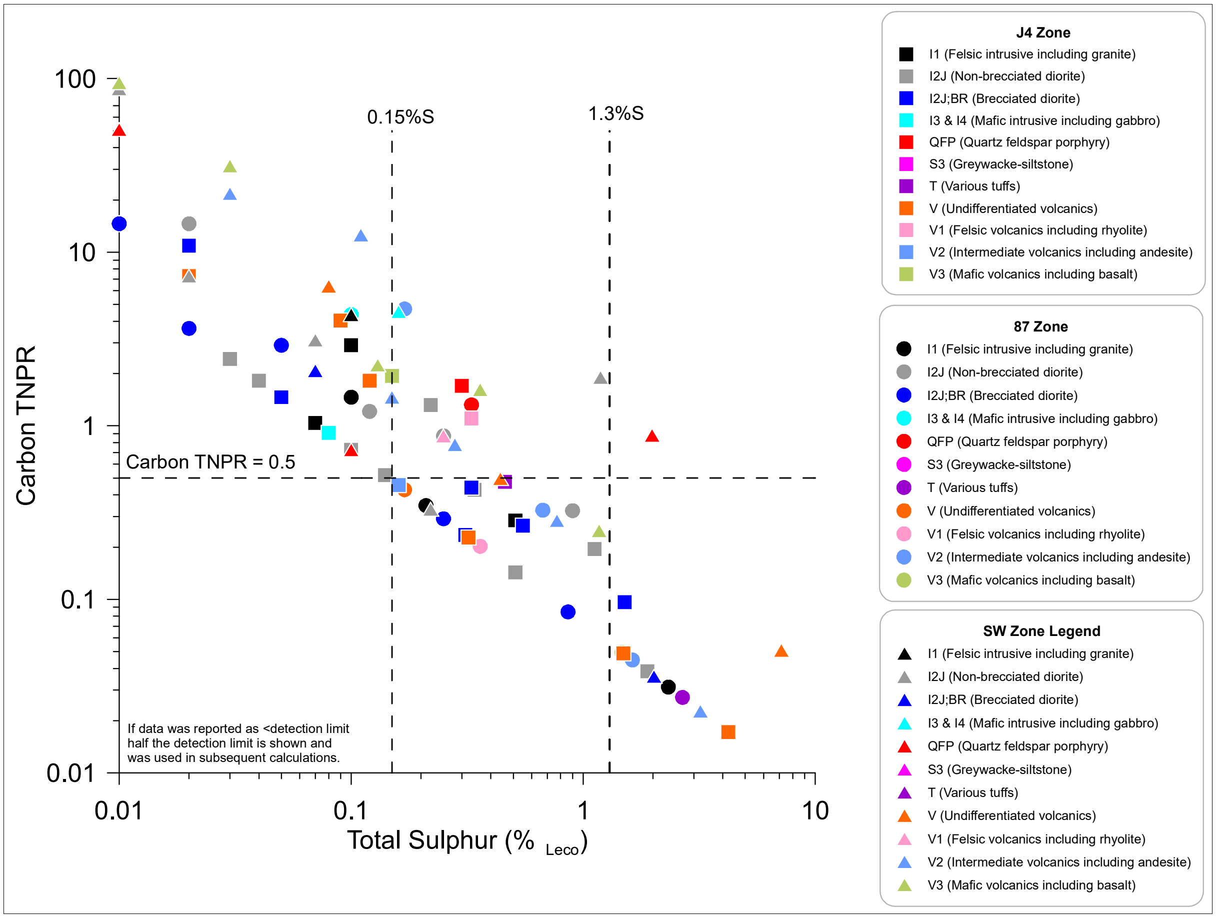


Figure 6-12. Carbon TNPR vs. total sulphur in the 89 ML-ARD samples.

Table 6-2. ARD predictions for ML-ARD samples collected from rock units in the J4 Zone using Sobek NP relative to mean total sulphur in each significant rock unit (see also Appendix A)

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Sobek Total-Sulphur-Based Net Potential Ratio (Sobek TNPR)[3]	ML-ARD Sample Number
I2J	Non-brecciated diorite	62%	+2.0 (2.2%S)	1.89	0.25	Y936654
			+1.5 (1.2%S)	1.12	0.51	Y936655
			+1.0 (0.77%S)	0.51	0.82	Y936656
			+0.5 (0.50%S)	0.34	1.69	Y936657
			0.0 (0.27%S)	0.14	4.11	Y936658
			-0.5 (0.18%S)	0.22	3.35	Y936659
			-1.0 (0.09%S)	0.10	5.76	Y936660
			-1.5 (0.06%S)	0.03	18.1	Y936661
			-2.0 (0.04%S)	0.04	12.8	Y936662
I2J; BR	Brecciated diorite	16%	+2.0 (2.1%S)	1.51	0.38	Y936663
			+1.0 (0.75%S)	0.55	1.16	Y936664
			0.0 (0.29%S)	0.33	2.04	Y936665
			0.0 (0.27%S)	0.31	1.75	Y936666
			-1.0 (0.10%S)	0.05	10.9	Y936667
			-2.0 (0.03%S)	0.02	30.4	Y936668
V	Undifferentiated volcanics	6.9%	+2.0 (4.4%S)	4.22	0.14	Y936672
			+1.0 (1.2%S)	1.49	0.32	Y936673
			0.0 (0.34%S)	0.32	1.70	Y936674
			0.0 (0.26%S)	0.12	4.53	Y936675
			-1.0 (0.07%S)	0.09	7.82	Y936676
			-2.0 (0.01%S)	0.02	27.2	Y936677
I1	Felsic intrusive including granite	5.0%	+1.0 (0.46%S)	0.51	1.07	Y936651
			0.0 (0.14%S)	0.10	4.80	Y936652
			-1.0 (0.05%S)	0.07	3.66	Y936653

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Sobek Total-Sulphur-Based Net Potential Ratio (Sobek TNPR)[3]	ML-ARD Sample Number
T	Various tuffs	2.0%	0.0 (0.32%S)	0.46	1.25	Y936671
V1	Felsic volcanics including rhyolite	1.8%	0.0 (0.33%S)	0.33	1.65	Y936678
QFP	Quartz Feldspar Porphyry	1.2%	0.0 (0.35%S)	0.30	2.56	Y936670
V2	Intermediate volcanics including andesite	0.58%	0.0 (0.18%S)	0.16	3.60	Y936679
V3	Mafic volcanics including basalt	0.39%	0.0 (0.27%S)	0.15	4.48	Y936680
I3	Mafic intrusive including gabbro	0.071%	0.0 (0.12%S)	0.08	9.20	Y936669

[1] See Table 3-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

[3] For this Phase 1 study using generic criteria, any Sobek TNPR value less than 2.0 (shaded in red) is predicted to eventually release ARD after some lag time; in reality, Troilus rock contains additional Neutralization Potential not detected by the hours-long Sobek procedure that will produce higher TNPR values for these samples and fewer boxes shaded in red (see Table 7-3).

Table 6-3. ARD predictions for ML-ARD samples collected from rock units in the 87 Zone using Sobek NP relative to mean total sulphur in each significant rock unit (see also Appendix B)

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Sobek Total-Sulphur-Based Net Potential Ratio (Sobek TNPR)[3]	ML-ARD Sample Number
I2J	Non-brecciated diorite	38%	+2.0 (1.6%S)	0.90	0.75	A00488501
			+1.0 (0.43%S)	0.25	2.43	A00488502
			0.0 (0.11%S)	0.12	4.53	A00488503
			-1.0 (0.04%S)	0.03	14.9	A00488504
			-2.0 (0.01%S)	0.02	36.8	A00488505
I2J; BR	Brecciated diorite	33%	+2.0 (1.2%S)	0.86	0.60	A00488506
			+1.0 (0.34%S)	0.25	2.43	A00488507
			0.0 (0.11%S)	0.05	13.4	A00488508
			0.0 (0.11%S)	0.05	10.9	A00488509
			-1.0 (0.02%S)	0.01	67.2	A00488510
			-2.0 (0.01%S)	0.02	25.6	A00488511
I1	Felsic intrusive including granite	9.7%	+2.0 (2.1%S)	2.33	0.19	A00488512
			+1.0 (0.52%S)	0.21	0.91	A00488513
			0.0 (0.12%S)	0.12	4.53	A00488514
			0.0 (0.12%S)	0.10	5.12	A00488515
			-1.0 (0.03%S)	0.02	30.4	A00488516
			-2.0 (0.01%S)	0.02	9.60	A00488517
T	Various tuffs	6.2%	+2.0 (4.28%S)	2.68	0.11	A00488518
			0.0 (0.13%S)	0.16	0.80	A00488519
			-2.0 (0.01%S)	0.03	21.3	A00488520
V2	Intermediate volcanics including andesite	3.3%	+2.0 (1.9%S)	1.63	0.26	A00488521
			0.0 (0.18%S)	0.17	8.28	A00488522
			-2.0 (0.01%S)[4]	0.67[4]	0.96[4]	A00488523

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Sobek Total-Sulphur-Based Net Potential Ratio (Sobek TNPR)[3]	ML-ARD Sample Number
V3	Mafic volcanics including basalt	3.0%	+2.0 (1.8%S)	1.47	0.35	A00488524
			0.0 (0.21%S)	0.10	4.80	A00488525
			-2.0 (0.02%S)	0.05	10.9	A00488526
QFP	Quartz Feldspar Porphyry	2.6%	0.0 (0.23%S)	0.33	1.94	A00488527
V	Undifferent-iated volcanics	2.0%	0.0 (0.20%S)	0.17	2.64	A00488528
V1	Felsic volcanics including rhyolite	0.84%	0.0 (0.42%S)	0.36	0.89	A00488529
I3 & I4	Mafic intrusive including gabbro	0.72%	0.0 (0.08%S)	0.10	6.72	A00488530

[1] See Table 4-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

[3] For this Phase 1 study using generic criteria, any Sobek TNPR value less than 2.0 (shaded in red) is predicted to eventually release ARD after some lag time; in reality, Troilus rock contains additional Neutralization Potential not detected by the hours-long Sobek procedure that will produce higher TNPR values for these samples and fewer boxes shaded in red (see Table 7-4).

[4] The sample for Rock Unit V2 at -2.0 log std dev contained 67 times more total sulphur than the statistical sulphur level, and is thus not applicable or representative of low sulphur levels in V2 but of above-average sulphur levels.

Table 6-4. ARD predictions for ML-ARD samples collected from rock units in the SW Zone using Sobek NP relative to mean total sulphur in each significant rock unit (see also Appendix C)

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Sobek Total-Sulphur-Based Net Potential Ratio (Sobek TNPR)[3]	ML-ARD Sample Number
V3	Mafic volcanics including basalt	29%	+2.0 (1.7%S)	1.17	0.60	A00488531
			+1.0 (0.53%S)	0.36	2.58	A00488532
			0.0 (0.17%S)	0.13	5.91	A00488533
			0.0 (0.17%S)	0.13	5.17	A00488534
			-1.0 (0.06%S)	0.03	48.0	A00488535
			-2.0 (0.01%S)	0.01	141.0	A00488536
I2J	Non-breccia ted diorite	26%	+2.0 (1.3%S)	1.19	2.18	A00488537
			+1.0 (0.29%S)	0.22	2.47	A00488538
			0.0 (0.07%S)	0.07	8.23	A00488539
			-1.0 (0.01%S)	0.02	28.8	A00488540
			-2.0 (0.01%S)	0.01	118.0	A00488541
V2	Intermediate volcanics including andesite	13%	+2.0 (4.4%S)	3.20	0.06	A00488542
			+1.0 (1.0%S)	0.77	0.79	A00488543
			0.0 (0.24%S)	0.15	3.63	A00488544
			0.0 (0.24%S)	0.28	2.40	A00488545
			-1.0 (0.05%S)	0.11	17.5	A00488546
			-2.0 (0.02%S)	0.03	36.3	A00488547
V	Undifferent-iated volcanics	10%	+2.0 (6.4%S)	7.15	0.10	A00488548
			0.0 (0.30%S)	0.44	1.53	A00488549
			-2.0 (0.01%S)	0.08	10.8	A00488550
QFP	Quartz Feldspar Porphyry	9.6%	+2.0 (2.0%S)	1.98	1.07	A00488551
			0.0 (0.13%S)	0.10	4.80	A00488552
			-2.0 (0.01%S)	0.01	86.4	A00488553

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Sobek Total-Sulphur-Based Net Potential Ratio (Sobek TNPR)[3]	ML-ARD Sample Number
I2J;BR	Brecciated diorite	6.1%	+2.0 (1.7%S)	2.02	0.19	A00488554
			0.0 (0.08%S)	0.07	5.94	A00488555
			-2.0 (0.01%S)	0.01	86.4	A00488556
V1	Felsic volcanics including rhyolite	2.5%	0.0 (0.30%S)	0.25	1.79	A00488557
I1	Felsic intrusive including granite	0.90%	0.0 (0.06%S)	0.10	8.96	A00488558
I3 & I4	Mafic intrusive including gabbro	0.50%	0.0 (0.15%S)	0.16	8.60	A00488559

[1] See Table 5-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

[3] For this Phase 1 study using generic criteria, any Sobek TNPR value less than 2.0 (shaded in red) is predicted to eventually release ARD after some lag time; in reality, Troilus rock contains additional Neutralization Potential not detected by the hours-long Sobek procedure that will produce higher TNPR values for these samples and fewer boxes shaded in red (see Table 7-5).

6.5 Total Solid-Phase Elemental Analyses of Troilus ML-ARD Rock Samples

Total-element contents in the 89 ML-ARD Troilus rock samples (Appendices A to C) were measured by ICP-MS analysis after strong four-acid digestion and by x-ray-fluorescence (XRF) whole-rock analysis. The minerals containing these elements were discussed above in Chapters 2 through 5.

The dominant element in the 89 Troilus ML-ARD rock samples was silicon mostly at more than 50% as SiO_2 (Appendices A to C), reflecting the known and pervasive presence of quartz and various aluminosilicate minerals in Troilus rock. Some of these aluminosilicate minerals likely providing additional neutralization potential are not detected by the standard hours-long procedure (see Section 6.2 above). There were also significant solid-phase amounts of aluminum, iron, calcium, sodium, magnesium, and potassium. All remaining analyzed elements were at lower levels.

ICP-MS elemental analyses after near-total four-acid digestion were compared with three times the maximum average crustal abundances, to highlight solid-phase elements relatively enriched in Troilus rock (see element analyses surrounded by boxes in Appendices A to C). These 89 rock samples frequently contained elevated levels of bismuth, copper, molybdenum, and tellurium. Some samples also contained elevated levels of antimony, arsenic, cadmium, cesium, potassium, lithium, lead, nickel, rubidium, selenium, thallium, tungsten, uranium, and zinc. The analytical detection limit for silver was significantly higher than reported crustal abundances and thus could not be reliably compared.

Elevated solid-phase levels do not implicitly predict accelerated leaching into water and water contamination by ML (metal leaching). In fact, solid-phase levels may be high due to a lack of leaching and mobility. Additionally, low levels of an element can still leach rapidly into water. Thus, various scales of kinetic testing and leaching testing have been conducted on Troilus rock to predict maximum equilibrium aqueous concentrations of dozens of elements during full-scale mining. These maximum predictions are based on an Empirical Drainage Chemistry Model (EDCM), which is similar to but more robust than the U.S. EPA Leaching Environmental Assessment Framework (LEAF). The Troilus rock EDCM is described elsewhere in another report.

Solid-phase elements showing at least some correlation with total sulphur, and thus potentially leached during sulphide oxidation, included arsenic, bismuth (Figure 6-13), cadmium, cobalt, copper (Figure 6-14), iron, potassium, silver, tellurium, thallium, tungsten, and zinc. Solid-phase elements showing at least some correlation with Sobek Neutralization Potential, and thus potentially leached during neutralization, included calcium (Figure 6-15), cobalt, iron, manganese, nickel (Figure 6-16), potassium (inverse correlation), scandium (Figure 6-17), strontium, titanium, vanadium, yttrium, and ytterbium. Some of these are discussed further in Chapter 7 below.

In summary, the dominant element in the 89 Troilus ML-ARD samples analyzed by four-acid-digestion ICP-MS and x-ray-fluorescence (XRF) whole-rock procedures was silica, reflecting the known aluminosilicate minerals and quartz, of which some provide additional neutralization. Silica was followed in abundance by aluminum, iron, calcium, sodium, magnesium, and potassium. At lower and "trace" levels, the elements that frequently exceeded by three times their general crustal abundances were bismuth, copper, molybdenum, and tellurium. Less frequent exceedances were seen for antimony, arsenic, cadmium, cesium, potassium, lithium, lead, nickel, rubidium, selenium, thallium, tungsten, uranium, and zinc. However, solid-phase levels rarely correlate with leaching rates into water. Thus, leaching tests of Troilus rock on various scales are being conducted separately. Nevertheless, correlations of some elements with total sulphur or Neutralization Potential suggest these elements might have higher leaching rates during active sulphide oxidation and neutralization.

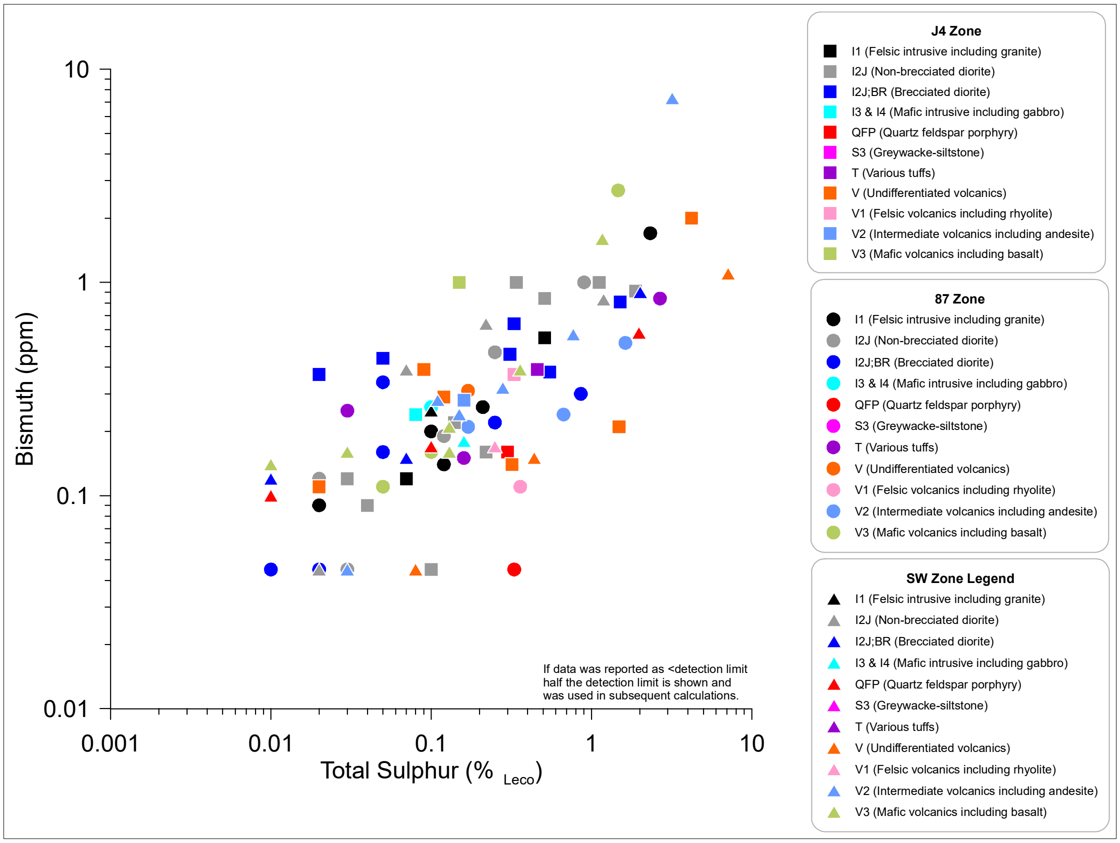


Figure 6-13. Solid-phase bismuth vs. total sulphur in the 89 ML-ARD samples.

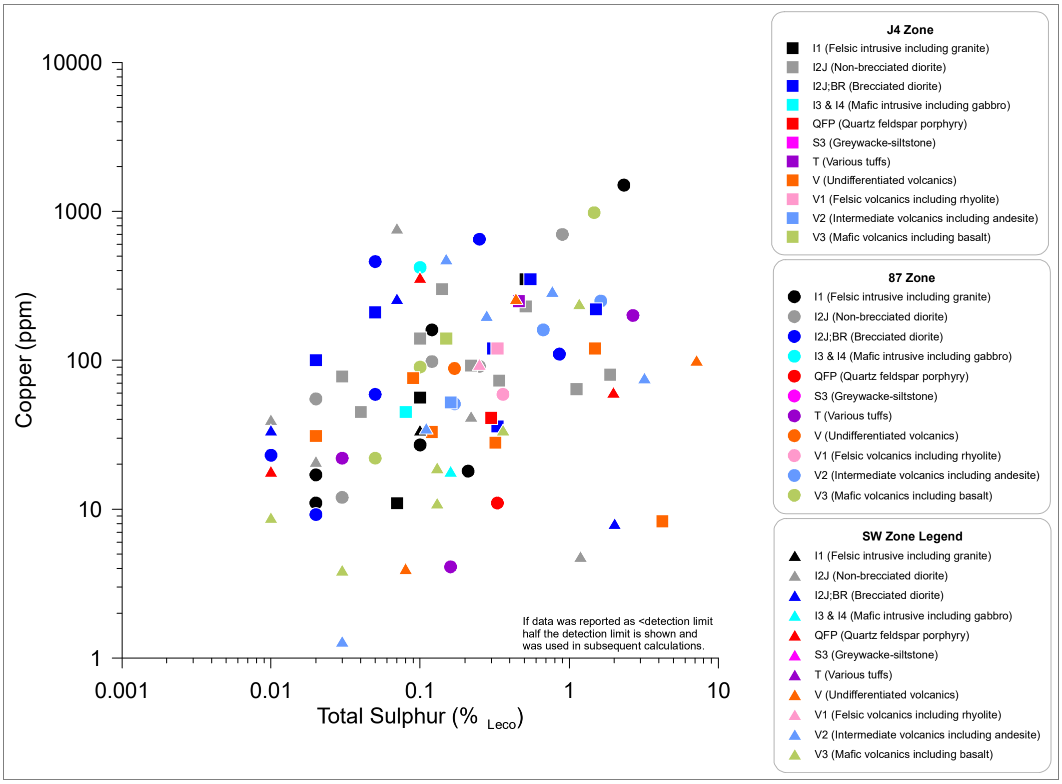


Figure 6-14. Solid-phase copper vs. total sulphur in the 89 ML-ARD samples.

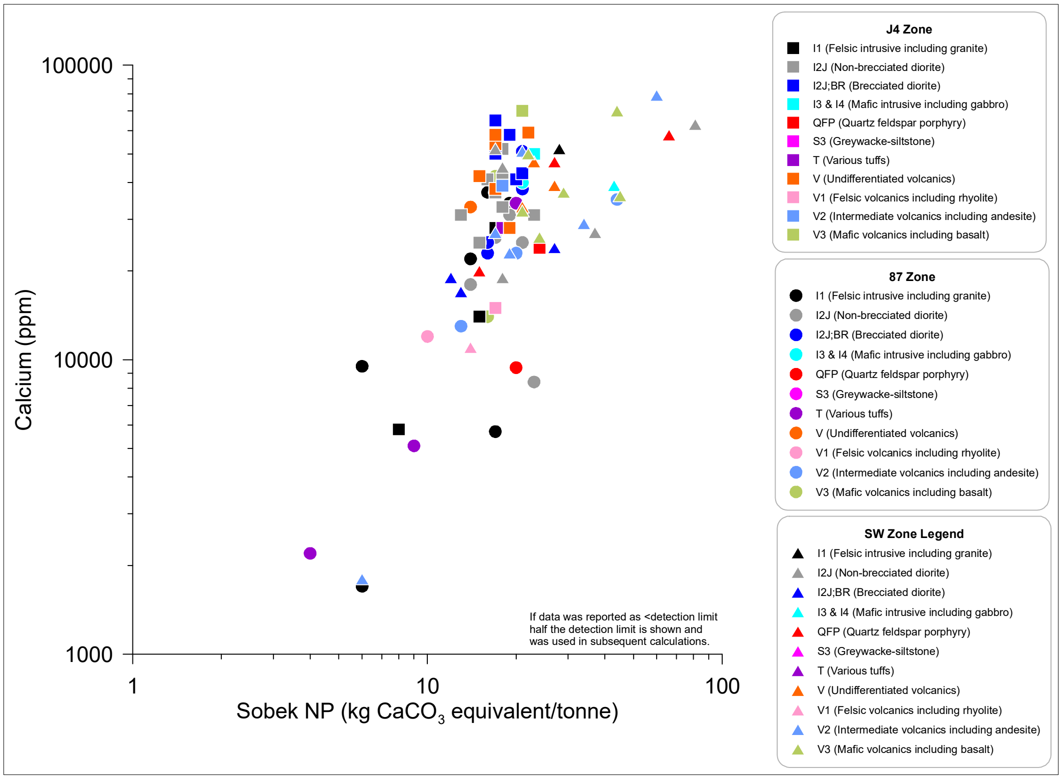


Figure 6-15. Solid-phase calcium vs. Sobek Neutralization Potential in the 89 ML-ARD samples.

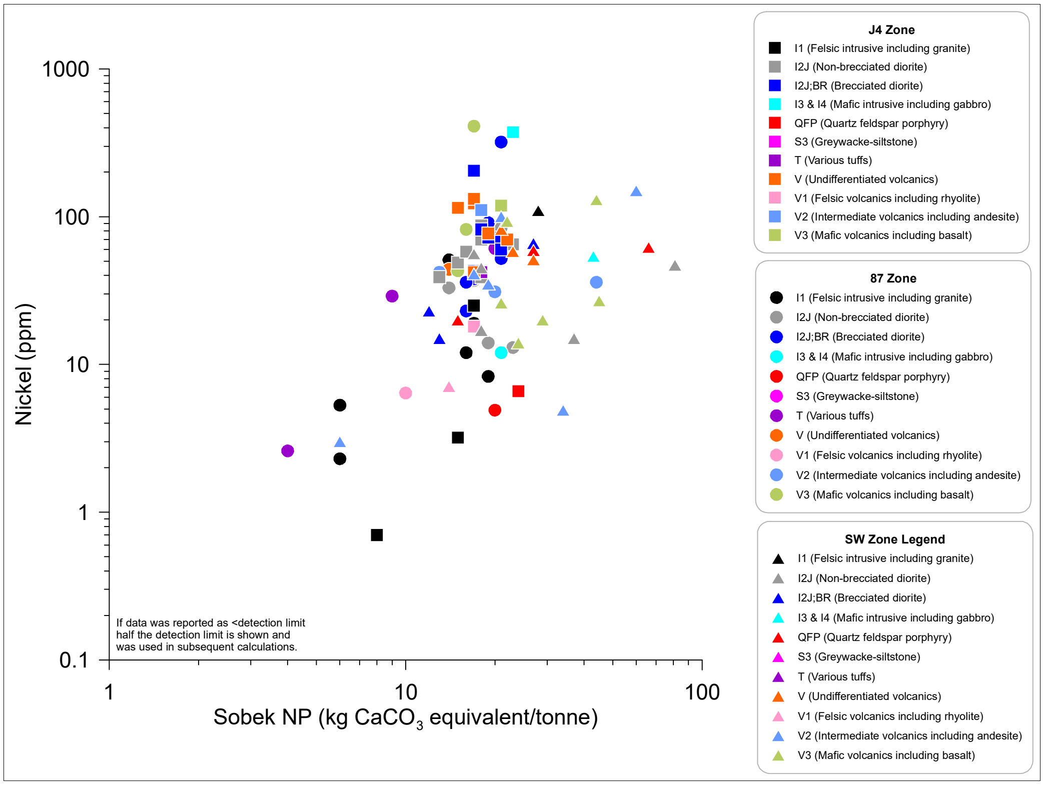


Figure 6-16. Solid-phase nickel vs. Sobek Neutralization Potential in the 89 ML-ARD samples.

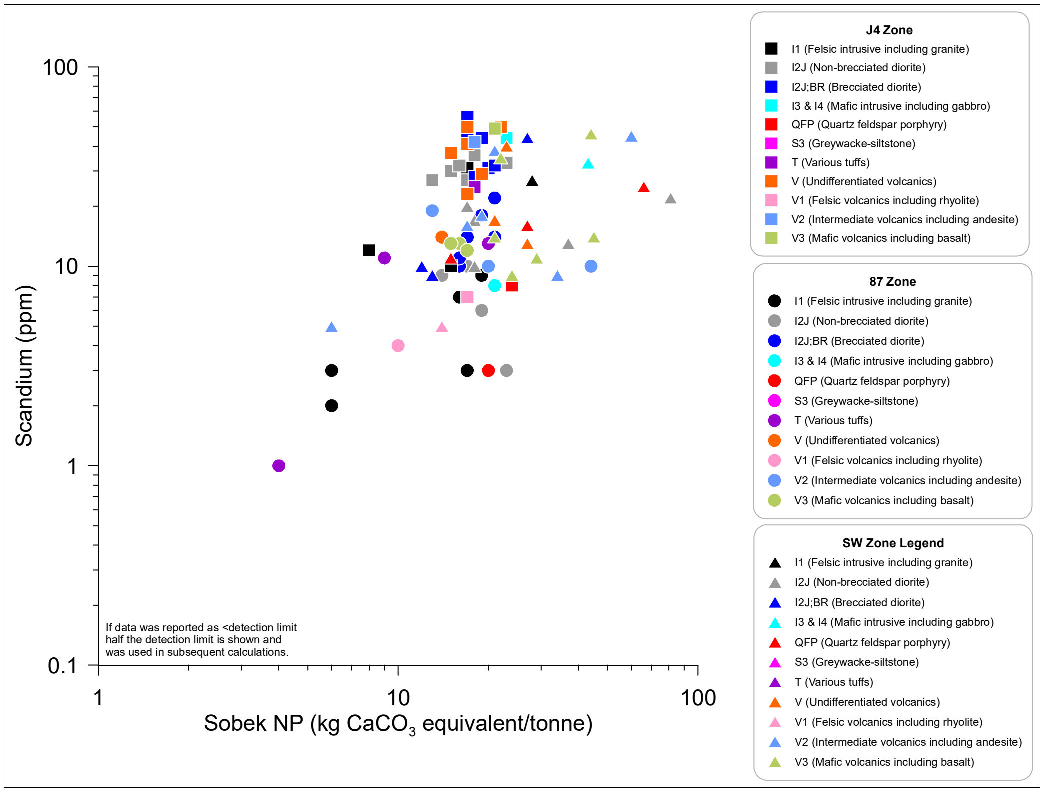


Figure 6-17. Solid-phase scandium vs. Sobek Neutralization Potential in the 89 ML-ARD samples.

6.6 Small-Scale ARD in One On-Site ML-ARD Column

6.6.1 Descriptions of the ML-ARD columns and the rock placed in them

As explained in previous sections and in Figure 1-1, Troilus rock contains additional Neutralization Potential (NP) not detected by the hours-long NP analytical procedure that is most sensitive to carbonate. This accounts for the observed lack of on-site full-scale ARD from the J4 and 87 waste-rock piles, despite past predictions of ARD based on ABA. These two full-scale waste-rock piles contain many tens of millions of tonnes mined from 1996 to 2010, and thus have been openly oxidizing and weathering for 14 to 28 years.

To test for additional NP and reliably detect smaller-scale NP, various scales of geochemical kinetic testing have been and are being conducted on Troilus rock in laboratories and on site. The details of these kinetic tests and their results are provided in other Troilus reports. The focus here is on two on-site ML-ARD columns containing existing J4 waste rock.

In 2021, Troilus constructed 13 on-site ML-ARD columns, open at the top to ambient air and to precipitation and with small angled holes drilled downward along the columns' lengths to ensure the rock would be exposed to air (Figure 6-18). The columns have an internal diameter of 30 cm with a height of 1.5 m, except Columns 12 and 13 with a height of 3.0 m.

The 11 smaller columns contain approximately 65 to 106 kg of future J4 waste rock collected from drillcore (see Chapter 3 and Figure 3-4). In contrast, larger Columns 12 and 13 were filled with 261 kg and 318 kg, respectively, of existing J4 waste rock taken from two separate locations in the existing J4 waste-rock dump.

Column 12 contains heavily oxidized, brown J4 waste rock with abundant fine-grained particles taken from the vicinity of Test Pit M4 (Figure 6-19) reported by SRK (2011). Its brown colouring suggests it is relatively reactive, fast weathering, and acid generating. Rinse pH by SRK (2011) confirmed this M4-pit rock had acidic pH values between 3.7 and 5.4 with total-sulphur levels up to 1.4%S. In contrast, all other test pits had near-neutral rinse pH values of 6.9 to 8.6 with total sulphur typically less than 0.50%S.

Column 13 contains relatively unoxidized, grey J4 waste rock with abundant fine-grained particles taken from near Test Pit SE6. SRK (2011) did not provide a photo of Test Pit SE6, but some similarly described J4 waste rock from Test Pit SW5 is shown in Figure 6-20.

After all subsamples were crushed to measure paste pH, paste pH values were typically around 8.2 to 9.8, except M4 samples with paste pH as low as 6.0 but typically around 8.0 to 8.8. Thus, crushing of Troilus rock quickly releases some NP to at least temporarily neutralize pH. This general observation of lower, but typically near-neutral, paste pH values at relatively high sulphur levels is consistent with Figure 6-1 above for the 89 ML-ARD drillcore samples.

These visible distinctions at Troilus between the weathered brown rock and the relatively unweathered grey rock were also seen in test pits and on pit walls in October 2023 (Figure 6-21).

Figure 6-18. A photograph of the 13 on-site ML-ARD columns, with Columns 12 and 13 containing hundreds of kg of existing, weathered J4 waste rock.

Figure 6-19. A photograph of J4 Test Pit M4 by SRK (2011) showing the type of rock filled into Column 12 including abundant fine-grained particles.

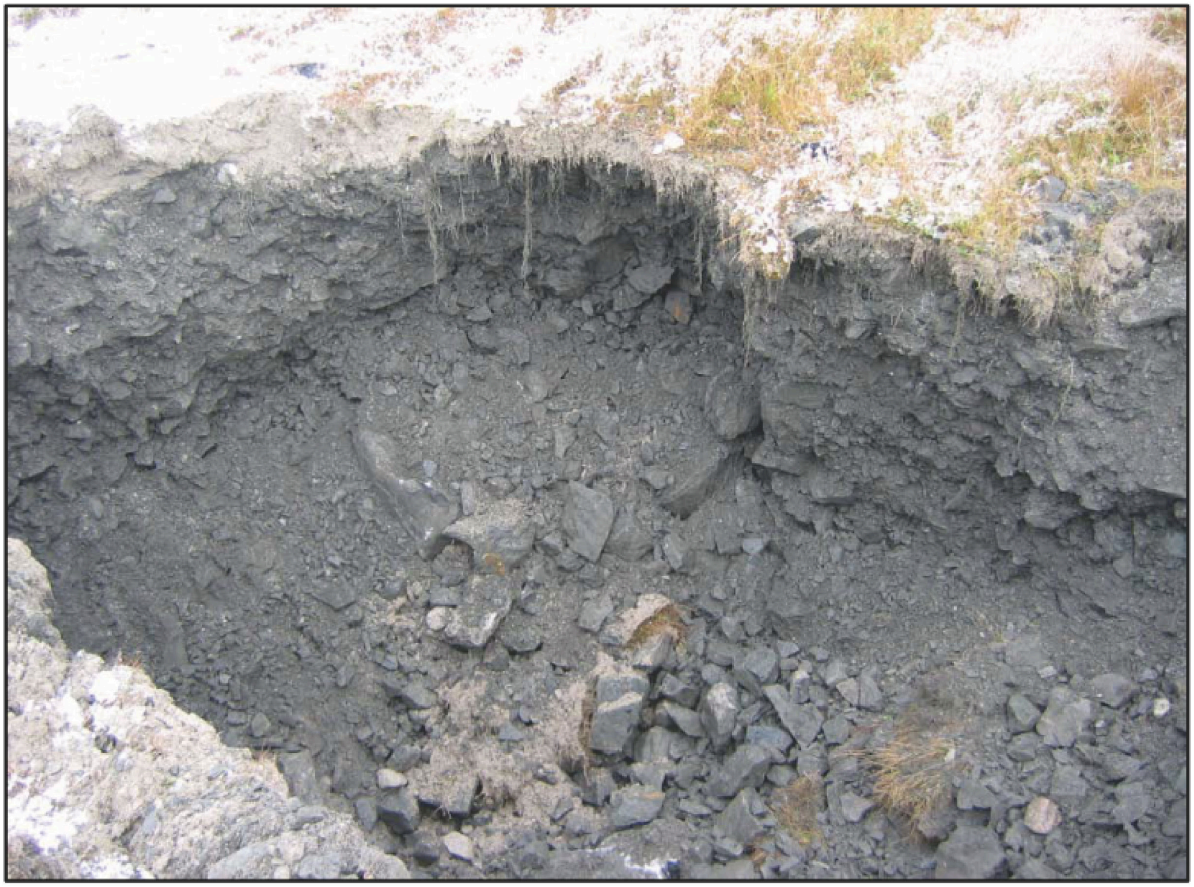


Figure 6-20. A photograph of J4 Test Pit SW5 by SRK (2011) showing the type of rock filled into Column 13 including abundant fine-grained particles.

Figure 6-21. Photographs of Troilus waste rock (top) and pit walls (bottom), showing the visible difference between brown oxidized rock and grey unoxidized rock, also seen in Figures 6-19 and 6-20 (photos from the National Research Council of Canada, October 2023).

6.6.2 Monitoring of the drainage effluents from the ML-ARD columns

In late 2021 when the columns started, effluent pH from the columns was typically between 7.0 and 8.5 (Figure 6-22), although the initial pH from Column 12 with the brown weathered rock was lower around 6.7. This is consistent with all rock samples having near-neutral paste pH values before being placed in the columns.

At the second sampling of the columns a few weeks later in 2021, the effluent pH from Column 12 had decreased to below 4.5 (Figure 6-22). In 2022 and 2023, effluent drainage from Column 12 was mostly around pH 3.5, typical of ARD with ferric-iron reactions that typically cause a brown rusty colour on the rock.

All other columns except Column 13 with existing grey J4 rock produced effluent pH values typically between 7.0 and 8.5 (Figure 6-22). This is a typical range for carbonate neutralization expected in the short term for fresh J4 drillcore.

Column 13 produced lower near-neutral effluent pH values around 6.0 to 6.5, but with some temporary values below 6.0 and above 7.0. This is consistent with its older age, more than 13 years weathering in the existing J4 waste-rock pile, indicating its small amount of initial carbonate neutralization was already depleted and non-carbonate silicate neutralization was active. This also occurred on a much larger scale at downstream monitoring of the entire J4 waste-rock pile at Station STP-09 when the mine closed (Figure 6-23), which is still the case in 2023. This is discussed further in Chapter 7 below.

Effluent concentrations of sulphate from all on-site ML-ARD columns confirm Troilus rock is reactive (Figure 6-24). However, to date, only Column 12 with the brown rock has released significant acidity (Figure 6-25) and low pH (Figure 6-22). Importantly, Column 12 is releasing sulphate about 5 times faster than Column 13 (Figure 6-24) while containing roughly 5 times more solid-phase sulphur (discussed below). This indicates the per-unit-weight rates of sulphide oxidation and total acid generation are apparently proportional to the solid-phase sulphur levels.

It is worthwhile to examine the pre-column-testing ABA characteristics of the rock placed into these 13 columns (Figure 6-18). For future J4 waste rock (Columns 1 to 11), only one subsample of the rock was analyzed, whereas 10 subsamples each were analyzed for Column 12 and 13 containing the existing, weathered, oxidized J4 waste rock (see Figure 6-19 to 6-21). This will show below that the ARD predictions based on solid-phase ABA for these columns are consistent with the 89 ML-ARD samples discussed above in Section 6.1 to 6.5. The individual ABA analyses for the on-site columns are compiled in Appendix D.

Similar to the Figure 6-1 with the 89 ML-ARD samples, the comparison of paste pH to solid-phase total sulphur shows that somewhat lower, but still alkaline, paste pH values are obtained only for some samples with the relatively high sulphur levels above 1.0%S (Figure 6-26).

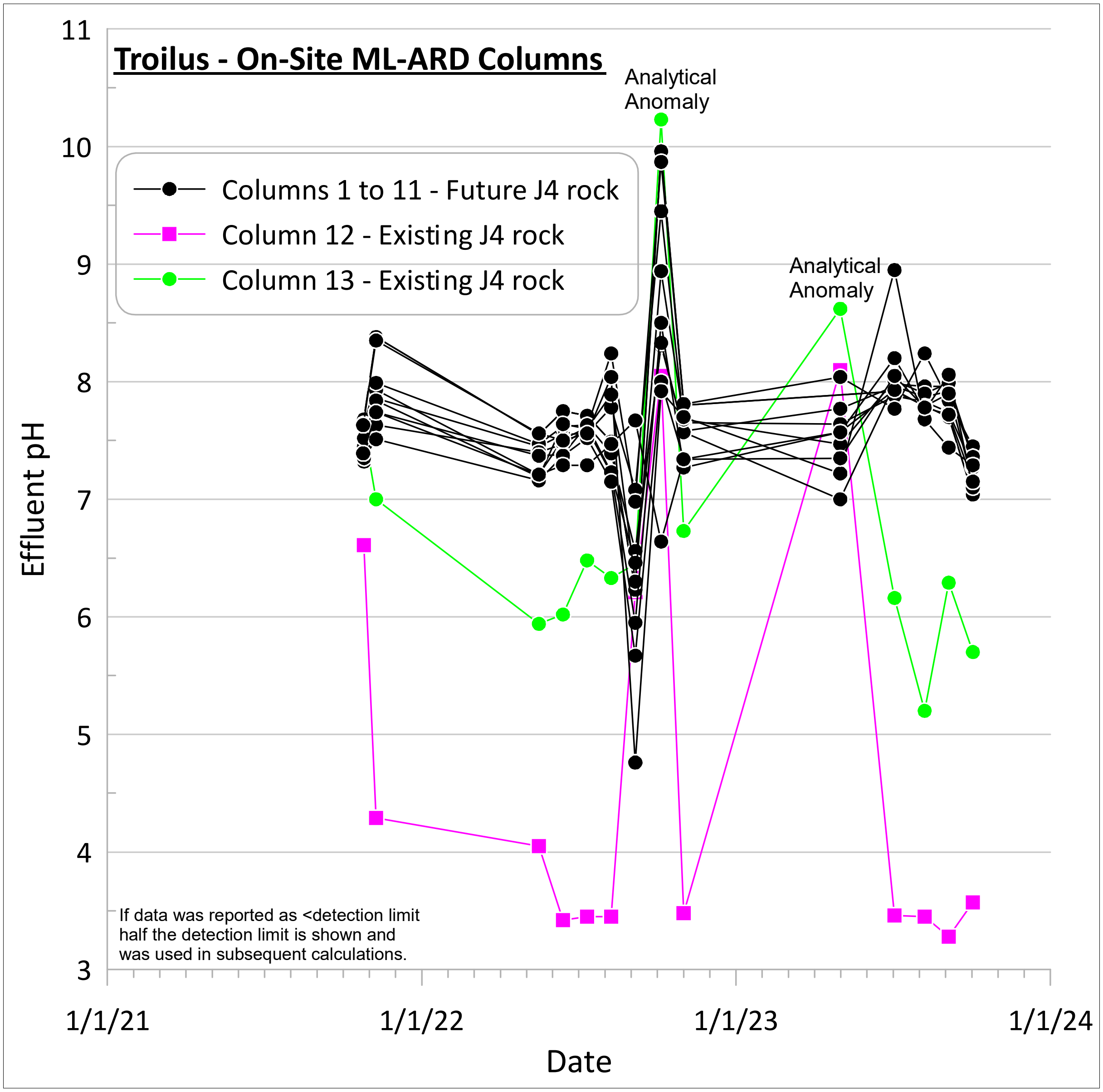


Figure 6-22. Trends of effluent pH from the 13 on-site ML-ARD columns from 2021 to 2023, showing only Column 12 filled with brown weathered rock and with the highest amount of solid-phase sulphur is releasing significant ARD at this time.

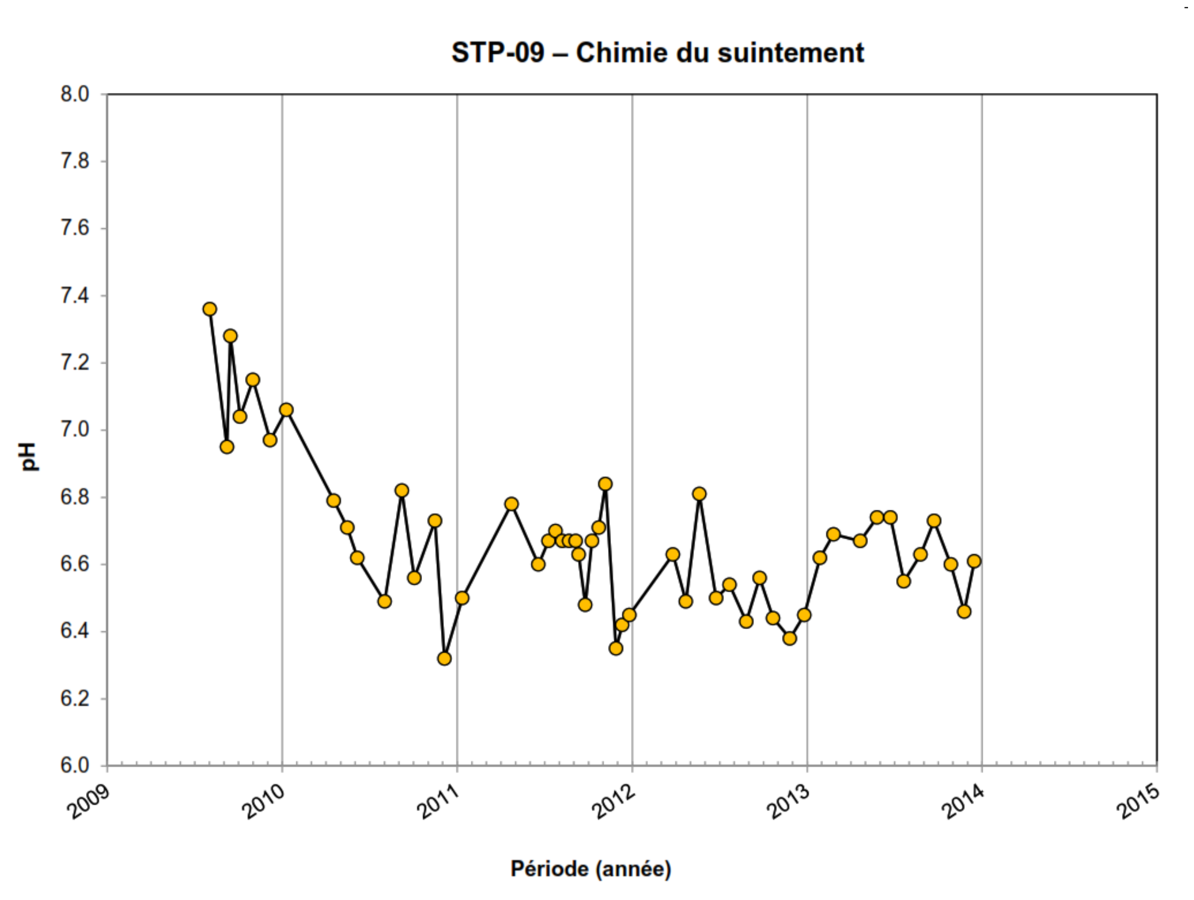


Figure 6-23. Trends of pH at full-scale Monitoring Station STP-09 downstream of the existing J4 waste-rock pile from SRK (2014), showing a trend similar to Column 13 containing existing grey J4 waste rock (see also Figure 6-22) that still remains near-neutral around pH 6.5 today.

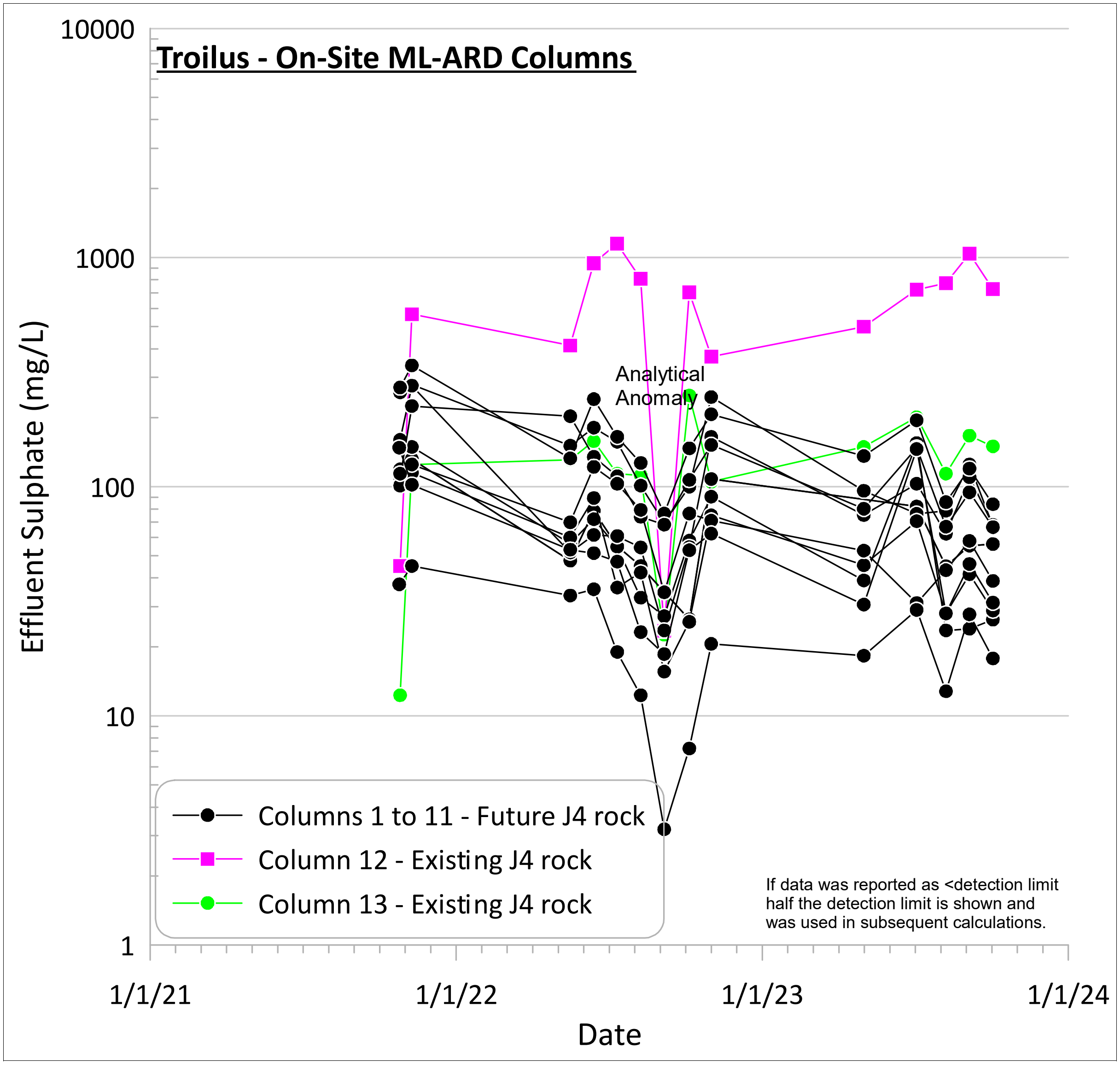


Figure 6-24. Trends of effluent aqueous sulphate from the 13 on-site ML-ARD columns from 2021 to 2023, showing that all columns are reactive with acidic high solid-phase-sulphur Column 12 with brown weathered rock producing the highest concentrations of sulphate.

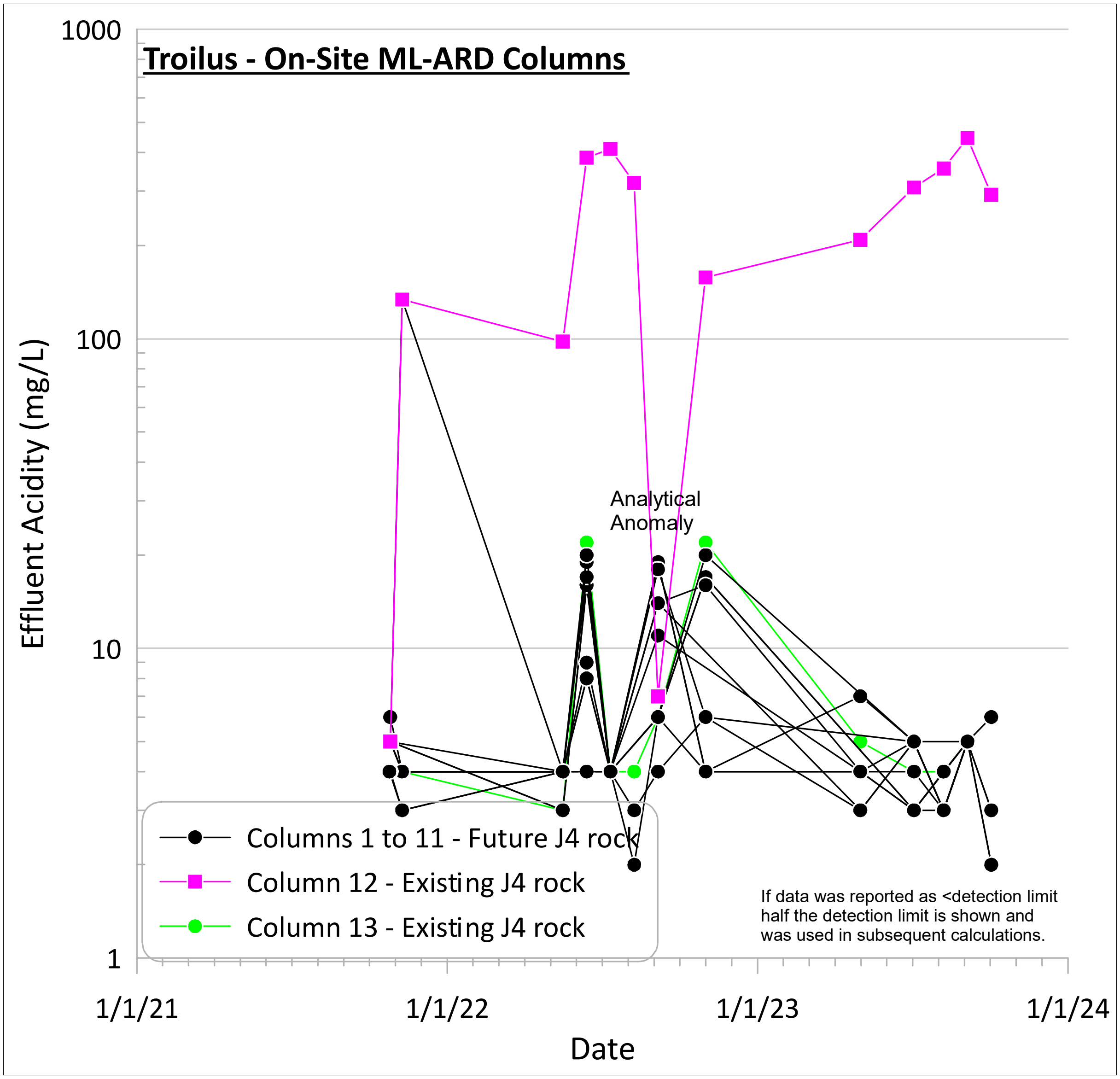


Figure 6-25. Trends of effluent aqueous acidity from the 13 on-site ML-ARD columns from 2021 to 2023, showing that only high solid-phase-sulphur Column 12 is releasing significant levels of acidity and ARD at this time.

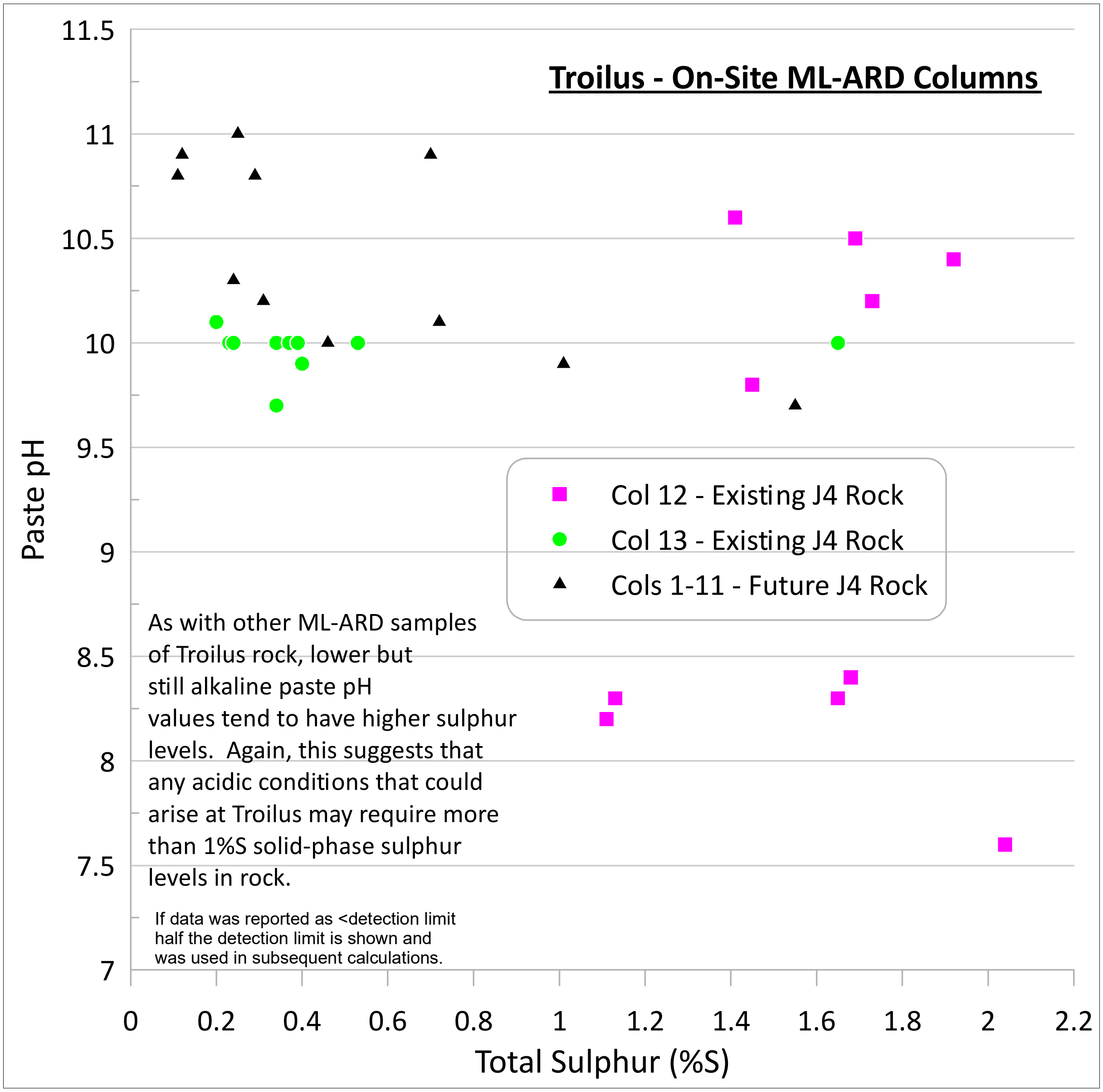


Figure 6-26. Paste pH vs. total sulphur in the 34 subsamples from the 13 on-site ML-ARD columns.

On average, Column 12 contains roughly 5 times more solid-phase sulphur (Figure 6-26) and releases about 5 times more sulphate (Figure 6-24). This indicates the amounts of sulphate and of total acidity generated per tonne of Troilus rock may be proportional to the amount of solid-phase sulphur. For non-carbonate NP, this means the lower levels of sulphur produce sufficiently little acidity that this slower-reacting NP from silicate minerals can “keep up” and maintain near-neutral pH in the effluent. This is discussed further in Chapter 7 below.

This effect of the solid-phase sulphur level appears also to be the case on the full mine scale (Figure 6-23). This is important for Troilus ARD predictions because the potential ARD may depend on the unit-weight rate of acidity generation. Thus, the slower the oxidation rate, the higher the amount of Fast-Neutralizing Silicate NP in Troilus rock (see the vertical dashed line in Figure 1-1). As a result, the undetected NP is not a certain numerical value but depends on conditions like sulphide-oxidation rate, particle size, and particle-scale pH. This is discussed further in Chapter 7 below.

Similar to the 89 ML-ARD samples, the Sobek Total-Sulphur-Based Net Potential Ratio (Sobek TNPR, see Section 6.4, Figure 6-10, and Equation 6-12 above) correlates with total sulphur (Figure 6-27). As before with a Sobek TNPR criterion of 2.0, total-sulphur levels below 0.15%S are consistently net neutralizing, and total-sulphur levels above 1.3%S (like Column 13) are consistently net acid generating and are predicted to release ARD after various lag times. Between total-sulphur levels of 0.15%S and 1.3%S (like Column 13 and the samples studied by National Research Council of Canada, 2023), total sulphur alone is not sufficient to predict ARD. Thus, additional information on Neutralization Potential (NP) is needed, as explained in Chapter 7. The currently undetected, additional non-carbon Neutralization Potential (NP) can result in Total TNPR values significantly above their Sobek TNPR values.

Similar to the 89 ML-ARD samples, the Carbon Total-Sulphur-Based Net Potential Ratio (Carbon TNPR, see Section 6.4, Figure 6-12, and Equation 6-11 above) correlates with total sulphur (Figure 6-28). As before with a Carbon TNPR criterion of 0.5, total-sulphur levels below 0.15%S are consistently net neutralizing, and total-sulphur levels above 1.3%S (like Column 12) are consistently net acid generating and will release ARD after various lag times. Between total-sulphur levels of 0.15%S and 1.3%S (like Column 13 and the samples studied by National Research Council of Canada, 2023), total sulphur alone is not sufficient to predict ARD. Thus, additional information on Neutralization Potential (NP) is needed as explained in Chapter 7. The currently undetected, additional non-carbon Neutralization Potential (NP) can result in Total TNPR values significantly above their Sobek TNPR values.

The levels of solid-phase elements and metals in these 34 subsamples from the on-site columns were similar to those of the 89 ML-ARD samples (Section 6.5 above and Appendices A to D below). There are a few elements generally less abundant in these 34 subsamples. However, a major discrepancy is that these 34 subsamples, including fresh drillcore and older weathered samples, contain roughly 10 times more mercury than the 89 ML-ARD fresh drillcore samples that were nearly consistently below detection of 0.05 ppm. The suspected cause is an artifact of the analytical methodology. In any case, mercury is regularly analyzed in water from the full-scale Monitoring Station STP-09, from the on-site ML-ARD columns, and from various smaller scales of laboratory kinetic testing, so any significant leaching of mercury would be detected.

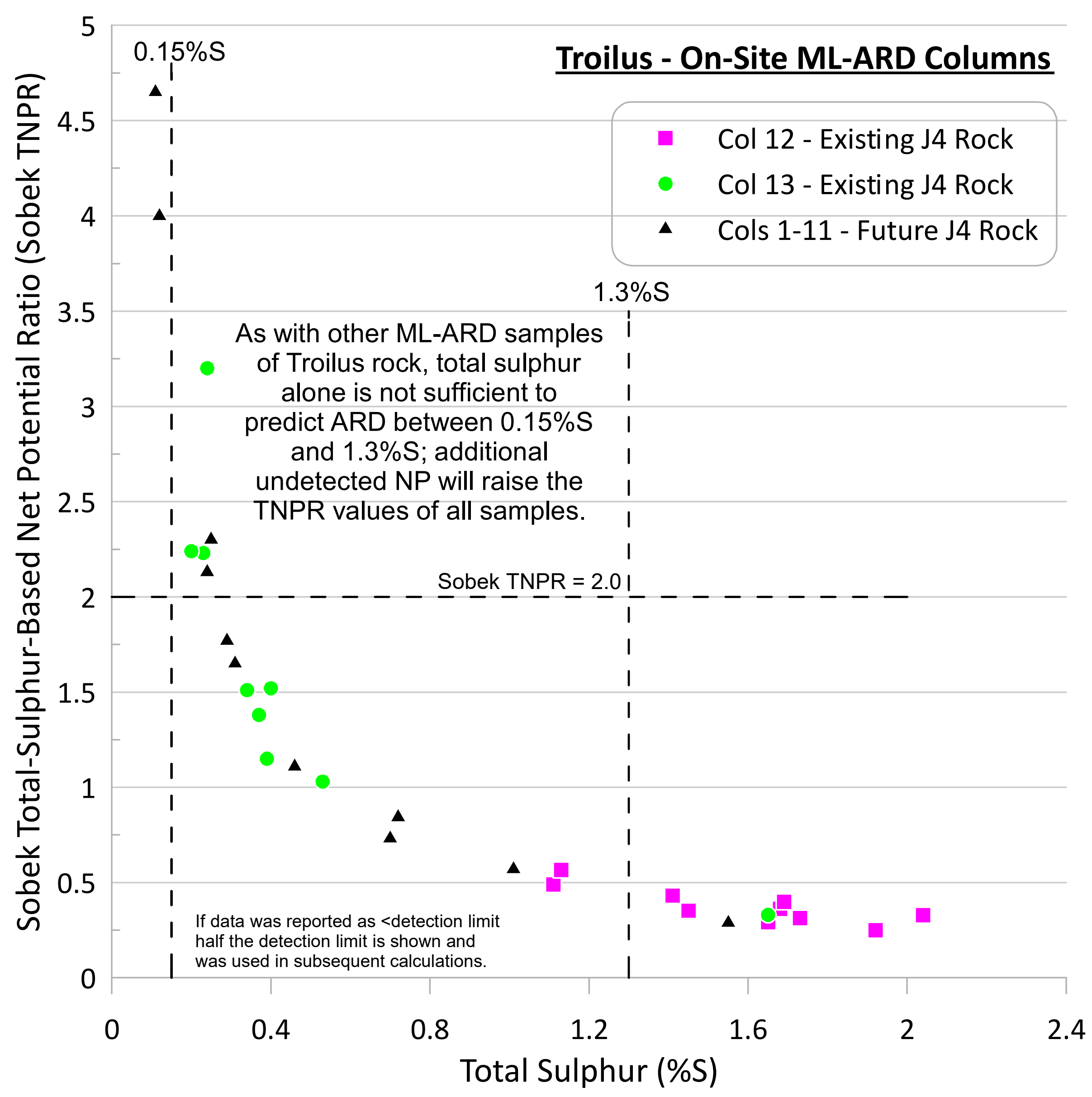


Figure 6-27. Sobek TNPR vs. total sulphur in the 34 subsamples from the 13 on-site ML-ARD columns.

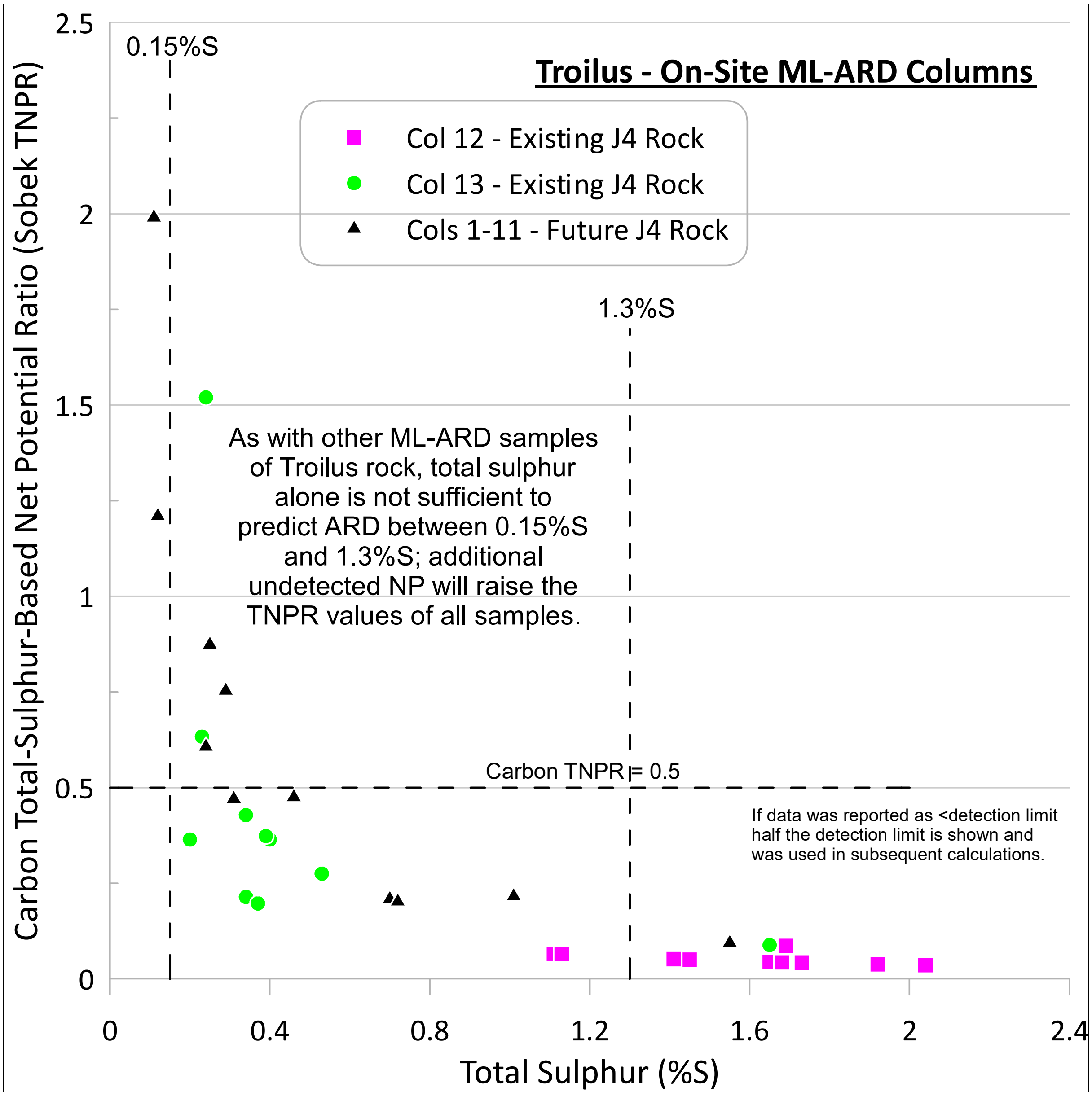


Figure 6-28. Carbon TNPR vs. total sulphur in the 34 subsamples from the 13 on-site ML-ARD columns.

In summary, at the Troilus Gold site, 11 ML-ARD columns were built and filled with up to about 100 kg of fresh J4 drillcore. Two additional ML-ARD columns were filled with hundreds of kg of existing J4 rock from the existing J4 waste-rock pile that has been exposed and oxidizing for 14-28 years. Column 12 contains brown, well-oxidized and acidic existing J4 rock with abundant fine particles. Column 13 contains grey, near-neutral existing J4 rock with abundant fine particles. There is a visible distinction at Troilus between the weathered brown rock and the relatively unweathered grey rock.

The pre-testing paste pH values indicated all subsamples from these columns were near neutral, although the initial effluents from all columns were initially near neutral. However, within a few weeks, the effluent pH from Column 12 with brown rock fell below 4.5 and eventually reached a typical ARD pH around 3.5. In contrast, the pH from Column 13 with existing grey rock remained near neutral, typically around pH 6.0-6.5 but with some higher and lower values. This pH range is also typical of pH measured after mine closure at Monitoring Station STP-09, measuring flow for the full-scale, existing J4 waste-rock pile with tens of millions of tonnes of rock.

Pre-testing ABA results for the column subsamples were consistent with the 89 ML-ARD samples discussed above, based on a Sobek TNPR criterion of 2.0 and a Carbon TNPR criterion of 0.5. Thus, (1) higher levels of total sulphur are associated with lower, but still near-neutral paste pH; (2) total sulphur levels below 0.15%S are consistently net neutralizing; (3) total sulphur levels above 1.3%S (like Column 12) are consistently net acid generating and capable of releasing ARD after various lag times; (4) total sulphur levels between 0.15%S and 1.3%S (like Column 13 and the samples studied by the National Research Council of Canada, 2023) require additional information on Silicate Neutralization Potential (Figure 1-1) for ARD predictions; and (5) the amount of Total NP in Troilus rock may depend on the amount of total sulphur and its oxidation rate rather than being a certain numerical value (vertical dashed line in Figure 1-1). The additional NP not currently detected in Troilus rock can cause TNPR values to increase significantly and thus to have less ARD potential than reported at this point. Chapter 7 addresses this additional Silicate NP.

7. GENERIC BASIS FOR ADDITIONAL NEUTRALIZATION POTENTIAL IN TROILUS ROCK

7.1 The Ongoing ML-ARD Studies of Troilus Rock by the National Research Council of Canada

A major part of Phase 1 work by the National Research Council of Canada (2023) was the detailed identification of mineralogy of Troilus rock. This is a major step to identifying and quantifying the currently undetected Silicate Neutralization Potential (NP) in Troilus rock (see Figure 1-1), and Phase 2 of these NRC studies are currently underway.

The National Research Council of Canada was sent five “bags” of grey Troilus rock taken from existing J4 waste rock more than 13 years old (e.g., Figures 6-20 and 6-21). This rock was freshly crushed to a particle size of 4-6 mm (~5 mm, labeled “coarse”) in some bags and to a particle size of <1 mm (“fine”) in other bags. Total sulphur levels in these five J4 bags ranged from 0.36%S to 0.54%S with a mean of 0.49%S which equals a mean Total Acid Potential (TAP, Equation 6-1) of 15.3 kg $CaCO_3$ equivalent/tonne. These sulphur levels are in the range where the amount of total NP is important to ARD predictions at Troilus (e.g., see Figures 6-10, 6-12, 6-27, and 6-28).

Carbon ranged from below detection to 0.11%C with a mean of 0.058%C, which is in the lower range of carbon values for all Troilus rock but relatively typical of J4 rock (Figure 6-4). Equation 6-2 shows the average Carbon NP for this sample is 4.8 kg/t (or as low as 2.4 kg/t if neutralization is only partial; see Morin and Hutt, 2006). Based on the average total sulphur and carbon, these samples have an average Carbon TNPR (Equations 6-7 and 6-11) of 0.32 in the range where the amount of NP is important for ARD predictions (Figure 6-12 and 6-28). Thus, these samples are appropriate for searching for the additional, non-carbon Silicate NP in Troilus rock (Figure 1-1) that forms part of Total NP (Equations 6-4 and 6-5), which in turn is important for reliably predicting ARD potential in Troilus rock.

National Research Council of Canada (2023) used advanced, state-of-the-art combined techniques for Troilus mineralogy, namely, x-ray diffraction (XRD), scanning electron microscopy with energy dispersive x-ray spectroscopy (SEM/EDX), visual petrographics, and microscopic Raman spectroscopy. Based on all this work, the mineralogy of the grey, relatively unweathered Troilus rock with approximately 0.5%S was defined as follows.

> “Fresh rock samples were confirmed to contain significant amounts of sulfur (0.49% wt.) but only trace amounts of carbonates (0.06% wt.). Metal sulfides, primarily pyrites with some pyrrhotite and chalcopyrite, were seen under the microscope but only traces of calcite were seen. Pyrite particles are well-encased, and many of the pyrites are still very fresh. Sulfides were observed as encapsulated particles and does not form veins that can lead to cracking. This can be a main factor for the slow acid generation reaction.
>
> “Petrographic microscopy and XRD both indicate that the main mineral groups in the rock are plagioclase, quartz, amphiboles and biotite. Other minor components identified include epidote, pyroxene, white mica (sericite, muscovite), titanite, chlorite and traces of other minerals. Three out of four of the major mineral groups, or 69.66% of the rock by XRD, are

> alkali/earth containing aluminosilicates: plagioclase (Ca, Na and some K), amphiboles (Mg, Ca and some K) and biotite (Mg, K). Considering that the feldspars were observed to be relatively altered (plagioclase pitting, forming clay, flakes and fines). It is reasonable to think that at least some of the calcium in the effluents may have originated from plagioclase and its by-products. Some samples from cell #4 were obtained for microscopic observation. Goethite was the only secondary mineral observed."

Table 7-1 summarizes the average mineralogy that accompanies the average Carbon TNPR of 0.32.

National Research Council Canada (2023) observed that:

> "These tests showed that the rate of oxygen consumption is about 0.186 mole O_2 per tonnes of fine crushed rock per day and about 0.056 mole O_2 per tonnes of the coarse rock per day. The slow oxidation rate of sulfides is a factor why the J4 rock pile has not been observed to generate ARD at STP-9."

7.2 Application to Total Neutralization Potential Not Currently Measured in Troilus Rock

The standard reaction for pyrite oxidation by oxygen and with pH above ~4 shows that 3.75 moles of O_2 consumes 2 moles of S, and produces 4 moles of H^+ that is mathematically equivalent to 2 moles of acidity as $CaCO_3$ equivalent:

$$FeS_2 + 15/4O_2 + 7/2H_2O \rightarrow Fe(OH)_{3(solid)} + 2SO_4^{2-} + 4H^+ \qquad \text{(Eq. 7-1)}$$

This means that the initial rates of acid generation calculated from the oxygen-consumption rates in Section 7.1 above are 0.099 moles of sulphur consumed/t/d and 0.099 moles of acidity as $CaCO_3$ equivalent/t/day produced by the fine 1 mm rock, and 0.030 moles of sulphur/t/d consumed and 0.030 moles of acidity produced as $CaCO_3$/t/day for the coarser 5 mm rock.

Upon mathematical conversion to more typical kinetic rates, these rates of acid generation were 69 mg $CaCO_3$/kg/week for the fine 1 mm rock and 21 mg $CaCO_3$/kg/week for the coarser 5 mm rock. Thus, coarser Troilus rock has a lower initial oxidation rate per kg or per tonne of rock than finer Troilus rock. Other kinetic tests of Troilus rock show that these initial oxidation rates typically decrease by factors of 5 to 10 within a few weeks.

As explained in the previous chapters of this MDAG report, there is additional non-carbonate NP not detectable by the hours-long NP analytical procedure and by the carbon analysis (Figure 1-1 and Equations 6-4 and 6-5 above).

Generic methods for determining the various types of Silicate NP include:

(1) the numerical amounts of Silicate NP (Figure 1-1) which is used in this subsection, and
(2) the numerical amounts of Fast-Neutralizing Silicate NP based on kinetic rates of silicate neutralization (Section 7.3 below), derived from the compiled information in Bowser and Jones (2002), Palandri and Kharaka (2004), and Eary and Williamson (2006) combined into the spreadsheet-based MDAG Silicate NP Model.

This information has been compiled into a spreadsheet for calculating (total) Silicate NP and the Fast-Neutralizing Silicate NP based the rock characterized in Table 7-1.

Table 7-1. Average mineralogy of Troilus rock tested by National Research Council of Canada (2023), typical of rock where undetected Neutralization Potential is important for ARD predictions at Troilus

Mineral Group	Weight-%	Mineral	Weight-%
Plagioclase	54.35	Bytownite (~80 mole-% calcium, ~20 mole-% sodium)	4.32
		Labradorite (~60 mole-% calcium, ~40 mole-% sodium)	3.35
		Andesine (~40 mole-% calcium, ~60 mole-% sodium)	11.69
		Oligoclase (~20 mole-% calcium, ~80 mole-% sodium)	25.50
		Albite (~5 mole-% calcium, ~95 mole-% sodium)	9.51
Quartz	26.56		
Mica	10.71	Muscovite	1.07
		Phlogopite (magesium-rich biotite)	1.39
		Biotite	8.26
Amphiboles	7.05	Tremolite	5.29
		Actinolite-tremolite	1.76
Pyrite	0.60[1]		
Titanite	0.28		
Calcite[2]	0.48[2]		
Unidentified (sillimanite?)	0.44		

[1] Based on the average total sulphur content of 0.49%S, this represents a Total Acid Potential of 15.3 kg $CaCO_3$ equivalent/t

[2] The only significant source of carbon in Troilus rock is carbonate occurring in the mineral calcite (see Chapters 2 to 5). Thus, the average 0.058% C was mathematically converted to 0.48% $CaCO_3$ and a Carbon NP of 4.8 kg $CaCO_3$/t (or 2.4 kg/t if neutralization is only partial; see Morin and Hutt, 2006).

Based on Table 7-1 and the aforementioned references in the MDAG Silicate NP Model, this grey Troilus rock contains approximately 160 kg $CaCO_3$ equivalent/tonne of Silicate NP, plus approximately 2 kg/t of Carbon NP, for a Theoretical Total Neutralizing Capacity of 162 kg/t. This is substantially higher than Sobek NP and Carbon NP in Chapter 6 above, especially for J4 rock that typically contains less than 25 kg/t of Sobek NP and less than 16 kg/t of Carbon NP (Section 6.3 and Figure 6-8). This results in a maximum TNPR value around 16.0 with no ARD risk compared with the Carbon TNPR around 0.31 with possible ARD risk. Because Carbon NP is very low in this sample, Silicate NP is almost the same value as Theoretical Total Neutralizing Capacity.

Most of this Silicate NP of 160 kg/t is derived from plagioclase minerals (Figure 7-1), with 55% of the Silicate NP coming specifically from oligoclase (plagioclase comprised of roughly 20 mole-% Ca: 80 mole-% Na) and andesine (plagioclase comprised of roughly 40 mole-% Ca: mole-% 60% Na), and only 1.5% coming from the trace amount of carbonate as calcite. The plagioclase minerals were observed to be "relatively altered (plagioclase pitting, forming clay, flakes and fines)" and thus reactive.

7.3 Calculated Rates of Silicate Neutralization in Troilus Rock

It is important to note that 160 kg/t for Silicate NP in Figure 7-1 is a generic estimate based on solid-phase levels that may not be sufficiently accurate. One major reason for this is that some silicate minerals dissolve very slowly in particular pH ranges and thus, while they represent significant solid-phase NP, they may not release NP fast enough to neutralize pH in certain contact waters. This is a major issue for Troilus NP and for Silicate NP in general.

In addition to information for calculating Total NP (Section 7.2), the aforementioned references of Bowser and Jones (2002), Palandri and Kharaka (2004), and Eary and Williamson (2006) address reaction rates. Their data were compiled into the spreadsheet-based MDAG Silicate NP Model for Troilus rock. These rates are now examined in this subsection.

Silicate-mineral reaction rates are particularly dependent on particle size and aqueous pH in the contact water surrounding the mineral particles. The calculated initial total neutralization rates at each theoretically possible pH for the two particle sizes examined by National Research Council of Canada (2023) are shown as solid curves in Figure 7-2. Typical of mineral reactivity, the total rate of silicate neutralization decreases as pH rises above 2, but begins to increase at pH above 9.

The reaction rates of many silicate minerals have not yet been defined across all pH ranges. For example, the aforementioned references do not include rates for plagioclase minerals in the alkaline pH range, but this is not important here for Troilus since ARD is the concern.

Figure 7-2 also shows as two dashed horizontal lines the two rates of sulphide oxidation and acidity generation measured by National Research Council of Canada (2023) for ~1 mm and ~5 mm particles. At a particular pH, the two rates differ by a factor of 5 because their particle size differs by a factor of 5. The coarser the particle, the slower the rate of neutralization proportionally.

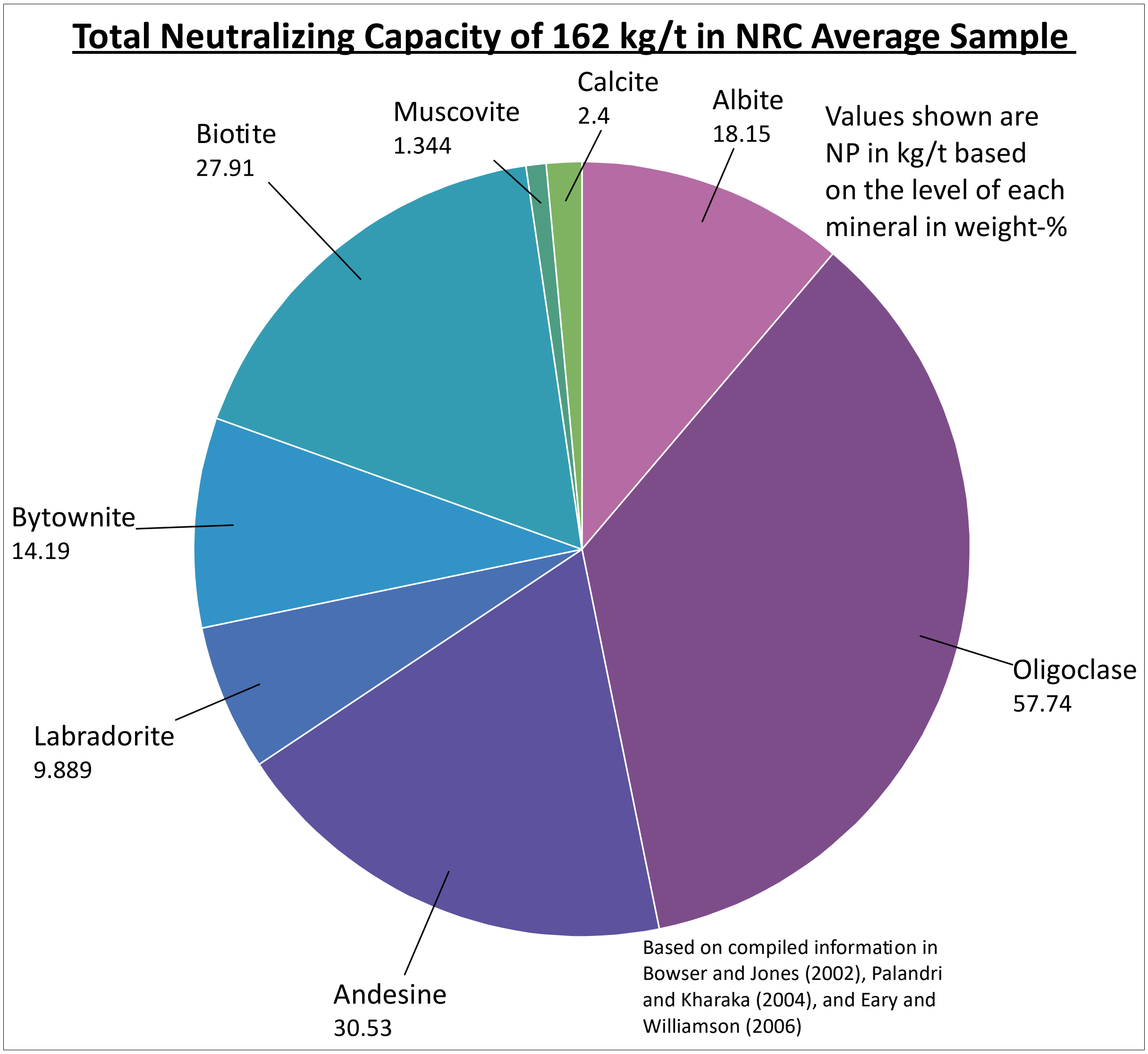


Figure 7-1. Calculated Total Neutralizing Capacity of 162 kg/t in the average rock sample tested by National Research Council of Canada (2023), with oligoclase and andesine combined accounting for more than 88 kg/t.

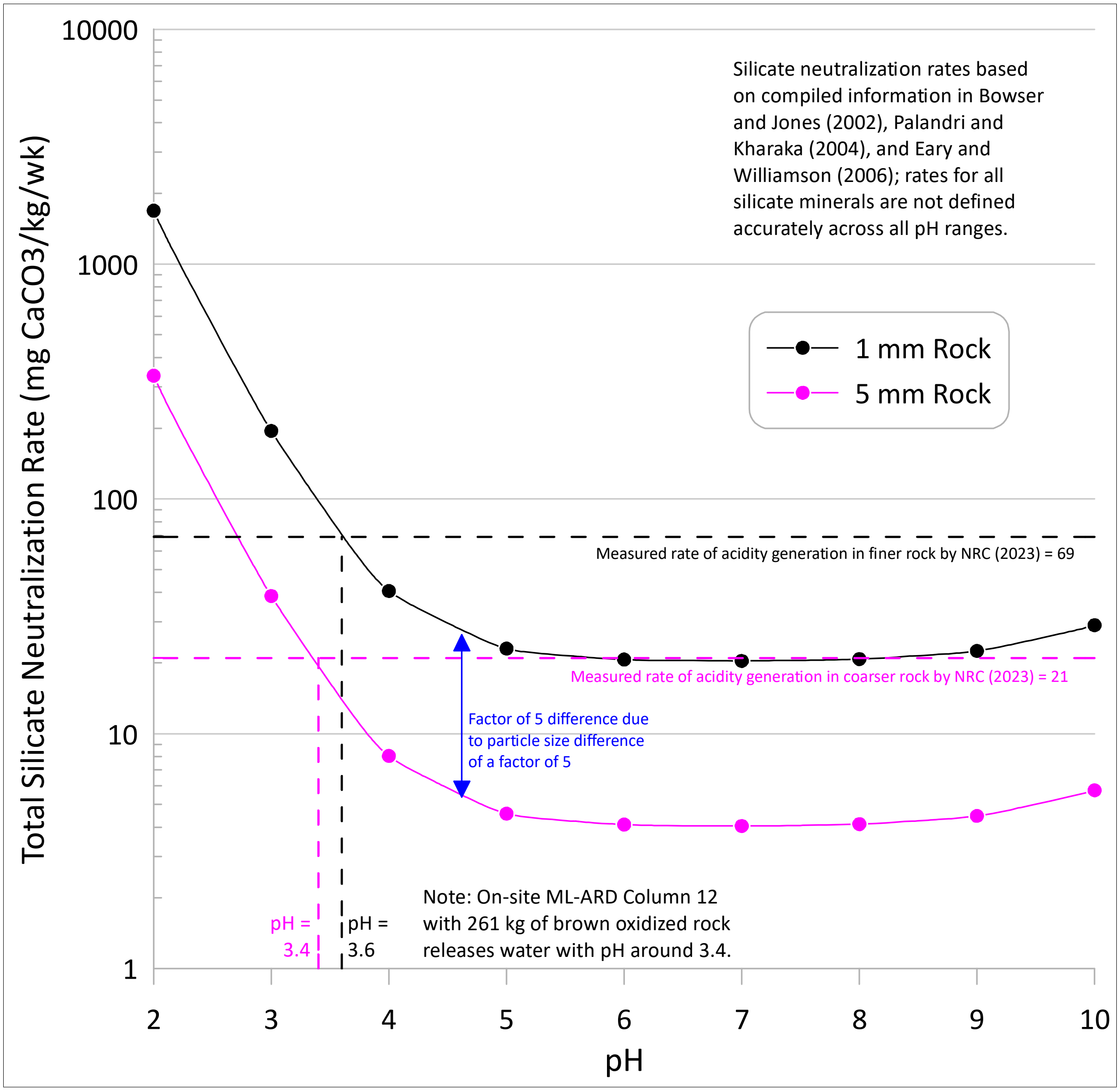


Figure 7-2. Total silicate neutralization rates at various pH levels (solid curved lines) and measured particle-size-dependent rates of acidity generation by National Research Council of Canada (2023) (dashed horizontal lines), showing that ARD is produced internally around pH 3.5, consistent with on-site ML-ARD Column 12.

Interestingly, on-site Column 12 discussed in Section 6.6 produced a typical effluent pH of approximately 3.4 (Figure 6-24). In agreement, the observed initial rates of acid generation (horizontal dashed lines in Figure 7-2) meet the rates of total silicate neutralization for the two particle sizes (curved lines in Figure 7-2) at approximately pH 3.5.

Thus, Figure 7-2 shows that acidic pH is around 3.5, at least in the limited small-scale observed Troilus ARD from Column 12 and possibly in microenvironments around sulphide and plagioclase particles in near-neutral Troilus samples. In turn, this pH allows silicate neutralization to offset the acid-generation rates (69 mg $CaCO_3$/kg/week for the fine 1 mm rock and 21 mg $CaCO_3$/kg/week for the coarser 5 mm rock) until an overall effluent pH above 6 is attained as in Column 13 (Figure 6-24).

Based on kinetic testing of Troilus rock, initial oxidation rates typically decrease by factors of 5 to 10 within weeks, creating pH effluent waters often between pH 6.0 and 7.0. In agreement, Figure 7-2 shows that the Silicate Neutralization Rate around pH 6.0 to 7.0 is roughly 5 times lower than at pH 3.5. Thus, as the rates of sulphide oxidation and acid generation slow, the rate of silicate neutralization also slows to match the rate of acid generation and yet continues neutralizing to above pH 6.0.

However, the rates of Silicate Neutralization in Figure 7-2 are not derived from a single silicate mineral (Figure 7-3). In Figure 7-2, the portion of the Silicate Neutralization Rate caused by bytownite (containing roughly 80 mole-% Ca and 20 mole-% Na) is 81% at pH 4 and 89% at pH 6. Notably, bytownite, which is about 4.3% of total rock (Table 7-1), represents only about 14 kg/t of the Silicate NP of 162 kg/t (left side of Figure 7-1). Thus, a small percentage of solid-phase Silicate NP provides most of the Fast-Neutralizing Silicate NP around pH 4 and 6.

Similarly, the percentage of the Silicate Neutralization Rate attributable to the plagioclase mineral, labradorite, is 14% at pH 4 and 7.6% at pH 6. Interestingly, labradorite is only 3.4% of the rock and represents only 9.9 kg/t of the Silicate NP of 162 kg/t, but accounts for 14% of the neutralization rate at pH 4.

Combined, bytownite and labradorite in the sample of Table 7-1 represent a Fast-Neutralizing Silicate NP of 24 kg/t (14 + 9.9 kg/t) for ARD predictions, while accounting for at least 95% of active neutralization by silicate minerals. In other words, while the sample of Table 7-1 has a Silicate NP of 160 kg/t, only15% (24/160) of its Silicate NP is sufficiently reactive to be Fast-Neutralizing Silicate NP, that is, to neutralize to at least pH 6 at the acid-generation rate, particle size, and particle-scale pH in this sample. Thus, for this Troilus rock:

$$\text{Fast-Neutralizing Silicate NP / Silicate NP} = 0.15 \qquad \text{(Eq. 7-2)}$$

Based on initial reaction rates circa pH 4, bytownite in this rock would be fully consumed in 8.3 years in the 1 mm sample and in 42 years in the 5 mm sample. Similarly, labradorite would be fully consumed in 32 years in the 1 mm sample and in 164 years in the 5 mm sample.

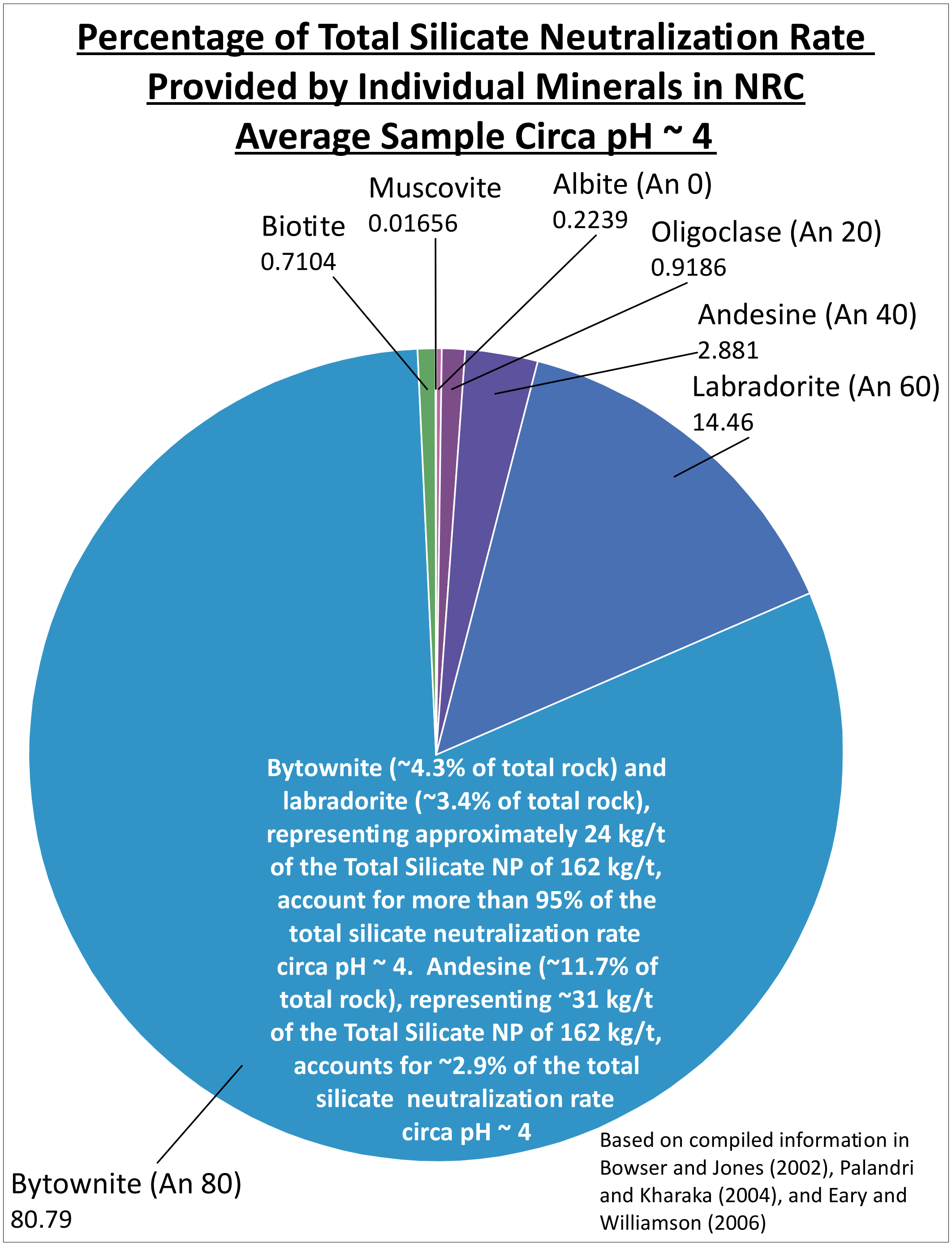


Figure 7-3. The percentage of the total silicate neutralization rate circa pH 4 accounted for by each relevant mineral in the average rock sample of National Research Council of Canada (2023).

However, the oxidation rates and thus the Silicate Neutralization Rates decrease after a few initial weeks by factors of 5 to 10, and these lower consumption rates provide better estimates of the longevity of silicate neutralization. Based on reaction rates circa pH 6, bytownite in this rock would be fully consumed in 15 years in the 1 mm sample and in 75 years in the 5 mm sample. Similarly, labradorite would be fully consumed in 121 years in the 1 mm sample and in 609 years in the 5 mm sample.

For estimates of ARD prediction based on rates of silicate neutralization that match the rate of acid generation, a simple excess of neutralization is needed to prevent ARD so that the Fast-Neutralizing Silicate NP outlasts the oxidation of the total sulphur and its Total Acid Potential.

In other words, the Silicate TNPR criterion with Fast-Neutralizing Silicate NP is 1.0:

Silicate Total-sulphur-based Net Potential Ratio (Silicate TNPR) < 1.0
will eventually release ARD (Eq. 7-3)
Silicate Total-sulphur-based Net Potential Ratio (TNPR) ≥ 1.0
will not release ARD (Eq. 7-4)

For the sample of Table 7-1, the Silicate TNPR is 1.6 (= 24 / 15) and thus this sample is not predicted to release ARD. It is important to note that this sample also contains an additional 4.8 kg/t of Carbon NP. Thus, its Total NP (from Equation 6.4 and Figure 1-1) is 29 kg/t (= 24 + 4.8) and its Total TNPR (from Equation 6.8) is 1.9 and, as a result, it is further not predicted to release ARD.

7.4 Calculation of Fast-Neutralizing Silicate NP from Calcium Analyses

As explained in Section 1.2, a major objective of this study is to mathematically convert more than 158,000 drillcore assays for J4, 87, and SW Zones (Chapters 3 to 5) into surrogate ABAs for large-scale, three-dimensional estimates of ARD potential (see Chapter 8 below). This objective is met through the usage of:

(1) roughly 158,000 analyses of total sulphur for Total Acid Potential (Section 6.1 and Figures 3-4, 4-4, and 5-5),
(2) Carbon NP for thousands of drillcore intervals based on total carbon for 87 and SW Zones (Figures 4-5 and 5-6), and
(3) roughly 158,000 Fast-Neutralizing Silicate NP values calculated from measured solid-phase calcium as explained below.

As explained in Section 7.3, bytownite and labradorite are the most reactive and fastest-neutralizing silicate minerals in the rock samples tested by National Research Council (2023). Bytownite and labradorite are two of the calcium-rich plagioclase minerals relative to sodium (Table 7-1). Based on all plagioclase minerals, this sample has a Total Silicate NP of 162 kg/t (plus a Carbon NP of 4.8 kg/t), but fast-neutralizing bytownite and labradorite comprise only 24 kg/t of Fast-Neutralizing Silicate NP (~15% of Silicate NP). At long-term rates of acid generation, this Fast-Neutralizing Silicate NP would last for many decades to centuries (Section 7.3). Notably, other feldspar minerals would begin to provide additional Fast-Reacting Silicate NP if the rock became sufficiently acidic after those initial lag times.

On a molar basis of (calcium + sodium), bytownite contains roughly 80 mole-% calcium and 20 mole-% sodium (or 87.5 wt-% calcium and 12.5 wt-% sodium). The other plagioclase minerals in Troilus rock contain proportionally less calcium and more sodium, with less neutralization. Thus, the calcium content and the Feldspar Calcium Molar Ratio [calcium / (calcium + sodium)] of Troilus rock are general indicators of its Silicate NP under the conditions discussed in Section 7.3 above.

However, other minerals in Troilus rock contain some solid-phase calcium, with tremolite in Table 7-1 containing 21.6% of total calcium, calcite containing 6.0%, and plagioclase minerals containing the remaining 72.4% of measured total calcium in that Troilus rock. Thus, for the sample tested by National Research Council (2023) in Table 7-1, the Feldspar Calcium Molar Ratio is 0.29, but the Sample Calcium Molar Ratio is 0.36 due to the additional calcium from tremolite and to a lesser extent calcite. This is not a major difference, but is resolved next.

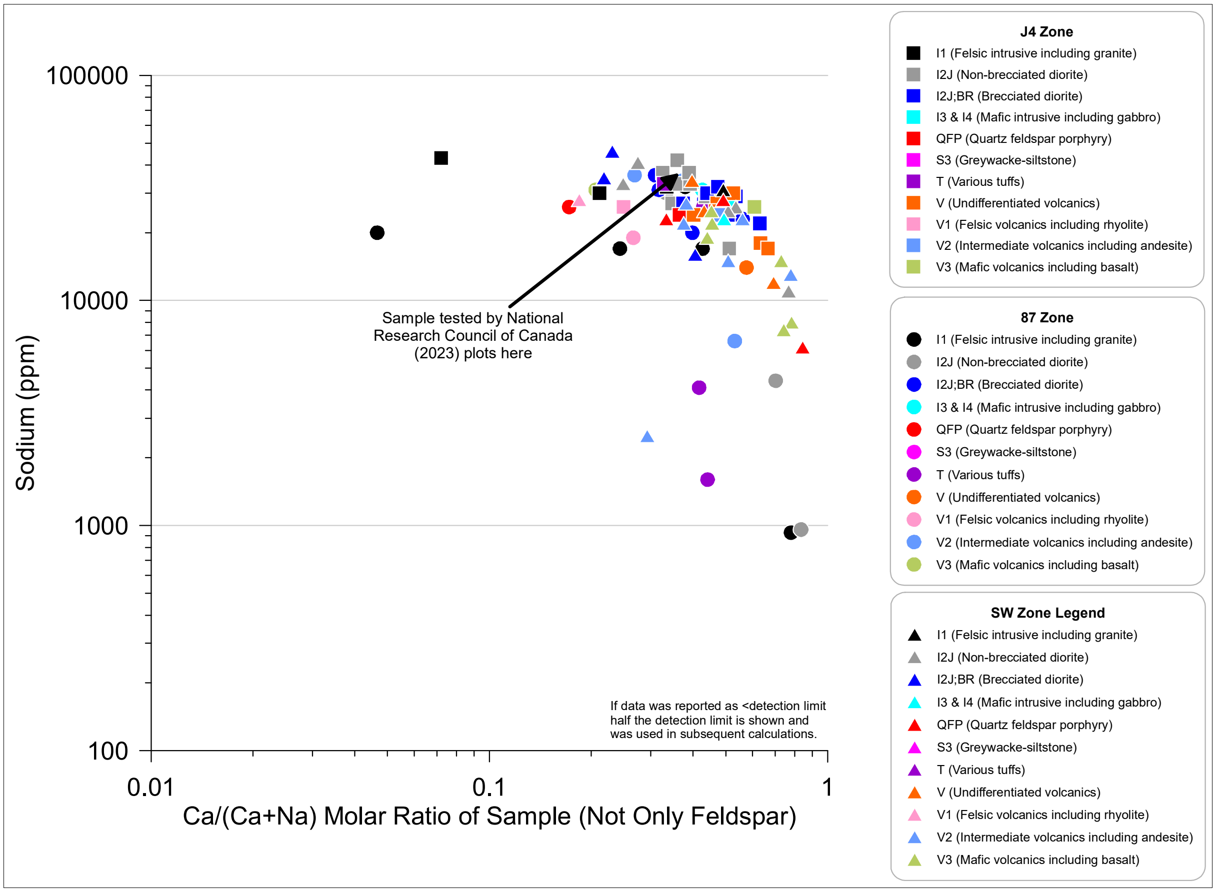
Based on solid-phase total sodium in the 89 ML-ARD samples of Chapter 6, most samples contain sodium between 1 wt-% Na to 5 wt-% Na (Figure 7-4). Thus, the Sample Molar Ratios are mostly relatively constant except for some of the samples at higher Sample Molar Ratios. This means that the Sample Molar Ratio should instead reflect more closely the variable solid-phase calcium in these samples, and it does (Figure 7-5).

In Figure 7-5, the two samples with Sample Calcium Molar Ratios below 0.1 are from Rock Unit I1 (felsic intrusive rock including granite), which by definition is enriched with sodium over calcium and thus yields a low Molar Ratio. The correlation line converges on albite (Molar Ratio of ~0.04) as the Sample Ratio decreases towards zero, supporting the validity of the Sample Ratio as a close indicator of the Feldspar Molar Ratio.

On the other hand, most samples with Sample Calcium Molar Ratios approaching 1.0 have higher calcium values (Figure 7-5) as expected. Several higher-calcium samples are Troilus volcanic rocks that are frequently mafic with ferromagnesian minerals that provide additional Silicate NP but includes little to no fast-neutralizing calcium beyond that in feldspar. This can be seen in Figures 7-6 and 7-7 where the increasing ferromagnesian minerals (increasing iron and magnesium) are associated with higher Sample Calcium Molar Ratios without contributing significant calcium or sodium to the ratios.

Therefore, the Sample Calcium Molar Ratios, as surrogates for Feldspar Molar Ratios, are consistent with the general mineralogy of Troilus rock. The highest Ratios represent higher amounts of Fast-Reacting Silicate NP such as bytownite.

However, as pointed out above, a small percentage of the solid-phase calcium at lower Ratios is from non-feldspar minerals. Thus, at lower Ratios, the Feldspar Molar Ratios would be somewhat less then the Sample Molar Ratios in Figures 7-4 through 7-7. The numerical difference between Sample Molar Ratio and Feldspar Molar Ratio for each sample would require detailed mineralogy of feldspar minerals as the National Research Council of Canada has done in Table 7-1 for low-ratio rock.



Sample tested by National Research Council of Canada (2023) plots here

If data was reported as <detection limit half the detection limit is shown and was used in subsequent calculations.

Figure 7-4. Solid-phase sodium vs. solid-phase Sample Calcium Molar Ratio in the 89 ML-ARD samples.

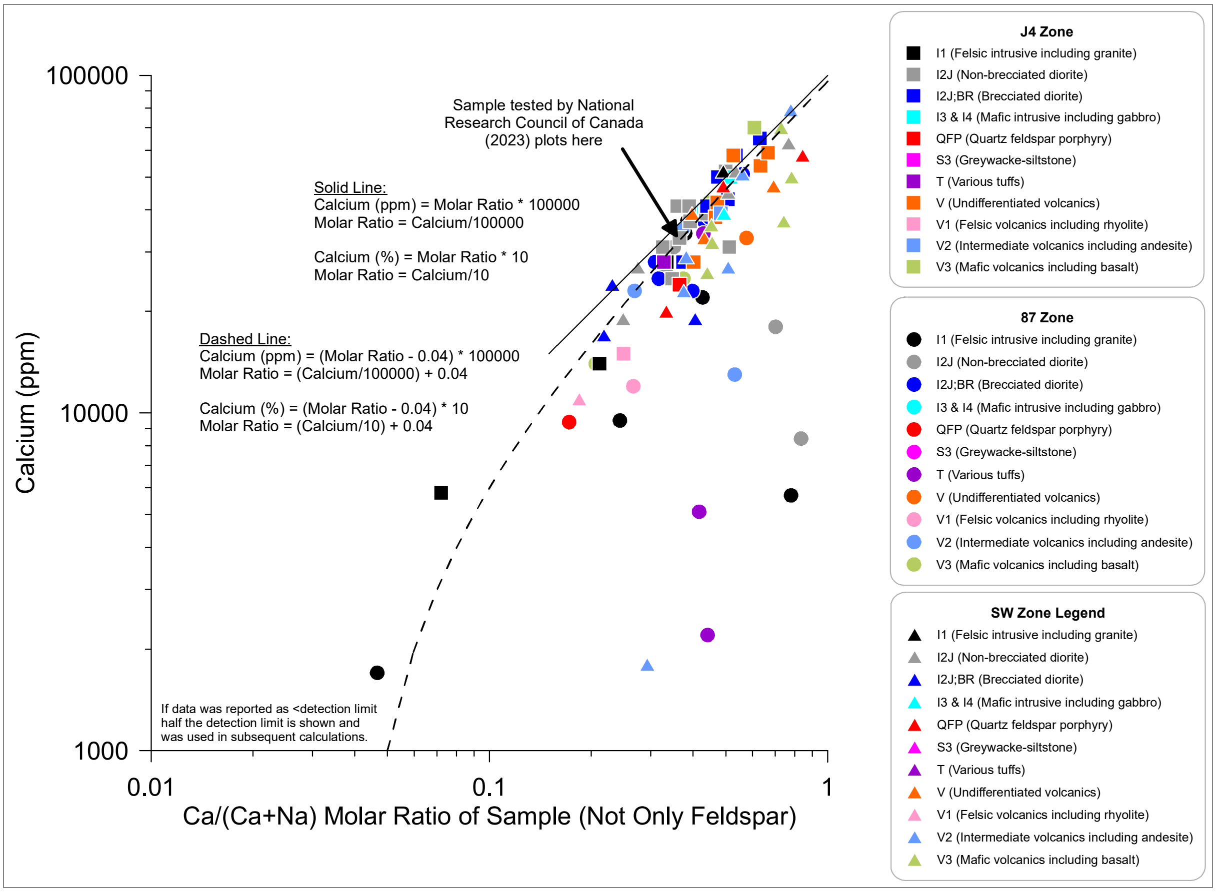


Figure 7-5. Solid-phase calcium vs. solid-phase Sample Calcium Molar, with correlation lines, in the 89 ML-ARD samples.

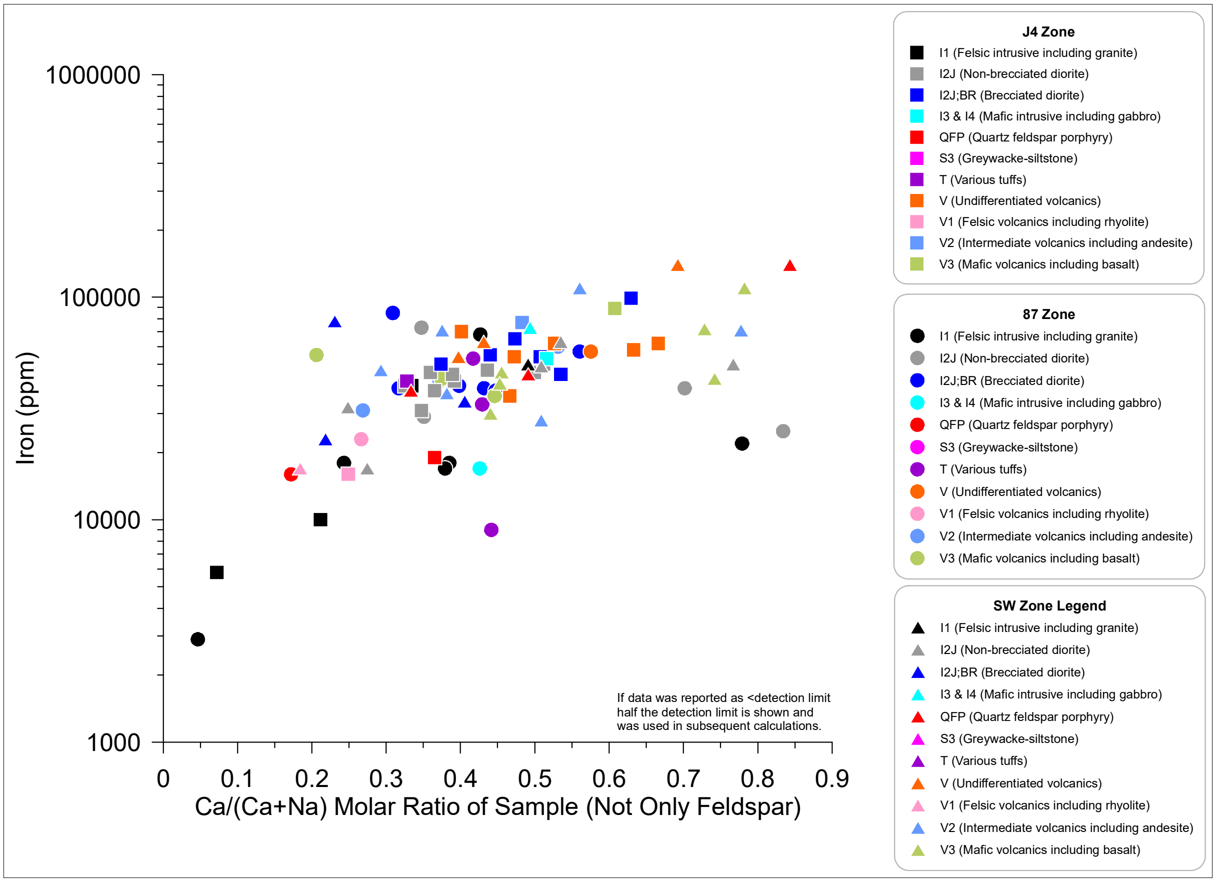


Figure 7-6. Solid-phase iron vs. solid-phase Sample Calcium Molar Ratio in the 89 ML-ARD samples.

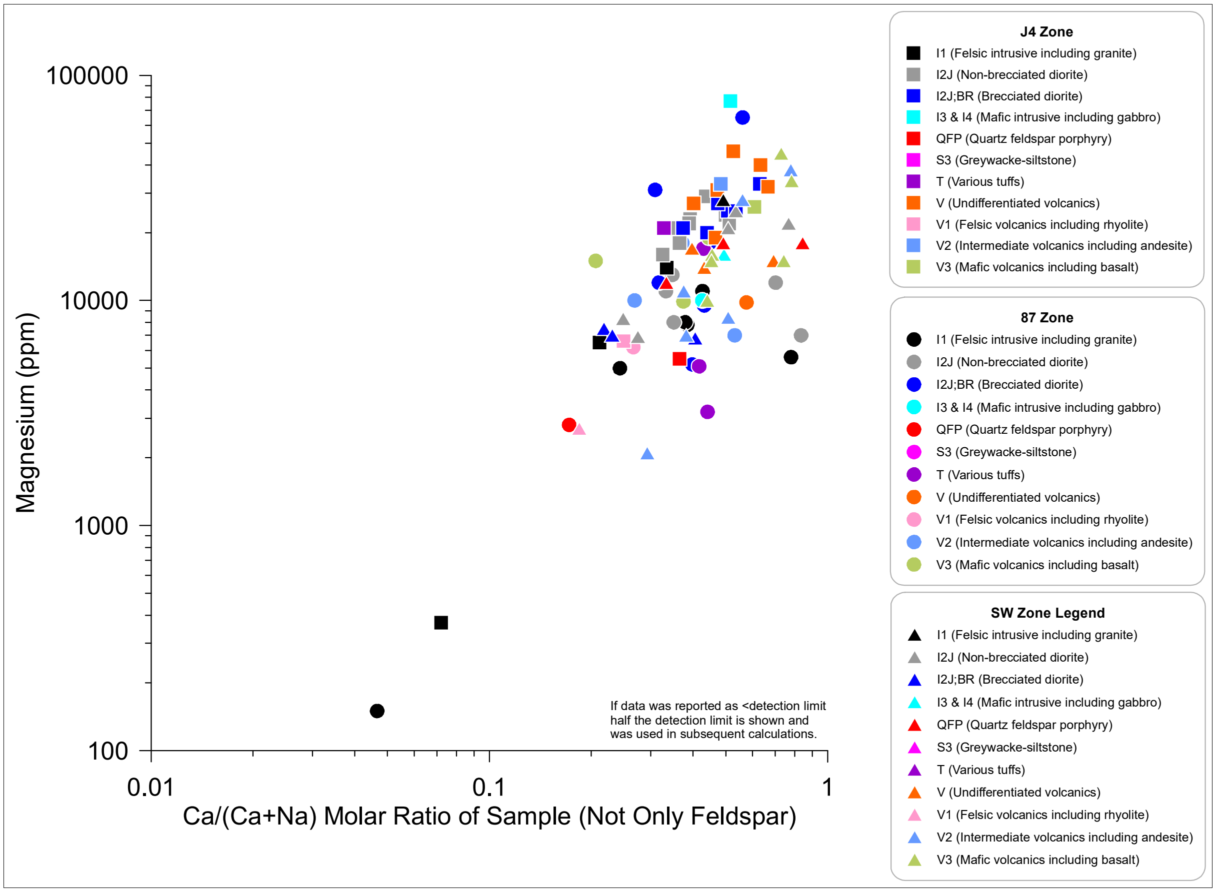


Figure 7-7. Solid-phase magnesium vs. solid-phase Sample Calcium Molar Ratio in the 89 ML-ARD samples.

Such detailed mineralogy has not been conducted on the 89 ML-ARD samples of Chapter 6 or on the roughly 158,000 drillcore assays of Chapters 2 to 5. As a result, the common measurements of solid-phase total calcium have to be mathematically adjusted to obtain Fast-Neutralizing Silicate NP. Again, the higher Sample Calcium Molar Ratios are mostly fast-neutralizing calcium plagioclase minerals like bytownite and anorthite that require no significant correction for Troilus rock.

For the rock samples tested by National Research Council of Canada (2023) and described in detail in Table 7-1, the Fast-Neutralizing Silicate NP from calcium-rich bytownite and labradorite is only 24 kg/t of the roughly 162 kg/t of Total Silicate NP, or 15% of Total Silicate NP, or 25% of total calcium. This occurs at a Sample Calcium Molar Ratio of 0.357. As seen in Figure 7-5, as the solid-phase calcium rises, the Sample Molar Ratio also rises due mostly to increasing percentages of more calcium-rich and more neutralizing plagioclase minerals like bytownite.

At a Sample Calcium Molar Ratio of 0.357, 25% of total calcium represents Fast-Neutralizing Silicate NP. Because this sample contains 3.23% Ca, then 25% of it is 0.80% Ca representing Fast-Neutralizing Silicate NP in this sample. The 0.80% Ca is mathematically equivalent to 20 kg $CaCO_3$ equivalent /t of Fast-Neutralizing Silicate NP (= %Ca * 25), compared with the mineralogy-based 24 kg/t. This shows that using %Ca at this Ratio can underestimate its Fast-Reacting Silicate NP by roughly 20%, but this is accepted as a safety factor.

At a Sample Calcium Molar Ratio of 1.00, 100% of total calcium would logically reflect Fast-Neutralizing Silicate NP due to calcium-dominated plagioclase minerals. Therefore, solid-phase total calcium can be mathematically converted to Fast-Neutralizing NP in Troilus rock by a straight-line interpolation between 0.357 (previous paragraph) and 1.00 (this paragraph):

Fast-Neutralizing Silicate Neutralization Potential (kg CaCO3 eq / t) = (Eq. 7-5)
Total %Ca in sample *
[(1.167 * Sample Calcium Molar Ratio) - 0.167] *
25 kg CaCO3/t / %Ca

This approach is summarized in Table 7-2 below.

A test of this approach in Table 7-2 for predicting ARD based on Total NP (Carbon NP plus Fast-Neutralizing Silicate NP, Figure 1-1) in Troilus rock uses Equations 6-4, 6-8, and 7-5. Total TNPR values (= Total NP / Total Acid Potential = Total NP / (Total Sulphur %S * 31.25) less than the criterion of 1.0 predict ARD after some lag time. Total TNPR values were calculated for the on-site ML-ARD columns described in Section 6.6 above, with Column 12 already releasing ARD around pH 3.5.

Despite similar values for Sample Calcium Molar Ratios (Figure 7-8), Equation 7-5 reliably estimated Fast-Neutralizing Silicate NP so that (1) Total TNPR for acidic Column 12 subsamples of brown rock were less than 1.0, and (2) Total TNPR for all but one grey-rock subsample of near-neutral Column 13 was above 1.0. Therefore, Table 7-2 is successful in predicting ARD potential in Troilus rock. This is due to the additional Fast-Reacting Silicate NP and thus the higher Total NP of many samples than indicated by Sobek NP (Figure 7-9) and Carbon NP (Figure 7-10).

Table 7-2. The stepwise site-specific approach to calculating Silicate NP in Troilus rock based only on the most reactive feldspar minerals of bytownite and labradorite

Step 1	Obtain measured total calcium and sodium in weight-% in a sample using four-acid-digestion ICP-MS or XRF analytical techniques	Solid-phase Total Calcium and Sodium are measured
Step 2	Calculate the amount of measured %Ca that is not in plagioclase minerals such as calcite and tremolite[1], and subtract it from measured Total Calcium	Plagioclase %Ca = Total %Ca - Non-Plagioclase %Ca[1]
Step 3	Multiply Plagioclase %Ca from Step 2 by an equation including the Sample Calcium Molar Ratio to obtain its most reactive neutralizing fraction	Fast-Neutralizing %Ca = Plagioclase %Ca * [(1.167 * Sample Calcium Molar Ratio) - 0.167]
Step 4	Obtain Fast-Neutralizing Silicate NP reflecting only the most reactive silicate mineral in Troilus rock by mathematical conversion to typical units	Fast-Neutralizing Silicate NP in kg $CaCO_3$ equivalent/tonne = Fast-Neutralizing Plagioclase %Ca * 25
Step 5	Obtain the Total NP of the sample	Total NP in kg/t = Fast-Neutralizing Silicate NP plus Carbon NP[1]
Step 6	Calculate Total TNPR and apply a criterion of 1.0 with Total TNPR < 1.0 potentially capable of releasing ARD after some lag time	Total TNPR (kg/t) = Total NP / (Total Sulphur in %S * 31.25)

[1] If calcite and its Carbon NP are not available separately (which is the case for most of the ~158,000 drillcore intervals of Chapter 8), its %Ca is automatically included as Plagioclase %Ca in Step 2, and thus calcite is downgraded to a feldspar mineral as a safety factor with significantly less NP than reality; when the amount of tremolite is not known (which is the case for virtually all of the ~158,000 drillcore intervals), then Plagioclase %Ca = Total %Ca in Step 2 and the calculations in these Steps are designed for this situation based on Sample %Ca rather than Plagioclase %Ca as explained in the text.

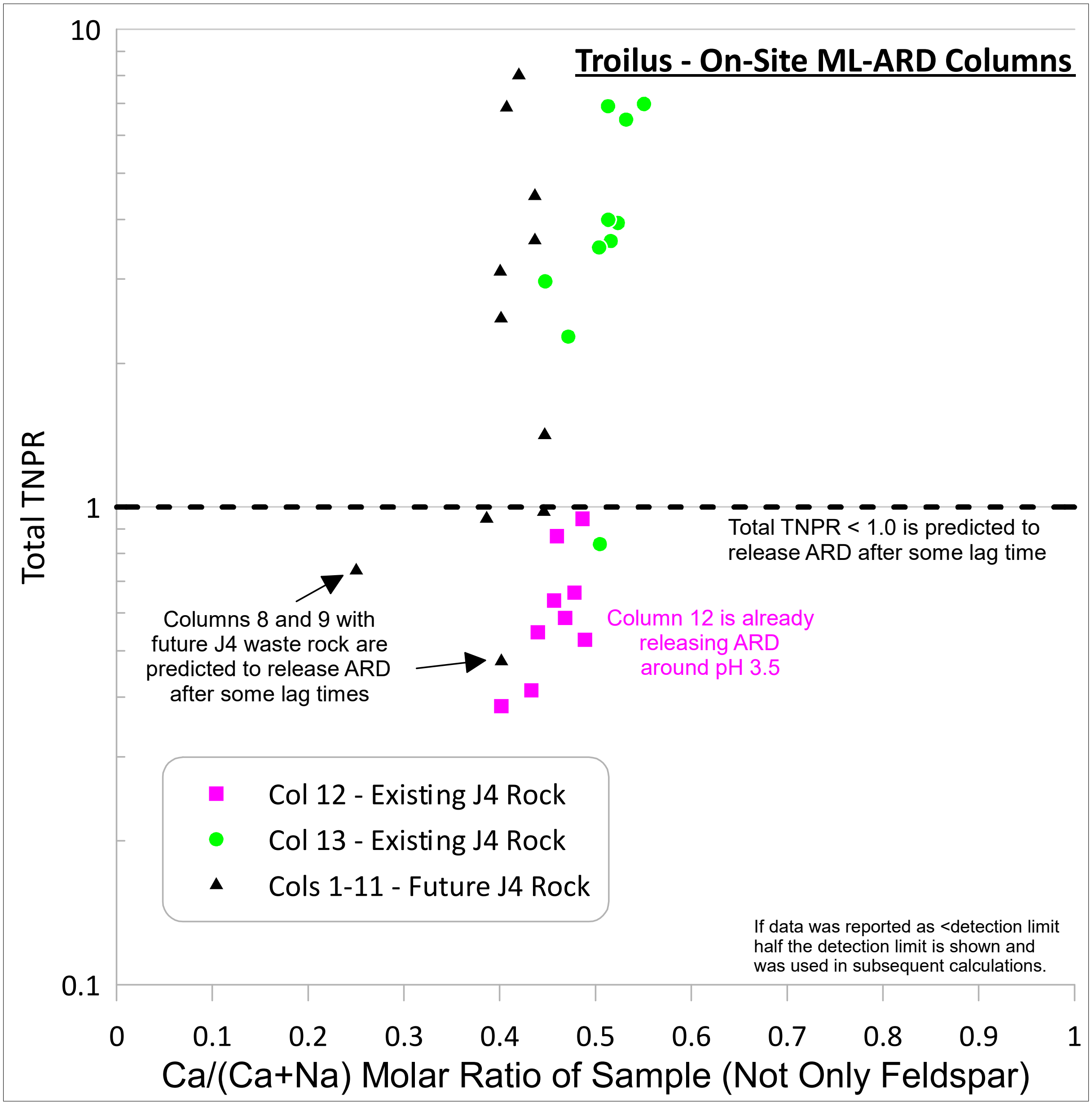


Figure 7-8. Total TNPR based on the approach in Table 7-2 estimating Fast-Neutralizing Silicate NP vs. Sample Calcium Molar Ratio, showing that this approach successfully separates the subsamples of acidic on-site ML-ARD Column 12 and near-neutral Column 13 with a Total TNPR criterion of 1.0.

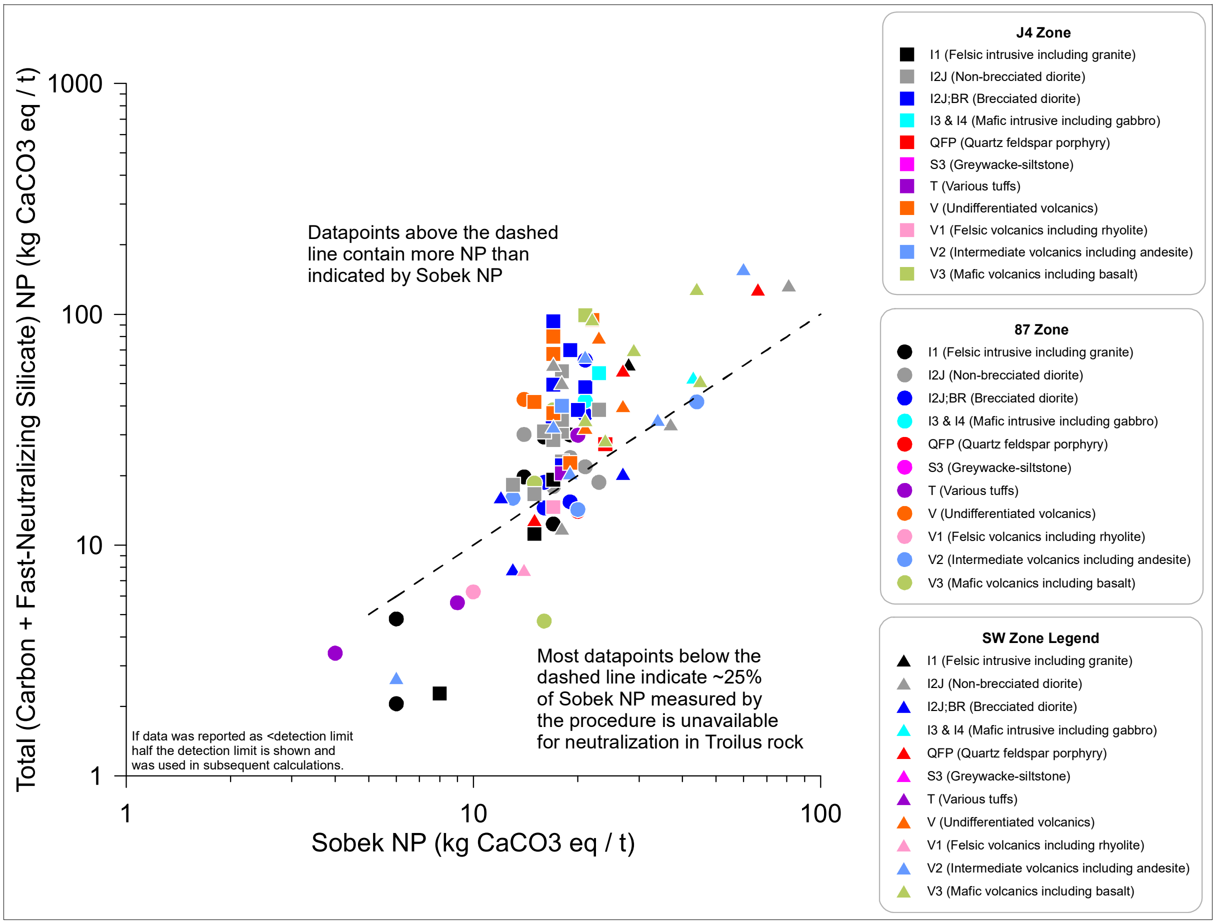


Figure 7-9. Total NP vs. Sobek NP in the 89 ML-ARD samples.

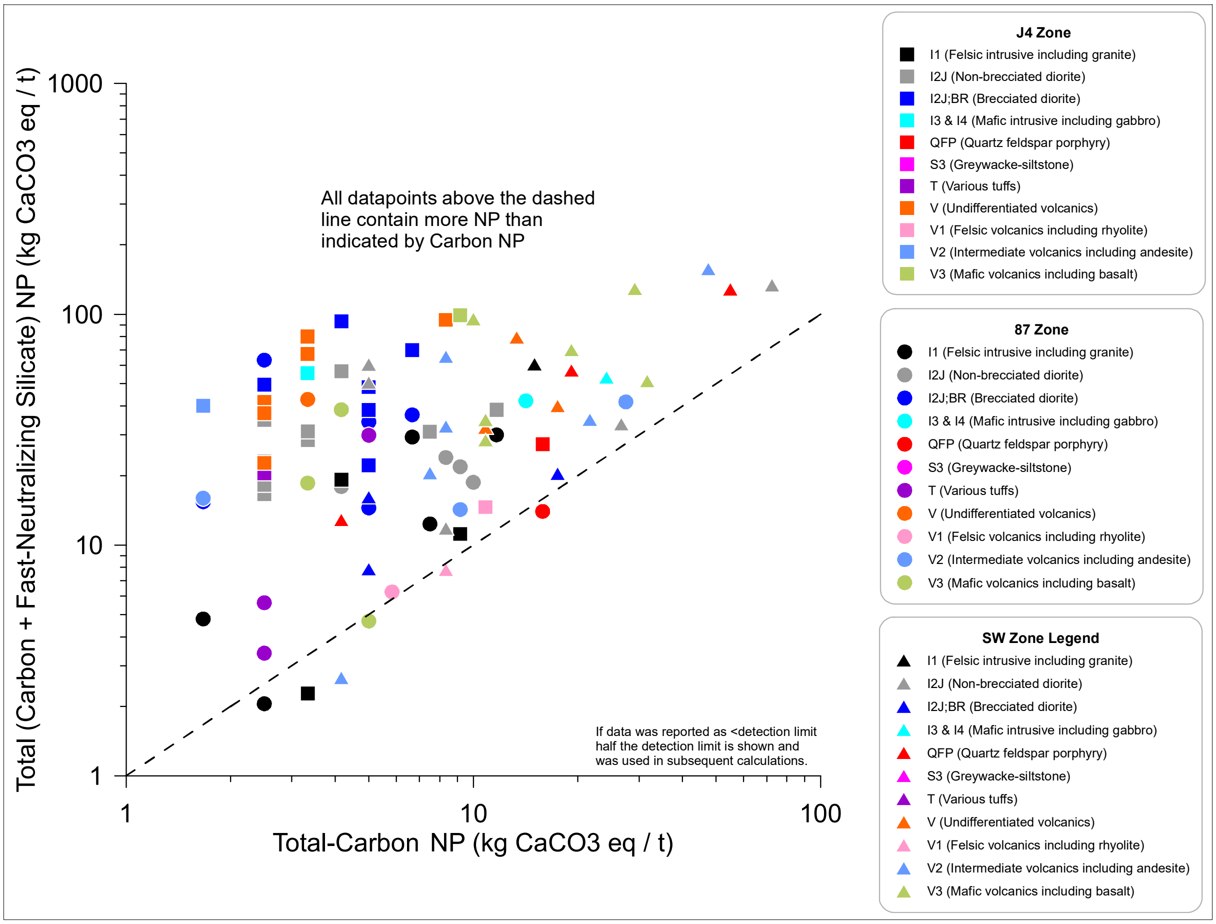


Figure 7-10. Total NP vs. Total-Carbon NP in the 89 ML-ARD samples.

This lowering of ARD potential and increasing of TNPR values can be seen in the comparison of Tables 7-3 to 7-5 based on Total NP with the corresponding Tables 6-2 to 6-4 based on Sobek NP.

7.5 A Remarkably Similar Study of Silicate-Mineral Neutralization for ARD in British Columbia

At former minesite in British Columbia, Morin and Hutt (2011) examined in detail the silicate neutralization in rock remarkably similar to Troilus in many ways, using the same methods discussed above in this chapter.

At this former minesite with more than 2 km of underground workings and 60,000 tonnes of waste rock, acid-base accounts indicated the drainage waters should be acidic, and some small-scale humidity cells became acidic. However, several decades of on-site monitoring showed no ARD.

Total Silicate NP values were calculated from bulk solid-phase levels of aluminosilicate minerals in five humidity-cell samples. All except the already acidic metasedimentary Cell 1 sample would be net acid neutralizing, as long as a substantial portion of this calculated silicate NP successfully neutralized pH to above 6. However, this was not true for the Cell 2, because it became acidic relatively quickly. Thus, most of its silicate NP apparently derived from biotite, magnetite, and epidote could not fully neutralize above pH 6. The remaining three cell samples were either acidic or trending towards acidic pH after Week 130, contained minor carbonate, and derived most of their silicate NPs from plagioclase. Their mineralogy-based Sulphide Net Potential Ratios indicate they will not become acidic, if much of their silicate NP could neutralize fully.

The U.S. Geological Survey SpreadBal-2002 software estimated the amounts of silicate minerals dissolving and precipitating to explain water chemistries seen at the on-site portal and in recent weeks of the five laboratory humidity cells. Epidote, plagioclase, calcite, and biotite were often calculated as major dissolving components to create the observed water chemistries, with substantial precipitation of quartz, ferric oxides, and aluminum oxides also needed to explain the observed chemistries.

Subsequent mathematical conversions showed that silicate neutralization played a major role in the partial (below pH 6) to full (above pH 6) neutralization in the near-neutral humidity cells. This work also showed that calcite was not needed to explain the water chemistry, with atmospheric CO_2 potentially supplying the carbon for alkalinity. However, slightly better agreement was obtained when calcite was included. This indicated calcite could be a secondary mineral accumulating in the samples, rather than a primary mineral solely accounting for neutralization.

Literature-derived, pH-dependent rates of neutralization by various aluminosilicate minerals were applied to the bulk effluent near-neutral pH from humidity cells to provide a calculated sum, or total, rate of neutralization. During extended near-neutral periods in three cells, the calculated neutralization rates were similar to, or substantially less than, the measured neutralization rates. The substantially larger measured rates apparently reflect (1) the additional contribution of calcite and/or (2) the possibility of microscale acidic conditions ($pH < 6$) around the aluminosilicate mineral grains that would cause them to react faster than calculated. However, such a small-scale pH could not be estimated from available information.

Table 7-3. ARD predictions for ML-ARD samples collected from rock units in the J4 Zone using Total NP relative to mean total sulphur in each significant rock unit

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Total Total-Sulphur-Based Net Potential Ratio (Total TNPR)[3]	ML-ARD Sample Number
I2J	Non-brecciated diorite	62%	+2.0 (2.2%S)	1.89	0.28	Y936654
			+1.5 (1.2%S)	1.12	0.89	Y936655
			+1.0 (0.77%S)	0.51	1.15	Y936656
			+0.5 (0.50%S)	0.34	5.33	Y936657
			0.0 (0.27%S)	0.14	5.27	Y936658
			-0.5 (0.18%S)	0.22	5.60	Y936659
			-1.0 (0.09%S)	0.10	11.1	Y936660
			-1.5 (0.06%S)	0.03	30.4	Y936661
			-2.0 (0.04%S)	0.04	24.8	Y936662
I2J; BR	Brecciated diorite	16%	+2.0 (2.1%S)	1.51	0.47	Y936663
			+1.0 (0.75%S)	0.55	2.24	Y936664
			0.0 (0.29%S)	0.33	4.69	Y936665
			0.0 (0.27%S)	0.31	5.12	Y936666
			-1.0 (0.10%S)	0.05	59.7	Y936667
			-2.0 (0.03%S)	0.02	112.0	Y936668
V	Undifferentiated volcanics	6.9%	+2.0 (4.4%S)	4.22	0.17	Y936672
			+1.0 (1.2%S)	1.49	0.90	Y936673
			0.0 (0.34%S)	0.32	3.73	Y936674
			0.0 (0.26%S)	0.12	21.4	Y936675
			-1.0 (0.07%S)	0.09	33.6	Y936676
			-2.0 (0.01%S)	0.02	107.8	Y936677
I1	Felsic intrusive including granite	5.0%	+1.0 (0.46%S)	0.51	1.20	Y936651
			0.0 (0.14%S)	0.10	3.57	Y936652
			-1.0 (0.05%S)	0.07	1.04	Y936653
T	Various tuffs	2.0%	0.0 (0.32%S)	0.46	1.42	Y936671

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Total Total-Sulphur-Based Net Potential Ratio (Total TNPR)[3]	ML-ARD Sample Number
V1	Felsic volcanics including rhyolite	1.8%	0.0 (0.33%S)	0.33	1.42	Y936678
QFP	Quartz Feldspar Porphyry	1.2%	0.0 (0.35%S)	0.30	2.92	Y936670
V2	Intermediate volcanics including andesite	0.58%	0.0 (0.18%S)	0.16	8.01	Y936679
V3	Mafic volcanics including basalt	0.39%	0.0 (0.27%S)	0.15	21.1	Y936680
I3	Mafic intrusive including gabbro	0.071%	0.0 (0.12%S)	0.08	22.3	Y936669

[1] See Table 3-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

[3] For this Phase 1 study using generic criteria, any Total TNPR value less than 1.0 (shaded in red) is predicted to eventually release ARD after some lag time; Troilus rock contains additional Silicate Neutralization Potential not detected by the hours-long Sobek procedure so there are fewer boxes shaded in red than in Table 6-2.

Table 7-4. ARD predictions for ML-ARD samples collected from rock units in the 87 Zone using Total NP relative to mean total sulphur in each significant rock unit

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Total Total-Sulphur-Based Net Potential Ratio (Total TNPR)[3]	ML-ARD Sample Number
I2J	Non-brecciated diorite	38%	+2.0 (1.6%S)	0.90	0.78	A00488501
			+1.0 (0.43%S)	0.25	3.07	A00488502
			0.0 (0.11%S)	0.12	4.78	A00488503
			-1.0 (0.04%S)	0.03	32.1	A00488504
			-2.0 (0.01%S)	0.02	29.9	A00488505
I2J; BR	Brecciated diorite	33%	+2.0 (1.2%S)	0.86	0.70	A00488506
			+1.0 (0.34%S)	0.25	1.97	A00488507
			0.0 (0.11%S)	0.05	40.5	A00488508
			0.0 (0.11%S)	0.05	21.9	A00488509
			-1.0 (0.02%S)	0.01	117.3	A00488510
			-2.0 (0.01%S)	0.02	23.2	A00488511
I1	Felsic intrusive including granite	9.7%	+2.0 (2.1%S)	2.33	0.27	A00488512
			+1.0 (0.52%S)	0.21	0.73	A00488513
			0.0 (0.12%S)	0.12	3.29	A00488514
			0.0 (0.12%S)	0.10	9.40	A00488515
			-1.0 (0.03%S)	0.02	48.0	A00488516
			-2.0 (0.01%S)	0.02	3.28	A00488517
T	Various tuffs	6.2%	+2.0 (4.28%S)	2.68	0.07	A00488518
			0.0 (0.13%S)	0.16	0.68	A00488519
			-2.0 (0.01%S)	0.03	31.9	A00488520
V2	Intermediate volcanics including andesite	3.3%	+2.0 (1.9%S)	1.63	0.31	A00488521
			0.0 (0.18%S)	0.17	7.85	A00488522
			-2.0 (0.01%S)[4]	0.67[4]	0.68[4]	A00488523

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Total Total-Sulphur-Based Net Potential Ratio (Total TNPR)[3]	ML-ARD Sample Number
V3	Mafic volcanics including basalt	3.0%	+2.0 (1.8%S)	1.47	0.10	A00488524
			0.0 (0.21%S)	0.10	5.93	A00488525
			-2.0 (0.02%S)	0.05	24.7	A00488526
QFP	Quartz Feldspar Porphyry	2.6%	0.0 (0.23%S)	0.33	1.36	A00488527
V	Undifferentiated volcanics	2.0%	0.0 (0.20%S)	0.17	8.05	A00488528
V1	Felsic volcanics including rhyolite	0.84%	0.0 (0.42%S)	0.36	0.56	A00488529
I3 & I4	Mafic intrusive including gabbro	0.72%	0.0 (0.08%S)	0.10	13.5	A00488530

[1] See Table 4-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

[3] For this Phase 1 study using generic criteria, any Total TNPR value less than 1.0 (shaded in red) is predicted to eventually release ARD after some lag time; Troilus rock contains additional Silicate Neutralization Potential not detected by the hours-long Sobek procedure so there are fewer boxes shaded in red than in Table 6-3.

[4] The sample for Rock Unit V2 at -2.0 log std dev contained 67 times more total sulphur than the statistical sulphur level, and is thus not applicable or representative of low sulphur levels in V2 but of above-average sulphur levels.

Table 7-5. ARD predictions for ML-ARD samples collected from rock units in the SW Zone using Total NP relative to mean total sulphur in each significant rock unit

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Total Total-Sulphur-Based Net Potential Ratio (Total TNPR)[3]	ML-ARD Sample Number
V3	Mafic volcanics including basalt	29%	+2.0 (1.7%S)	1.17	2.61	A00488531
			+1.0 (0.53%S)	0.36	6.23	A00488532
			0.0 (0.17%S)	0.13	7.01	A00488533
			0.0 (0.17%S)	0.13	8.60	A00488534
			-1.0 (0.06%S)	0.03	54.9	A00488535
			-2.0 (0.01%S)	0.01	412.6	A00488536
I2J	Non-breccia ted diorite	26%	+2.0 (1.3%S)	1.19	3.60	A00488537
			+1.0 (0.29%S)	0.22	8.85	A00488538
			0.0 (0.07%S)	0.07	5.41	A00488539
			-1.0 (0.01%S)	0.02	81.0	A00488540
			-2.0 (0.01%S)	0.01	107.1	A00488541
V2	Intermediate volcanics including andesite	13%	+2.0 (4.4%S)	3.20	0.03	A00488542
			+1.0 (1.0%S)	0.77	0.85	A00488543
			0.0 (0.24%S)	0.15	6.98	A00488544
			0.0 (0.24%S)	0.28	7.50	A00488545
			-1.0 (0.05%S)	0.11	45.8	A00488546
			-2.0 (0.02%S)	0.03	37.3	A00488547
V	Undifferent-iated volcanics	10%	+2.0 (6.4%S)	7.15	0.36	A00488548
			0.0 (0.30%S)	0.44	2.35	A00488549
			-2.0 (0.01%S)	0.08	16.1	A00488550
QFP	Quartz Feldspar Porphyry	9.6%	+2.0 (2.0%S)	1.98	2.08	A00488551
			0.0 (0.13%S)	0.10	4.12	A00488552
			-2.0 (0.01%S)	0.01	183.0	A00488553

Code	Rock Unit	Percent of Waste + Ore[1]	Targeted Log Std Dev Above/Below Rock-Unit Mean Total Sulphur[2]	Total Sulphur in Sample (%S)	Total Total-Sulphur-Based Net Potential Ratio (Total TNPR)[3]	ML-ARD Sample Number
I2J;BR	Brecciated diorite	6.1%	+2.0 (1.7%S)	2.02	0.26	A00488554
			0.0 (0.08%S)	0.07	3.60	A00488555
			-2.0 (0.01%S)	0.01	65.4	A00488556
V1	Felsic volcanics including rhyolite	2.5%	0.0 (0.30%S)	0.25	1.00	A00488557
I1	Felsic intrusive including granite	0.90%	0.0 (0.06%S)	0.10	19.5	A00488558
I3 & I4	Mafic intrusive including gabbro	0.50%	0.0 (0.15%S)	0.16	10.7	A00488559

[1] See Table 5-1 for waste and ore percentages.

[2] Log Std Dev = logarithmic10 standard deviations.

[3] For this Phase 1 study using generic criteria, any Total TNPR value less than 1.0 (shaded in red) is predicted to eventually release ARD after some lag time; Troilus rock contains additional Silicate Neutralization Potential not detected by the hours-long Sobek procedure so there are fewer boxes shaded in red than in Table 6-4.

Based on this Troilus study with on-site ML-ARD Column 12 (Section 6.6 above), the discrepancy at this site in British Columbia was due to the lack of on-site information on pH levels of small-scale ARD. Thus, this British Columbia study could not estimate reasonable silicate-neutralization rates under acidic conditions as done for Troilus in Figure 7-2 above.

In summary, silicate neutralization at this former minesite in British Columbia (Morin and Hutt, 2011), and at another former minesite (Morin et al., 2001), is remarkably similar to that at Troilus:

- ABA results indicated ARD should be widespread, but no full-scale ARD was detected at the site over decades.
- Small-scale kinetic tests produced ARD, although no full-scale ARD was detected on site after decades.
- Calcite and carbonate minerals represented a minor portion of Total NP, with ongoing weathering of rock producing small amounts of carbonate detected in ABA.
- Aqueous alkalinity can be accounted for by ingassing of atmospheric carbon dioxide.
- Minerals like biotite, magnetite, and epidote theoretically contributed substantially to Total NP, but apparently were not reacting sufficiently fast to provide much neutralization.
- Plagioclase minerals apparently provided most of the silicate neutralization, but they were at relatively lower levels than seen at Troilus in the samples tested by National Research Council of Canada (2023).
- Plagioclase minerals were not separated as done for Troilus, but tended to be more sodium rich than Troilus, and thus with less neutralization and at slower rates.
- Acid-generating sulphide minerals were primarily pyrite and pyrrhotite with some chalcopyrite and molybdenite, and their levels ranged from trace amounts (<~0.1%S) up to ~5%S.
- Rates of acid generation at this site were generally lower than at Troilus, around 7 mg$CaCO_3$ equivalent/kg/wk under near-neutral conditions and around 20-30 mg/kg/wk under acidic conditions, which was attributed to trace amounts of molybdenite that may suppress sulphide oxidation (Morin et al., 2001).

7.6 Summary

Based on advanced, state-of-the-art techniques by the National Research Council of Canada (NRC), the detailed mineralogy including various forms of plagioclase has been measured in samples of existing J4 waste rock at Troilus Gold. Rates of oxygen consumption by sulphide minerals, which in turn results in acid generation, were also measured on two samples with particle sizes of approximately 1 and 5 mm. These rates were 69 mg $CaCO_3$/kg/week for the fine 1 mm rock and 21 mg $CaCO_3$/kg/week for the coarser 5 mm rock.

In order to estimate the amount of unmeasured, Silicate Neutralization Potential (Silicate NP, Figure 1-1) in these samples, databases on reaction rates of silicate minerals and their total capacities to neutralize were combined and applied to the state-of-the-art mineralogy of Troilus rock by NRC.

This showed that the NRC samples of Troilus rock contained a Total Silicate NP of 160 kg of $CaCO_3$ equivalent/tonne of rock, plus about 2 kg/t of Carbon NP, for a Theoretical Total Neutralizing Capacity of 162 kg/t. However, some silicate minerals comprising this 162 kg/t were relatively slow to react and neutralize. Compiled pH-dependent reaction rates showed that the Silicate Neutralization Rates matched the acid-generating oxidation rates when contact waters around mineral grains were roughly pH 3.5. Notably, this is the pH in the larger-scale effluent water from acidic, on-site ML-ARD Column 12. In long-term kinetic testing, this higher oxidation rate and thus the silicate neutralization rate decreased by factors of 5 to 10 within weeks while still neutralizing to above pH 6.0.

When the Silicate Neutralization Rate was separated into rates for each relevant silicate mineral, at least 95% of the Rate could be attributed to the calcium-rich plagioclase minerals, bytownite and labradorite. Combined, bytownite and labradorite in the NRC sample represent a suitably Fast-Neutralizing Silicate NP of 24 kg/t (14 + 9.9 kg/t) for ARD predictions, while accounting for at least 95% of active neutralization by silicate minerals but only 7.7% of the entire rock mass. In other words, while this sample has a Silicate NP of 160 kg/t, only15% (24/160) of its Silicate NP is sufficiently reactive to fully neutralize at the acid-generation rate, particle size, and particle-scale pH in this sample. At the current, relatively slow near-neutral rates, the amounts of bytownite and labradorite would persist and neutralize for up to several centuries.

The solid-phase Silicate TNPR of this sample tested by the National Research Council of Canada was calculated at 1.6 (24/15). This is above the Silicate TNPR criterion of 1.0 based on matching rates of acid generation and acid neutralization, and thus this sample is not predicted to release ARD. This sample also contains an additional 4.8 kg/t of Carbon NP, so that its Total NP is 29 kg/t (= 24 + 4.8) with a Total TNPR of 1.9 (29/15).

These observations led to several complex observations and predictions. For example:

- If the rate of sulphide oxidation and acid generation did not decrease by at least 95% of the current initial rates within weeks to months, ARD could appear from this sample.
- However, if this ARD results in a pH below the current particle-scale of pH 3.5, then the Silicate Neutralization Rate would increase. For example, if pH fell to 3.0 at the current acid-generation rate after all bytownite was consumed, then the rate of neutralization from labradorite would accelerate sufficiently to neutralize overall pH above pH 6.
- At slower rates of acid generation such as from coarser particles, additional silicate minerals can contribute significant neutralization, like andesine, which also means that there would then be additional Fast-Reacting Silicate NP above the 24 kg/t from bytownite and labradorite.
- At some faster rates of acid generation, neutralization by bytownite and others would no longer be able to "keep up" and ARD would appear, unless pH around mineral grains falls below 3.5 to cause a higher rate of Silicate Neutralization Rate from the remaining silicate minerals.

Based on the mineralogy of the rock tested by the National Research Council of Canada, the amount of Fast-Neutralizing Silicate NP related to the calcium-rich plagioclase minerals can be estimated from (1) measured solid-phase concentrations of total calcium and (2) the sample's solid-phase Calcium Molar Ratio based on (calcium + sodium).

This equation ("Equation 7-5") is:

$$\text{Fast-Neutralizing Silicate Neutralization Potential (kg } CaCO_3 \text{ eq / t)} = \text{Total \%Ca in sample} * [(1.167 * \text{Sample Calcium Molar Ratio}) - 0.167] * 25 \text{ kg } CaCO_3\text{/t / \%Ca}$$

This equation and the stepwise approach of Table 7-2 for obtaining Total NP and Total TNPR were tested on subsamples of the on-site ML-ARD Columns. For Column 12 with ongoing release of ARD around pH 3.5, its 10 subsamples all had Total TNPR values (= [Carbon NP + Fast-Neutralizing Silicate NP] / [Total sulphur %S * 31.25)] less than the criterion of 1.0. On the other hand, all but one of the 10 subsamples of near-neutral Column 13 had Total TNPR values greater than 1.0. Thus, this approach and equation were successful for predicting ARD potential in J4 rock.

Silicate-mineral neutralization in these Troilus samples is remarkably similar to that documented more than 10 years ago at a former minesite in British Columbia.

- ABA results indicated ARD should be widespread, but no full-scale ARD was detected at the site over decades.
- Small-scale kinetic tests produced ARD, although no full-scale ARD was detected on site after decades.
- Calcite and carbonate minerals represented a minor portion of Total NP, with ongoing weathering of rock producing small amounts of carbonate detected in ABA.
- Aqueous alkalinity can be accounted for by ingassing of atmospheric carbon dioxide.
- Minerals like biotite, magnetite, and epidote theoretically contributed substantially to Total NP, but apparently were not reacting sufficiently fast to provide much neutralization.
- Plagioclase minerals apparently provided most of the silicate neutralization, but they were at relatively lower levels than seen at Troilus in the samples tested by National Research Council of Canada (2023).
- Plagioclase minerals were not separated as done for Troilus, but tended to be more sodium rich than Troilus, and thus with less neutralization and at slower rates.
- Acid-generating sulphide minerals were primarily pyrite and pyrrhotite with some chalcopyrite and molybdenite, and their levels ranged from trace amounts (<~0.1%S) up to ~5%S.
- Rates of acid generation at this site were generally lower than at Troilus, around 7 mg$CaCO_3$ equivalent/kg/wk under near-neutral conditions and around 20-30 mg/kg/wk under acidic conditions, which was attributed to trace amounts of molybdenite that may suppress sulphide oxidation.

8. SURROGATE ABA RESULTS FROM THE ASSAY DATABASES FOR J4, 87, AND SW ZONES

As explained above in Section 1.2, a major objective of this report is to use the analytical results from dozens of carefully selected ABA samples from drillcore and from on-site ML-ARD columns to mathematically convert more than 158,000 drillcore assays into surrogate ABAs.

These surrogate ABAs for ~158,000 drillcore intervals can meet the following Requirements.

1) They provide a detailed estimate of the total amounts of rock in each ore zone that will eventually release ARD.
2) They can be combined with the Troilus Gold three-dimensional mining model for integrated assessments of mine planning, economics, and environmental protection.
3) When combined with the three-dimensional mine model, they provide year-by-year estimates of the rock eventually releasing ARD, highlighting the extent and amount of ARD mitigation planning needed each year.

The surrogate ABAs for drillcore were obtained following the stepwise procedure in Table 7-2. That table summarizes the procedure for estimating Fast-Neutralizing Silicate Neutralization Potential (NP) based on a sample's measured amounts of solid-phase calcium and sodium (Equation 7-5), which is then added to Carbon NP to obtain Total NP (Equation 6-4). This is then mathematically divided by a sample's Total Acid Potential based on a sample's total sulphur level multiplied by 31.25 (Equation 6-1). This division yields Total Total-Sulphur-Based Net Potential Ratio (Total TNPR, Equation 6-8). A Total TNPR value less than 1.0 for a drillcore interval is predicted to eventually release ARD after some lag time.

Several general observations can be made about these surrogate ABAs from drillcore assays of roughly 158,000 core intervals.

- There were no carbon analyses for J4 drillcore, less than 200 for 87 drillcore, and 7009 valid carbon analyses for SW (Figure 8-1). Therefore, the rapid and strong neutralization provided by calcite in Troilus rock is not well known or defined. As explained in Table 7-2, the unknown amount of calcium associated with calcite in nearly all drillcore intervals was "downgraded" and made much less neutralizing by considering it part of Silicate NP as shown in Figures 8-2, 8-4, and 8-6.
- Assays and chemical analyses are subject to minimum and maximum detection limits and mathematical division is not possible with zero values in the divisor. As a result, some artifacts appear such as spikes in certain statistical ranges (e.g., spikes in Figures 8-2 and 8-4).
- The Bulk Total TNPR of each ore zone can be calculated using mathematical division of the sum of all intervals' Total NP by the sum of all intervals' Total Acid Potential (TAP). Bulk Total TNPR values for all three ore zones are above 1.0 (Table 8-1) with SW Zone having the highest bulk values. Thus, on average and in bulk, all Troilus rock will not release ARD, although smaller-scale amounts could do so (see the next bullet and Section 6.6 above).

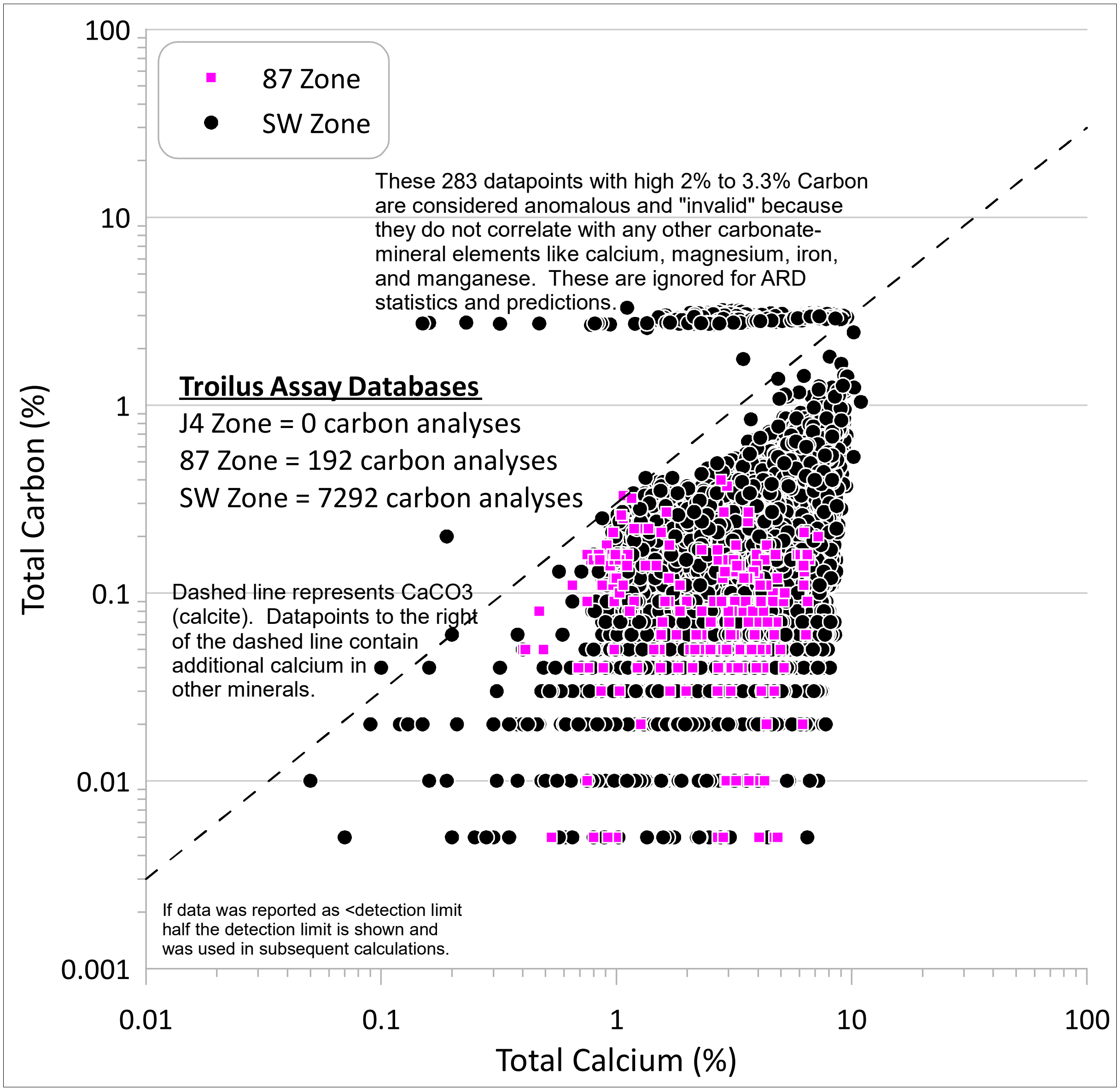
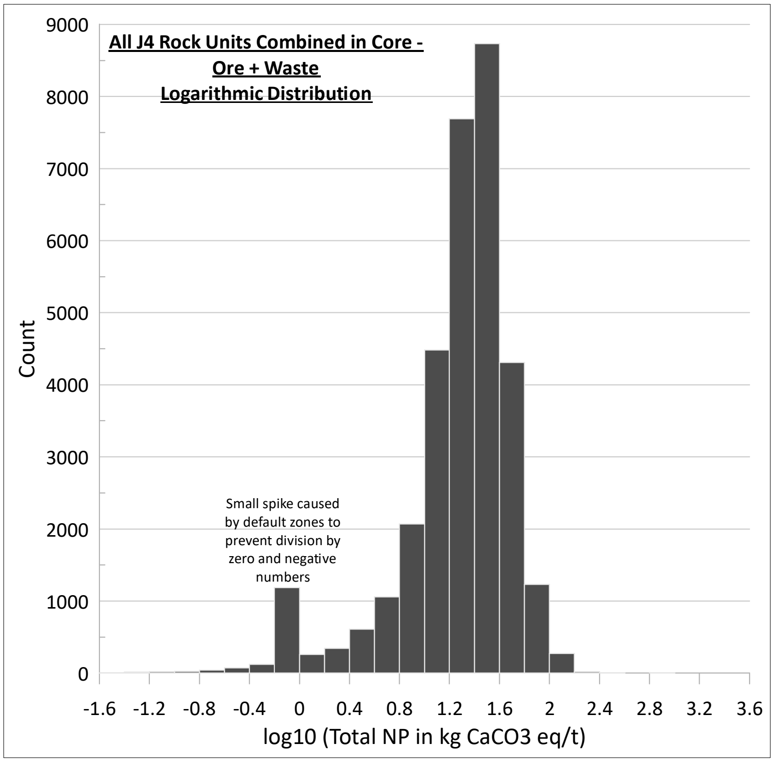


Figure 8-1. Total carbon vs. total calcium in the core intervals with carbon analyses (87 and SW Zones only).



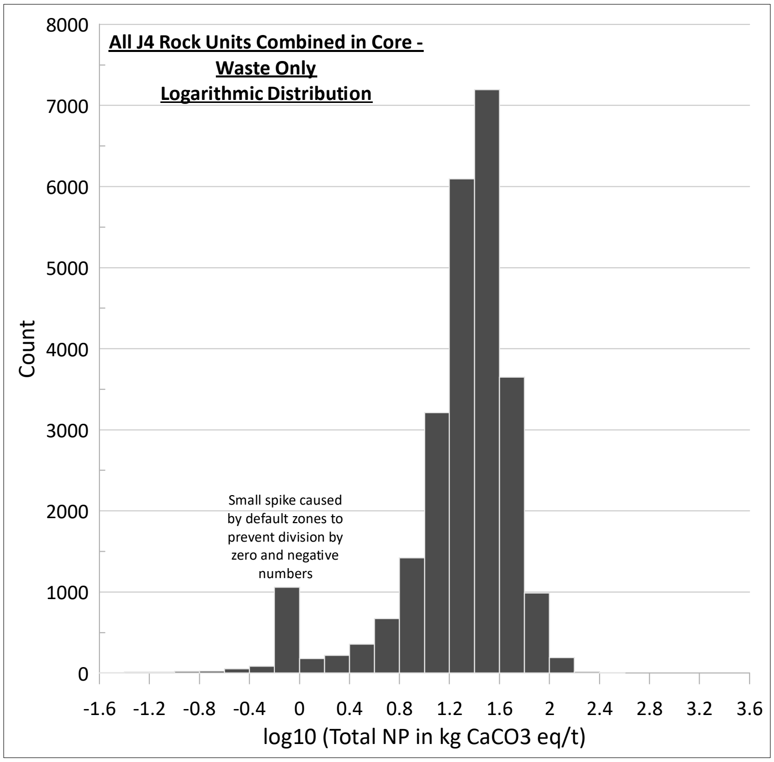
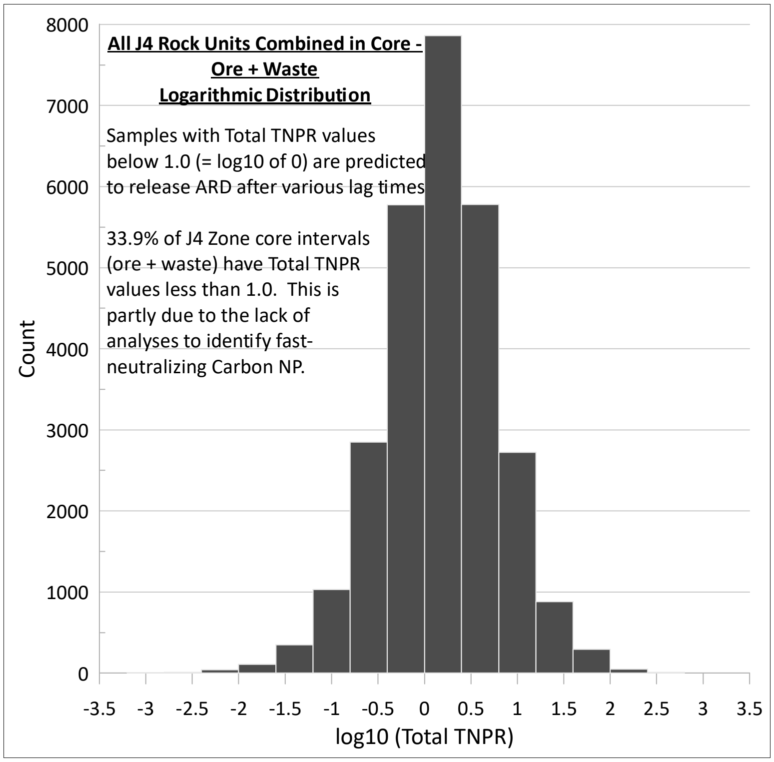


Figure 8-2. Lognormal distribution of Total Neutralization Potential in future J4 rock for ore and waste combined (upper diagram) and waste only (lower diagram).



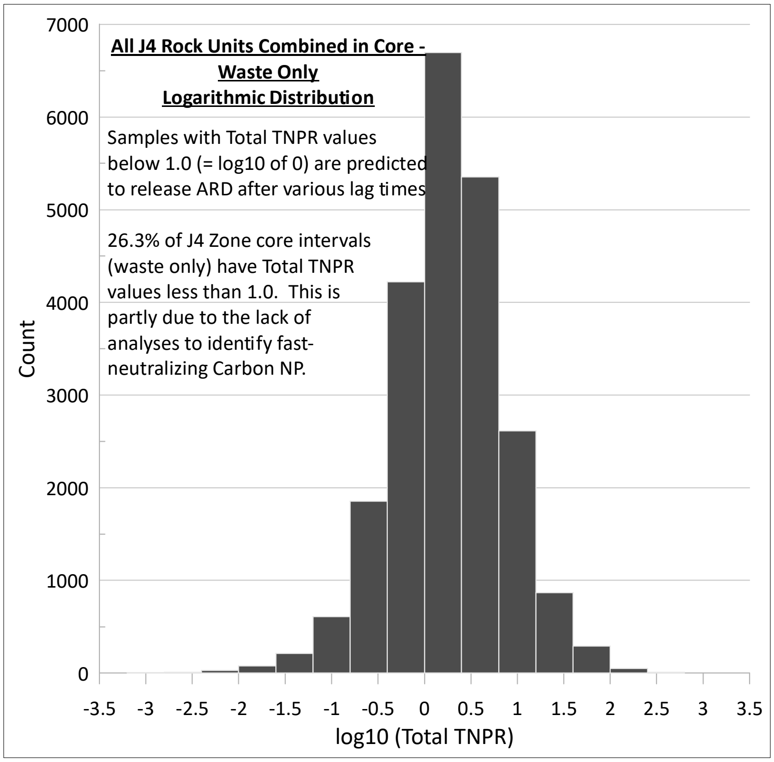
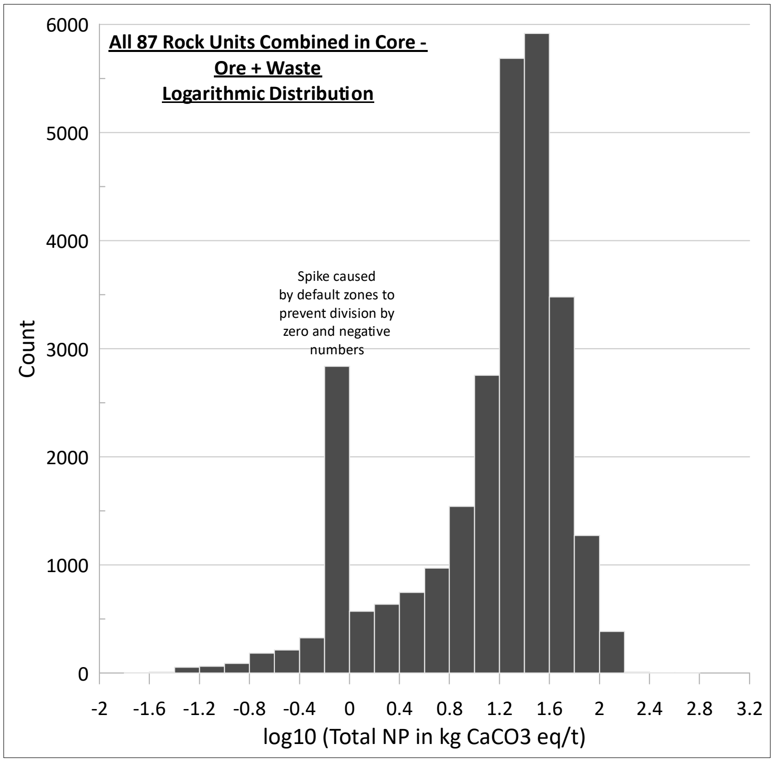


Figure 8-3. Lognormal distribution of Total TNPR in future J4 rock for ore and waste combined (upper diagram) and waste only (lower diagram).



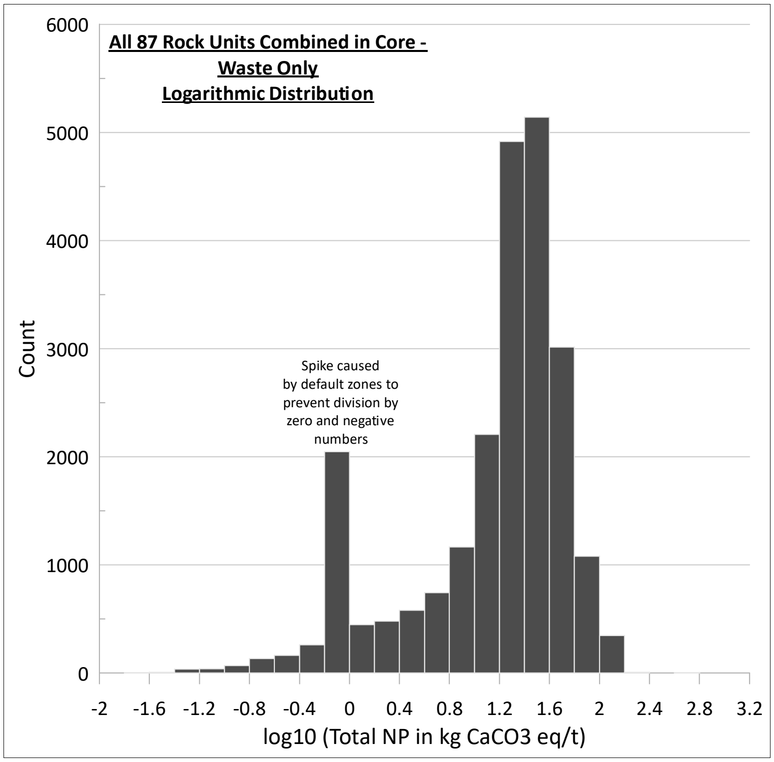
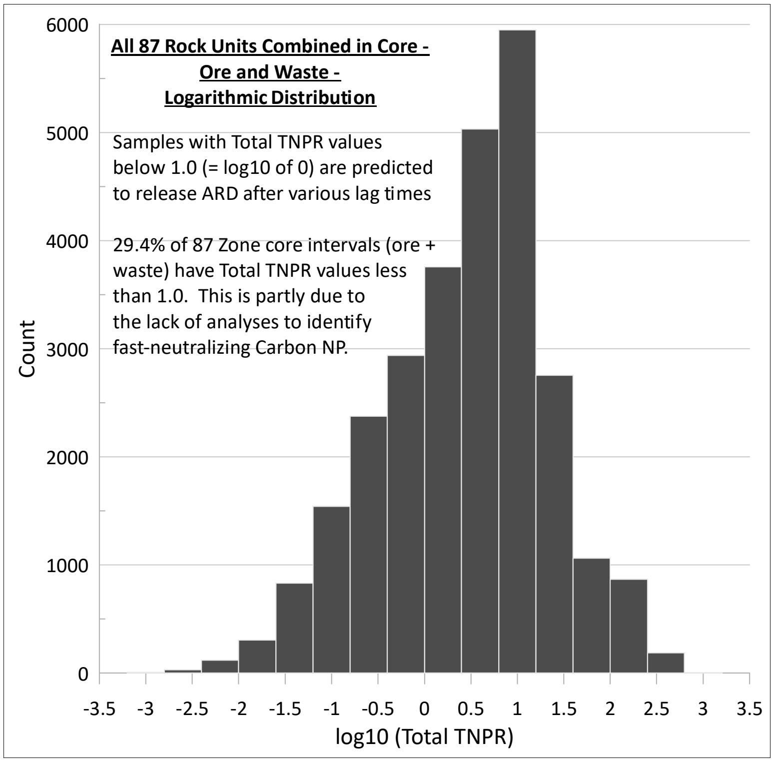


Figure 8-4. Lognormal distribution of Total Neutralization Potential in future 87 rock for ore and waste combined (upper diagram) and waste only (lower diagram).



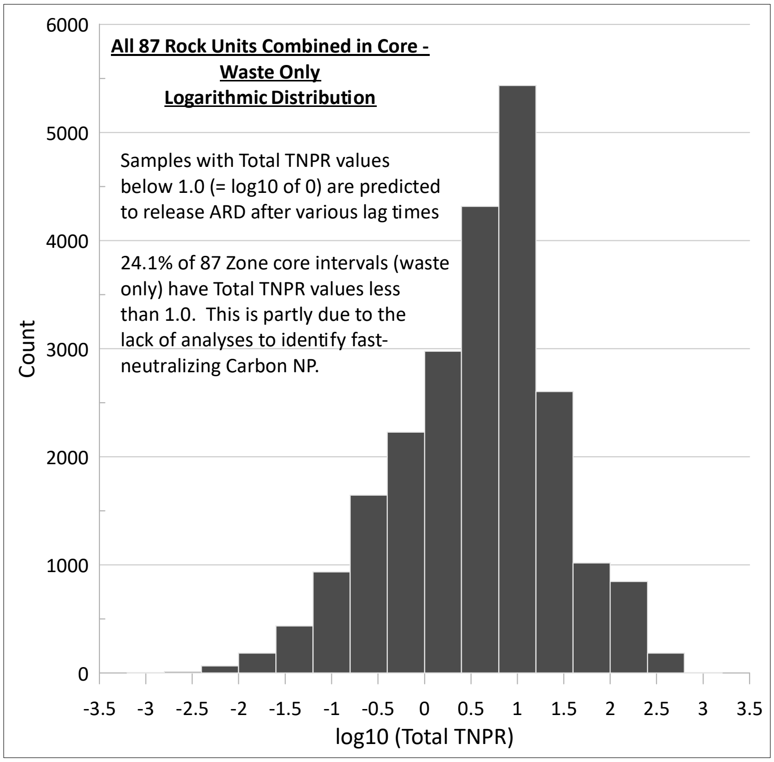
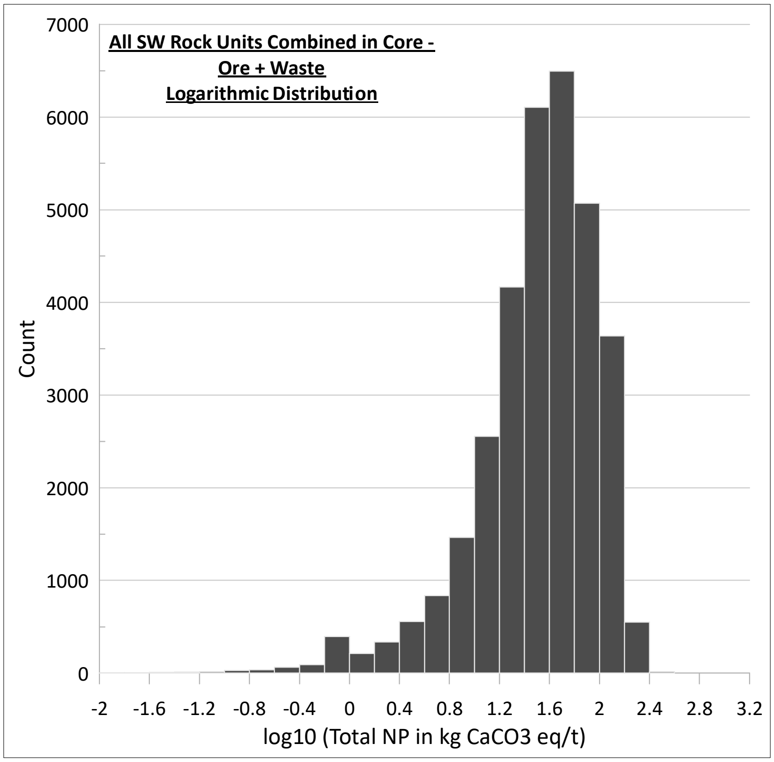


Figure 8-5. Lognormal distribution of Total TNPR in future 87 rock for ore and waste combined (upper diagram) and waste only (lower diagram).



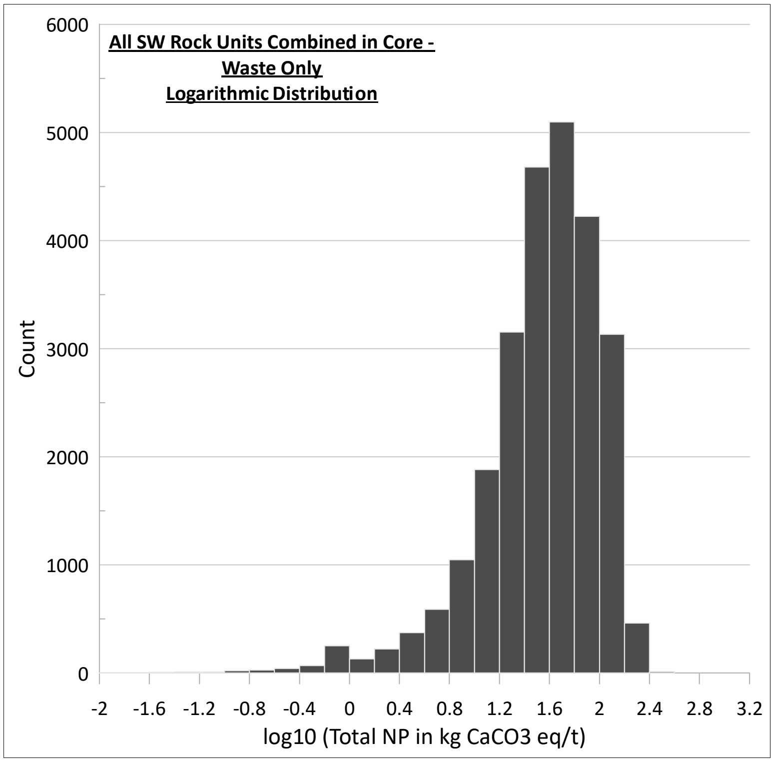
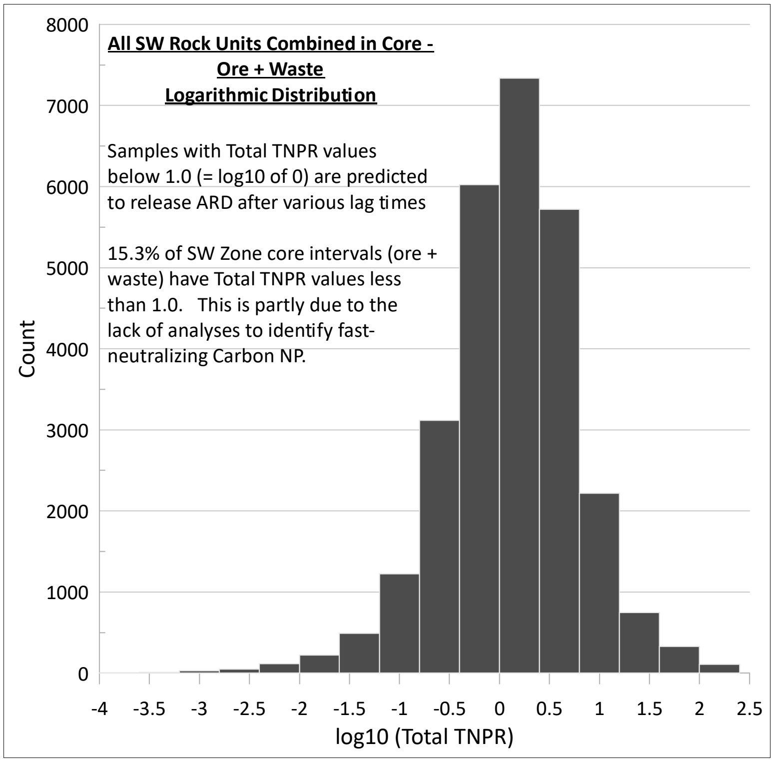


Figure 8-6. Lognormal distribution of Total Neutralization Potential in future SW rock for ore and waste combined (upper diagram) and waste only (lower diagram).



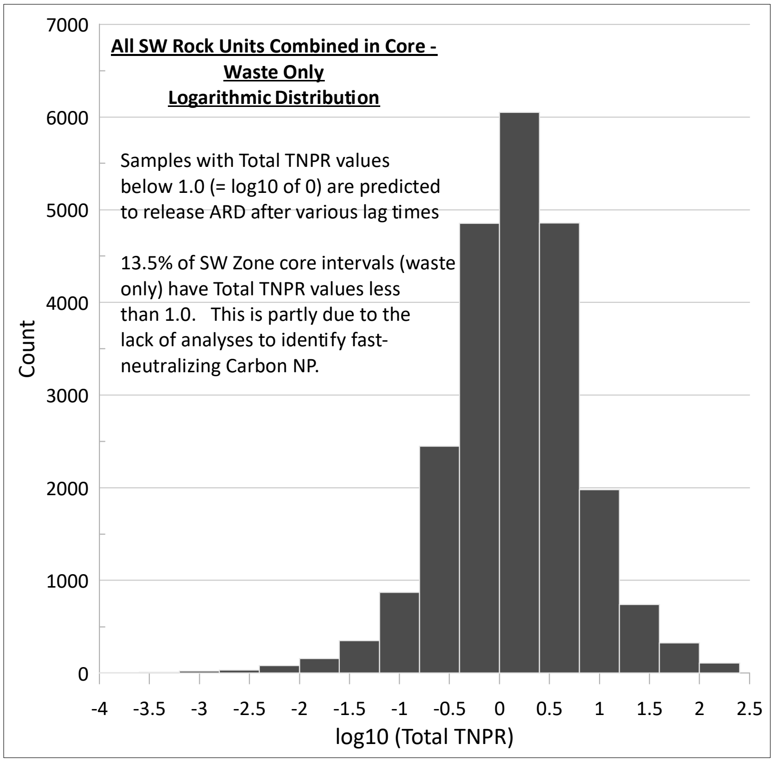


Figure 8-7. Lognormal distribution of Total TNPR in future SW rock for ore and waste combined (upper diagram) and waste only (lower diagram).

Table 8-1. The bulk values and percentages of Total TNPR <1 predicted to release ARD after various lag times based on 158,434 core intervals in this Phase 1 study (also shown in Figures 8-3, 8-5, and 8-7)[1]

Ore + Waste			Waste Only		
Total no. of assayed intervals	Bulk Total TNPR[2]	% of intervals with Total TNPR < 1	Total no. of assayed intervals	Bulk Total TNPR[2]	% of intervals with Total TNPR < 1
J4 Zone					
32,559	1.51	33.9%	25,455	1.93	26.3%
87 Zone					
27,757	2.41	29.4%	22,893	3.19	24.1%
SW Zone					
98,118	4.05	15.3%	89,405	4.67	13.5%

[1] Ongoing ML-ARD studies are underway to refine these ARD predictions of Troilus rock, so these percentages may decrease significantly if additional NP is detected.

[2] Bulk Total TNPR = (∑ Total NP from all core intervals) / (∑TAP from all core intervals); all bulk values are greater than 1.0 with SW Zone having the highest Bulk Total TNPR values.

- Overall, the statistical distributions of Total NP (Figures 8-2, 8-4, and 8-6) and of Total TNPR (Figures 8-3, 8-5, and 8-7) are generally lognormal. Thus, as single ore zones, the proportions of all rock, as ore + waste or as waste only, can be reliably calculated for J4, 87, and SW Zones, which is one of this report's objectives. For example about twice the percentage of J4 Zone waste rock (26.3%) is predicted to release ARD compared with SW Zone rock (13.5%), although in bulk and on average ARD would not be released based on Bulk Total TNPR.
- The other objectives of three-dimensional distributions of surrogate TNPR and the year-to-year TNPR levels during mining can be met by importing the surrogate ABAs into Troilus Gold's mine model for the three ore zones.

9. CONCLUSION

Troilus Gold Corp. has asked the Minesite Drainage Assessment Group (MDAG) to develop criteria for three-dimensional ARD models of its three main ore zones: J4, 87, and Southwest (SW). These criteria were developed in this report by extrapolating ABA results from dozens of drillcore samples to more than 158,000 drillcore assays.

The general geology, rock units, and mineralogy of the Troilus Gold site were described in Chapter 2. Then, for the J4, 87, and SW Ore Zones at Troilus, Chapters 3 to 5 summarized zone-specific geology and rock units, geostatistics of potentially acid-generating sulphur, three-dimensional distributions of sulphur, and rationales for the ML-ARD ABA samples chosen from drillcore to represent each zone.

Chapter 6 interpreted the analytical results from selected ABA samples of drillcore and from the on-site ML-ARD columns using generic ARD criteria. Chapter 7 then developed a site-specific Silicate Model to estimate the additional, unmeasured Neutralization Potential (Fast-Neutralizing Silicate NP) in Troilus rock. Chapter 8 used Chapters 6 and 7 and Table 7-2 to estimate the percentage of each ore zone with the potential to release ARD after some lag time.

Several general observations can be made about these surrogate ABAs from drillcore assays of roughly 158,000 core intervals.

- There were no carbon analyses for J4 drillcore, less than 200 for 87 drillcore, and 7009 valid carbon analyses for SW. Therefore, the rapid and strong neutralization provided by calcite in Troilus rock is not well known or defined. As a result, the unknown amount of calcium associated with calcite in nearly all drillcore intervals was "downgraded" and made much less neutralizing by considering it part of Silicate NP.
- Assays and chemical analyses are subject to minimum and maximum detection limits and mathematical division is not possible with zero values in the divisor. As a result, some artifacts appear such as spikes in certain statistical ranges.
- Bulk Total TNPR values for all three ore zones are above 1.0 with SW Zone having the highest bulk values. Thus, on average and in bulk, all Troilus rock will not release ARD, although smaller-scale amounts could do so (see the next bullet).
- Overall, the statistical distributions of Total NP and of Total TNPR are generally lognormal. Thus, as single ore zones, the proportions of all rock, as ore + waste or as waste only, can be reliably calculated for J4, 87, and SW Zones. For example about twice the percentage of J4 Zone rock is predicted to release ARD compared with SW Zone rock, although in bulk and on average ARD would not be released based on Bulk Total TNPR.
- Other objectives for these ~159,000 surrogate ABAs for Trolius require them to be mapped in three dimensions through the ore zones, which is not done in this report but can be done with Trolius Gold mine models.

A detailed summary of the chapters can be found at the beginning of this document under Report Summary.

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APPENDIX A. ML-ARD Analyses for the 30 Selected Samples from the J4 Ore Zone

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **Notes for Data and Calculations**

All Data

[1] Interquartile Range (IQR) = 75th percentile minus 25th percentile
[2] Coefficient of Variation (CoV) = standard deviation divided by mean

Data shown in blue represents calculated data.
If data was reported as <detection limit half the detection limit is shown in italics and was used in subsequent calculations.
If data was reported as > detection limit the detection limit is shown in bold and was used in subsequent calculations.

ABA Calculations

% S (Sulphide) Calculated = % S (Total) - % S (Sulphate) Carb Leach
%S($BaSO_4$) = Ba (ppm) * 0.0001 * 32.06 / 137.37
Ba (ppm) data by ICP was used for calculation
% S (del actual) = %S(Total) Leco - %S(Sulphide) Leco - %S(Sulphate) Carb Leach - %S($BaSO_4$)
If %S(Sulphide) Leco is unavailable, % S (del actual) = 0
% S (del) = % S (del actual) unless <0, then 0
TAP = % S (Total) * 31.25
SAP = % S (Sulphide + del) * 31.25

Unavailable NP = 10
Available NP = NP - Unavailable NP
Total CaNP = % C * 10 * 100.09 / 12.01
Inorganic CaNP = % CO_2 * 10 * 100.09 / 44.01 or or Inorganic CaNP = % CO_3 * 10 * 100.09 / 60.01
(Ca) CaNP = (Ca(ppm) * 100.09 / 40.08) / 1000
(Ca+Mg) CaNP = ((Ca(ppm) * 100.09 / 40.08) + (Mg(ppm) * 100.09 / 24.31)) / 1000

TNNP = NP - TAP
Adjusted TNNP = (NP - Unavailable NP) - TAP
SNNP = NP - SAP
Adjusted SNNP = (NP - Unavailable NP) - SAP
Unavailable NP = 10
TNPR = NP / TAP
Note: If % S(Total) <0.01 then TNPR = 200
Note: If % S(Total) > 0.01 and NP <= 0 then TNPR = 0.001
Adjusted TNPR = (NP - Unavailable NP) / TAP
Note: If % S(Total) <0.01 then Adjusted TNPR = 200
Note: If % S(Total) > 0.01 and (NP - Unavailable NP) <= 0 then Adjusted TNPR = 0.001
SNPR = NP / SAP
Note: If % S(Sulphide + del) <0.01 then SNPR = 200
Note: If % S(Sulphide + del) > 0.01 and NP <= 0 then SNPR = 0.001
Adjusted SNPR = (NP - Unavailable NP) / SAP
Note: If % S(Sulphide + del) <0.01 then Adjusted SNPR = 200
Note: If % S(Sulphide + del) > 0.01 and (NP - Unavailable NP) <= 0 then Adjusted SNPR = 0.001

Solid-Phase Elements

Crustal Abundance Data: Curated data provided by Mathematica's ElementData function from Wolfram Research, Inc.:
https://periodictable.com/Properties/A/CrustAbundance.al.html

$\boxed{2}$ NOTE: if data is boxed, then data is 3 times the maximum crustal abundance.

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **Sample Information**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval		Interval (m)	Zone	Lithology	Description	Weight	No échantillon BD Troilus	Certificat d'analyse BD Troilus
		From (m)	To (m)							
Y936675	TLG-ZJ21-227	49.00	50.00	1.00	J4	V	Undifferentiated volcanics	0.79	B518028	SD21022209
Y936677	TLG-ZJ21-232	103.00	104.00	1.00	J4	V	Undifferentiated volcanics	0.99	B519089	SD21040444
Y936661	TLG-ZJ21-236	96.00	97.00	1.00	J4	I2J	Non-brecciated diorite	0.40	B523385	SD21064177
Y936674	TLG-ZJ21-237	37.00	38.00	1.00	J4	V	Undifferentiated volcanics	0.83	B523922	SD21064162
Y936666	TLG-ZJ21-240	195.00	196.00	1.00	J4	I2J;BR	Brecciated diorite	1.24	C080594	SD21083095
Y936670	TLG-ZJ21-241	95.00	96.00	1.00	J4	QFP	Quartz feldspar porphyry	0.93	C081095	SD21104376
Y936673	TLG-ZJ21-242	43.00	44.00	1.00	J4	V	Undifferentiated volcanics	0.98	C081588	SD21104411
Y936672	TLG-ZJ21-242	84.00	85.00	1.00	J4	V	Undifferentiated volcanics	1.03	C081633	SD21104411
Y936654	TLG-ZJ21-249	69.00	70.00	1.00	J4	I2J	Non-brecciated diorite	0.92	C082567	SD21096216
Y936676	TLG-ZJ21-285	128.00	129.00	1.00	J4	V	Undifferentiated volcanics	1.22	C083657	SD21098913
Y936653	TLG-ZJ418-051	125.00	126.00	1.00	J4	I1	Felsic intrusive including granite	0.88	Y386776	SD18213091 mod
Y936657	TLG-ZJ418-052	111.00	112.00	1.00	J4	I2J	Non-brecciated diorite	1.03	Y385961	SD18213086 mod
Y936655	TLG-ZJ418-056	90.00	91.00	1.00	J4	I2J	Non-brecciated diorite	1.09	Y386593	SD18213082 mod
Y936658	TLG-ZJ418-060	112.00	113.00	1.00	J4	I2J	Non-brecciated diorite	0.95	Y384166	SD18213055 mod
Y936659	TLG-ZJ418-069	24.00	25.00	1.00	J4	I2J	Non-brecciated diorite	0.97	Y153519	SD18246283 mod
Y936671	TLG-ZJ418-071	190.00	191.00	1.00	J4	T (tuff)	Various tuffs	1.04	Y150396	SD189168199 mod
Y936679	TLG-ZJ418-077	114.00	115.00	1.00	J4	V2	Intermediate volcanics including andesite	0.98	Y152699	SD18185406 mod
Y936669	TLG-ZJ419-091	158.00	160.00	2.00	J4	I3	Mafic intrusive including gabbro	2.00	Y345005	SD19033628
Y936680	TLG-ZJ419-094	7.10	8.00	0.90	J4	V3	Mafic volcanics including basalt	0.72	A0070001	SD19042257
Y936662	TLG-ZJ419-099	75.00	76.00	1.00	J4	I2J	Non-brecciated diorite	1.03	A0075868	SD19049416
Y936668	TLG-ZJ419-111	61.00	63.00	2.00	J4	I2J;BR	Brecciated diorite	2.25	A0252666	SD19140454
Y936660	TLG-ZJ419-113	86.00	88.00	2.00	J4	I2J	Non-brecciated diorite	2.19	A0253533	SD19152982
Y936663	TLG-ZJ419-148	154.00	156.00	2.00	J4	I2J;BR	Brecciated diorite	1.82	A0263370	SD19152936
Y936652	TLG-ZJ419-151	260.00	262.00	2.00	J4	I1	Felsic intrusive including granite	2.96	A0253326	SD19152868
Y936656	TLG-ZJ419-156	69.00	71.00	2.00	J4	I2J	Non-brecciated diorite	1.54	A0072779	SD19132025
Y936651	TLG-ZJ419-157	199.00	201.00	2.00	J4	I1	Felsic intrusive including granite	1.80	A0073049	SD19140424
Y936667	TLG-ZJ419-163	63.00	65.00	2.00	J4	I2J;BR	Brecciated diorite	2.28	A0264420	SD19175011
Y936678	TLG-ZJ419-163	171.00	173.00	2.00	J4	V1	Felsic volcanics including rhyolite	1.70	A0264478	SD19175011
Y936664	TLG-ZJ419-166	85.00	87.00	2.00	J4	I2J;BR	Brecciated diorite	1.79	A0254579	SD19175022
Y936665	TLG-ZJ419-169	86.00	88.00	2.00	J4	I2J;BR	Brecciated diorite	2.15	A0074831	SD19172811

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: Samples collected by Troilus personnel.
The pH of water used for paste and rinse pH testing ranged from 6.0.

Sample Id.	Drillhole	Interval From (m)	To (m)	Paste pH Unity	S (Total) (% Leco)	S (Sulphide) (% Leco)	S (Sulphide) (% Calc)	Carbonate Leach S (Sulphate) (%)	HCl Leachable S (Sulphate) (%)	S(BaSO$_4$) (%)	S(del$_{actual}$) (%)	S(del) (%)	Without BaSO$_4$ S(del$_{actual}$) (%)	Without BaSO$_4$ S(del) (%)	TAP (kg CaCO$_3$/t)	SAP (kg CaCO$_3$/t)	Sobek NP (kg CaCO$_3$/t)	Available NP (kg CaCO$_3$/t)	Total C (% Leco)	Inorganic C (%)	Inorganic CO$_2$ (%)
Method				OA-ELE07	S-IR08	S-IR07	Calculated	S-GRA06	S-GRA06a	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	OA-VOL08	Calculated	C-IR07	C-GAS05	C-GAS05
MDL				0.1	0.01	0.01	0.01	0.01	0.01								1		0.01	0.05	0.2
Y936675	TLG-ZJ21-227	49.00	50.00	9.4	0.12	0.09	0.115	*0.005*	0.01	0.004	0.021	0.021	0.025	0.025	3.8	3.5	17	7	0.04	0.09	0.3
Y936677	TLG-ZJ21-232	103.00	104.00	9.8	0.02	0.02	0.015	*0.005*	0.01	0.002	-0.007	0.000	-0.005	0.000	0.6	0.6	17	7	0.04	0.05	0.2
Y936661	TLG-ZJ21-236	96.00	97.00	9.5	0.03	0.03	0.025	*0.005*	0.02	0.004	-0.009	0.000	-0.005	0.000	0.9	0.9	17	7	0.04	*0.025*	*0.1*
Y936674	TLG-ZJ21-237	37.00	38.00	9.6	0.32	0.26	0.31	0.01	0.02	0.007	0.043	0.043	0.050	0.050	10.0	9.5	17	7	0.03	*0.025*	*0.1*
Y936666	TLG-ZJ21-240	195.00	196.00	9.2	0.31	0.22	0.3	0.01	0.04	0.005	0.075	0.075	0.080	0.080	9.7	9.2	17	7	0.03	*0.025*	*0.1*
Y936670	TLG-ZJ21-241	95.00	96.00	9.5	0.3	0.24	0.295	*0.005*	0.01	0.015	0.040	0.040	0.055	0.055	9.4	8.7	24	14	0.19	0.19	0.7
Y936673	TLG-ZJ21-242	43.00	44.00	9.1	1.49	1.29	1.47	0.02	0.02	0.007	0.173	0.173	0.180	0.180	46.6	45.7	15	5	0.03	*0.025*	*0.1*
Y936672	TLG-ZJ21-242	84.00	85.00	8.4	4.22	3.89	4.2	0.02	0.03	0.004	0.306	0.306	0.310	0.310	131.9	131.1	19	9	0.03	*0.025*	*0.1*
Y936654	TLG-ZJ21-249	69.00	70.00	9.1	1.89	1.66	1.86	0.03	0.02	0.008	0.192	0.192	0.200	0.200	59.1	57.9	15	5	0.03	*0.025*	*0.1*
Y936676	TLG-ZJ21-285	128.00	129.00	9.5	0.09	0.07	0.085	*0.005*	0.02	0.009	0.006	0.006	0.015	0.015	2.8	2.4	22	12	0.1	0.15	0.5
Y936653	TLG-ZJ418-051	125.00	126.00	9.5	0.07	0.06	0.065	*0.005*	0.04	0.000	0.005	0.005	0.005	0.005	2.2	2.0	8	-2	0.04	*0.025*	*0.1*
Y936657	TLG-ZJ418-052	111.00	112.00	9.6	0.34	0.28	0.33	0.01	0.05	0.004	0.046	0.046	0.050	0.050	10.6	10.2	18	8	0.05	0.05	0.2
Y936655	TLG-ZJ418-056	90.00	91.00	9.1	1.12	0.96	1.1	0.02	0.01	0.006	0.134	0.134	0.140	0.140	35.0	34.2	18	8	0.09	0.08	0.3
Y936658	TLG-ZJ418-060	112.00	113.00	9.6	0.14	0.11	0.13	0.01	0.01	0.004	0.016	0.016	0.020	0.020	4.4	3.9	18	8	0.03	*0.025*	*0.1*
Y936659	TLG-ZJ418-069	24.00	25.00	9.3	0.22	0.18	0.21	0.01	0.04	0.010	0.020	0.020	0.030	0.030	6.9	6.3	23	13	0.14	0.12	0.4
Y936671	TLG-ZJ418-071	190.00	191.00	9.5	0.46	0.38	0.45	0.01	0.01	0.005	0.065	0.065	0.070	0.070	14.4	13.9	18	8	0.03	0.07	0.3
Y936679	TLG-ZJ418-077	114.00	115.00	9.9	0.16	0.14	0.15	0.01	0.01	0.010	0.000	0.000	0.010	0.010	5.0	4.4	18	8	0.02	*0.025*	*0.1*
Y936669	TLG-ZJ419-091	158.00	160.00	9.5	0.08	0.08	0.075	*0.005*	0.01	0.007	-0.012	0.000	-0.005	0.000	2.5	2.5	23	13	0.04	*0.025*	*0.1*
Y936680	TLG-ZJ419-094	7.10	8.00	9.1	0.15	0.11	0.14	0.01	0.01	0.005	0.025	0.025	0.030	0.030	4.7	4.2	21	11	0.11	0.11	0.4
Y936662	TLG-ZJ419-099	75.00	76.00	9.5	0.04	0.04	0.03	0.01	0.04	0.005	-0.015	0.000	-0.010	0.000	1.3	1.3	16	6	0.04	*0.025*	*0.1*
Y936668	TLG-ZJ419-111	61.00	63.00	9.5	0.02	0.04	0.015	*0.005*	0.02	0.005	-0.030	0.000	-0.025	0.000	0.6	1.3	19	9	0.08	0.07	0.3
Y936660	TLG-ZJ419-113	86.00	88.00	9.5	0.1	0.07	0.09	0.01	0.01	0.008	0.012	0.012	0.020	0.020	3.1	2.5	18	8	0.03	*0.025*	*0.1*
Y936663	TLG-ZJ419-148	154.00	156.00	9.2	1.51	1.27	1.49	0.02	0.03	0.004	0.216	0.216	0.220	0.220	47.2	46.4	18	8	0.06	0.05	0.2
Y936652	TLG-ZJ419-151	260.00	262.00	9.5	0.1	0.08	0.09	0.01	*0.005*	0.022	-0.012	0.000	0.010	0.010	3.1	2.5	15	5	0.11	0.1	0.4
Y936656	TLG-ZJ419-156	69.00	71.00	9.4	0.51	0.38	0.5	0.01	0.02	0.005	0.115	0.115	0.120	0.120	15.9	15.5	13	3	0.03	*0.025*	*0.1*
Y936651	TLG-ZJ419-157	199.00	201.00	9.4	0.51	0.42	0.49	0.02	0.02	0.014	0.056	0.056	0.070	0.070	15.9	14.9	17	7	0.05	0.06	0.2
Y936667	TLG-ZJ419-163	63.00	65.00	9.4	0.05	0.05	0.045	*0.005*	0.03	0.004	-0.009	0.000	-0.005	0.000	1.6	1.6	17	7	0.05	*0.025*	*0.1*
Y936678	TLG-ZJ419-163	171.00	173.00	9.6	0.33	0.23	0.31	0.02	0.01	0.019	0.061	0.061	0.080	0.080	10.3	9.1	17	7	0.13	0.12	0.5
Y936664	TLG-ZJ419-166	85.00	87.00	9.5	0.55	0.44	0.54	0.01	0.03	0.014	0.086	0.086	0.100	0.100	17.2	16.5	20	10	0.06	0.06	0.2
Y936665	TLG-ZJ419-169	86.00	88.00	9.1	0.33	0.23	0.32	0.01	0.02	0.008	0.082	0.082	0.090	0.090	10.3	9.7	21	11	0.06	0.05	0.2
All Data																					
Maximum				9.9	4.22	3.89	4.2	0.03	0.05	0.022	0.31	0.31	0.31	0.31	132	131	24	14	0.19	0.19	0.7
Minimum				8.4	0.02	0.02	0.015	0.005	0.005	0.00019	-0.03	0	-0.025	0	0.62	0.62	8	-2	0.02	0.025	0.1
Mean				9.39	0.52	0.44	0.51	0.011	0.021	0.0075	0.057	0.06	0.064	0.066	16.2	15.7	17.9	7.87	0.06	0.059	0.22
Standard Deviation				0.28	0.85	0.77	0.84	0.0064	0.012	0.005	0.079	0.076	0.079	0.077	26.5	26.3	3.16	3.16	0.041	0.044	0.16
10 Percentile				9.1	0.039	0.04	0.03	0.005	0.01	0.004	-0.012	0	-0.005	0	1.22	1.25	15	5	0.03	0.025	0.1
25 Percentile				9.22	0.092	0.073	0.086	0.005	0.01	0.0044	0.0015	0.0015	0.01	0.01	2.89	2.5	17	7	0.03	0.025	0.1
Median				9.5	0.26	0.2	0.25	0.01	0.02	0.0057	0.032	0.032	0.04	0.04	8.12	7.5	18	8	0.04	0.05	0.2
75 Percentile				9.5	0.5	0.38	0.48	0.01	0.03	0.0088	0.08	0.08	0.088	0.088	15.5	14.6	19	9	0.075	0.078	0.3
90 Percentile				9.6	1.49	1.27	1.47	0.02	0.04	0.014	0.17	0.17	0.18	0.18	46.6	45.8	22.1	12.1	0.11	0.12	0.41
Interquartile Range (IQR) [1]				0.28	0.4	0.31	0.39	0.005	0.02	0.0043	0.079	0.079	0.078	0.078	12.7	12.1	2	2	0.045	0.052	0.2
Variance				0.077	0.72	0.6	0.71	0.000041	0.00014	0.000025	0.0063	0.0058	0.0062	0.006	703	694	9.98	9.98	0.0017	0.0019	0.025
Skewness				-1.53	3.27	3.46	3.29	1.23	0.81	1.51	1.57	1.72	1.5	1.6	3.27	3.31	-0.6	-0.6	1.62	1.39	1.37
Coefficient of Variation (CoV) [2]				0.029	1.63	1.74	1.66	0.57	0.58	0.67	1.4	1.28	1.23	1.17	1.63	1.67	0.18	0.4	0.68	0.74	0.7
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

NPR <1.0 or NPR = 1.0
1.0 <NPR <2.0
NPR > 2.0 or NPR =2.0

% NPR <1.0 or NPR = 1.0 of Total
% 1.0 <NPR <2.0 of Total
% NPR > 2.0 or NPR =2.0 of Total

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From (m)	Interval To (m)	Excess C (%)	Total CaNP (kg $CaCO_3$/t)	Inorganic CaNP (kg $CaCO_3$/t)	(Ca) CaNP (kg $CaCO_3$/t)	(Ca+Mg) CaNP (kg $CaCO_3$/t)	TNNP (kg $CaCO_3$/t)	Adjusted TNNP (kg $CaCO_3$/t)	SNNP (kg $CaCO_3$/t)	Adjusted SNNP (kg $CaCO_3$/t)	Total CaNP-TAP NNP (kg $CaCO_3$/t)	(Ca+Mg) CaNP-TAP NNP (kg $CaCO_3$/t)	TNPR	Adjusted TNPR	SNPR	Adjusted SNPR	Total CaNP/TAP NPR	(Ca+Mg) CaNP/TAP NPR	Fizz Rating Unity	Comparison of Fizz Rating & NP
Method				Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	OA-VOL08	
MDL																						
Y936675	TLG-ZJ21-227	49.00	50.00	0	3.3	6.8	134.9	299.5	13.3	3.3	13.5	3.5	-0.4	295.8	4.53	1.87	4.9	2.02	0.889	79.9	1	Agree
Y936677	TLG-ZJ21-232	103.00	104.00	0	3.3	4.5	144.8	334.2	16.4	6.4	16.4	6.4	2.7	333.6	27.2	11.2	27.2	11.2	5.33	535	1	Agree
Y936661	TLG-ZJ21-236	96.00	97.00	0.015	3.3	2.3	92.4	187.1	16.1	6.1	16.1	6.1	2.4	186.2	18.1	7.47	18.1	7.47	3.56	200	1	Agree
Y936674	TLG-ZJ21-237	37.00	38.00	0.005	2.5	2.3	94.9	173.1	7.0	-3.0	7.5	-2.5	-7.5	163.1	1.7	0.7	1.79	0.739	0.25	17.3	1	Agree
Y936666	TLG-ZJ21-240	195.00	196.00	0.005	2.5	2.3	124.9	236.0	7.3	-2.7	7.8	-2.2	-7.2	226.3	1.75	0.723	1.84	0.759	0.258	24.4	1	Agree
Y936670	TLG-ZJ21-241	95.00	96.00	0	15.8	15.9	59.9	82.6	14.6	4.6	15.3	5.3	6.5	73.2	2.56	1.49	2.75	1.6	1.69	8.81	1	Agree
Y936673	TLG-ZJ21-242	43.00	44.00	0.005	2.5	2.3	104.9	232.5	-31.6	-41.6	-30.7	-40.7	-44.1	186.0	0.322	0.107	0.328	0.109	0.0537	4.99	1	Agree
Y936672	TLG-ZJ21-242	84.00	85.00	0.005	2.5	2.3	69.9	181.1	-112.9	-122.9	-112.1	-122.1	-129.4	49.2	0.144	0.0682	0.145	0.0686	0.019	1.37	1	Agree
Y936654	TLG-ZJ21-249	69.00	70.00	0.005	2.5	2.3	62.4	148.9	-44.1	-54.1	-42.9	-52.9	-56.6	89.8	0.254	0.0847	0.259	0.0864	0.0423	2.52	1	Agree
Y936676	TLG-ZJ21-285	128.00	129.00	0	8.3	11.4	147.3	279.1	19.2	9.2	19.6	9.6	5.5	276.3	7.82	4.27	9.25	5.04	2.96	99.2	1	Agree
Y936653	TLG-ZJ418-051	125.00	126.00	0.015	3.3	2.3	14.5	16.0	5.8	-4.2	6.0	-4.0	1.1	13.8	3.66	0.001	3.95	0.001	1.52	7.32	1	Agree
Y936657	TLG-ZJ418-052	111.00	112.00	0	4.2	4.5	129.9	228.7	7.4	-2.6	7.8	-2.2	-6.5	218.0	1.69	0.753	1.77	0.786	0.392	21.5	1	Agree
Y936655	TLG-ZJ418-056	90.00	91.00	0.01	7.5	6.8	102.4	188.8	-17.0	-27.0	-16.2	-26.2	-27.5	153.8	0.514	0.229	0.527	0.234	0.214	5.4	1	Agree
Y936658	TLG-ZJ418-060	112.00	113.00	0.005	2.5	2.3	82.4	156.5	13.6	3.6	14.1	4.1	-1.9	152.1	4.11	1.83	4.57	2.03	0.571	35.8	1	Agree
Y936659	TLG-ZJ418-069	24.00	25.00	0.02	11.7	9.1	77.4	168.0	16.1	6.1	16.7	6.7	4.8	161.1	3.35	1.89	3.67	2.08	1.7	24.4	1	Agree
Y936671	TLG-ZJ418-071	190.00	191.00	0	2.5	6.8	69.9	156.4	3.6	-6.4	4.1	-5.9	-11.9	142.0	1.25	0.557	1.3	0.576	0.174	10.9	1	Agree
Y936679	TLG-ZJ418-077	114.00	115.00	0	1.7	2.3	97.4	233.3	13.0	3.0	13.6	3.6	-3.3	228.3	3.6	1.6	4.1	1.82	0.333	46.7	1	Agree
Y936669	TLG-ZJ419-091	158.00	160.00	0.015	3.3	2.3	124.9	441.9	20.5	10.5	20.5	10.5	0.8	439.4	9.2	5.2	9.2	5.2	1.33	177	1	Agree
Y936680	TLG-ZJ419-094	7.10	8.00	0	9.2	9.1	174.8	281.9	16.3	6.3	16.8	6.8	4.5	277.2	4.48	2.35	4.97	2.61	1.96	60.1	1	Agree
Y936662	TLG-ZJ419-099	75.00	76.00	0.015	3.3	2.3	102.4	193.0	14.8	4.8	14.8	4.8	2.1	191.7	12.8	4.8	12.8	4.8	2.67	154	1	Agree
Y936668	TLG-ZJ419-111	61.00	63.00	0.01	6.7	6.8	144.8	247.8	18.4	8.4	17.8	7.8	6.0	247.1	30.4	14.4	15.2	7.2	10.7	396	1	Agree
Y936660	TLG-ZJ419-113	86.00	88.00	0.005	2.5	2.3	97.4	216.8	14.9	4.9	15.5	5.5	-0.6	213.7	5.76	2.56	7.06	3.14	0.8	69.4	1	Agree
Y936663	TLG-ZJ419-148	154.00	156.00	0.01	5.0	4.5	69.9	156.4	-29.2	-39.2	-28.4	-38.4	-42.2	109.2	0.381	0.17	0.388	0.172	0.106	3.31	1	Agree
Y936652	TLG-ZJ419-151	260.00	262.00	0.01	9.2	9.1	35.0	61.7	11.9	1.9	12.5	2.5	6.0	58.6	4.8	1.6	6	2	2.93	19.8	1	Agree
Y936656	TLG-ZJ419-156	69.00	71.00	0.005	2.5	2.3	77.4	143.3	-2.9	-12.9	-2.5	-12.5	-13.4	127.4	0.816	0.188	0.84	0.194	0.157	8.99	1	Agree
Y936651	TLG-ZJ419-157	199.00	201.00	0	4.2	4.5	69.9	127.6	1.1	-8.9	2.1	-7.9	-11.8	111.6	1.07	0.439	1.14	0.471	0.261	8	1	Agree
Y936667	TLG-ZJ419-163	63.00	65.00	0.025	4.2	2.3	162.3	298.2	15.4	5.4	15.4	5.4	2.6	296.6	10.9	4.48	10.9	4.48	2.67	191	1	Agree
Y936678	TLG-ZJ419-163	171.00	173.00	0.01	10.8	11.4	37.5	64.6	6.7	-3.3	7.9	-2.1	0.5	54.3	1.65	0.679	1.87	0.771	1.05	6.27	1	Agree
Y936664	TLG-ZJ419-166	85.00	87.00	0	5.0	4.5	102.4	184.7	2.8	-7.2	3.5	-6.5	-12.2	167.5	1.16	0.582	1.22	0.608	0.291	10.7	1	Agree
Y936665	TLG-ZJ419-169	86.00	88.00	0.01	5.0	4.5	107.4	210.3	10.7	0.7	11.3	1.3	-5.3	200.0	2.04	1.07	2.16	1.13	0.485	20.4	1	Agree
All Data																						
Maximum				0.025	15.8	15.9	175	442	20.5	10.5	20.5	10.5	6.46	439	30.4	14.4	27.2	11.2	10.7	535		
Minimum				0	1.67	2.27	14.5	16	-113	-123	-112	-122	-129	13.8	0.14	0.001	0.14	0.001	0.019	1.37		
Mean				0.0068	5.03	5.08	97.2	198	1.64	-8.36	2.12	-7.88	-11.2	181	5.6	2.45	5.34	2.31	1.51	75		
Standard Deviation				0.0068	3.41	3.57	38.3	87.2	26.8	26.8	26.6	26.6	27.3	94.6	7.56	3.38	6.24	2.7	2.17	123		
10 Percentile				0	2.5	2.27	57.7	80.8	-29.4	-39.4	-28.7	-38.7	-42.4	58.2	0.38	0.1	0.38	0.11	0.1	4.82		
25 Percentile				0	2.5	2.27	69.9	156	3.02	-6.98	3.69	-6.31	-11.8	116	1.18	0.47	1.24	0.5	0.25	8.2		
Median				0.005	3.33	4.55	97.4	188	11.3	1.28	11.9	1.88	-1.25	177	2.96	1.28	3.21	1.36	0.69	21		
75 Percentile				0.01	6.25	6.82	125	235	15.3	5.3	15.4	5.45	2.55	228	5.52	2.51	6.8	3.01	1.9	77.3		
90 Percentile				0.015	9.33	9.33	145	298	16.6	6.58	16.9	6.88	5.57	296	13.3	5.43	13	5.4	3.02	192		
Interquartile Range (IQR) [1]				0.01	3.75	4.55	54.9	79	12.3	12.3	11.8	11.8	14.4	112	4.34	2.04	5.56	2.51	1.64	69.1		
Variance				4.6E-05	11.6	12.7	1464	7599	719	719	710	710	747	8954	57.2	11.4	38.9	7.31	4.69	15077		
Skewness				0.89	1.62	1.37	0.002	0.41	-3.11	-3.11	-3.14	-3.14	-3.19	0.53	2.26	2.31	1.98	1.72	2.97	2.61		
Coefficient of Variation (CoV) [2]				0.99	0.68	0.7	0.39	0.44	16.4	-3.21	12.6	-3.38	-2.44	0.52	1.35	1.38	1.17	1.17	1.43	1.64		
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
NPR <1.0 or NPR = 1.0															6	14	6	14	17	0		
1.0 <NPR <2.0															7	7	7	3	6	1		
NPR > 2.0 or NPR =2.0															17	9	17	13	7	29		
% NPR <1.0 or NPR = 1.0 of Total															20.00	46.67	20.00	46.67	56.67	0.00		
% 1.0 <NPR <2.0 of Total															23.33	23.33	23.33	10.00	20.00	3.33		
% NPR > 2.0 or NPR =2.0 of Total															56.67	30.00	56.67	43.33	23.33	96.67		

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample		Interval		Silver	Aluminum	Arsenic	Barium	Beryllium	Bismuth	Calcium	Cadmium	Cerium	Cobalt	Chromium	Cesium	Copper	Iron	Gallium	Hafnium
Id.	Drillhole	From	To	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Hf
		(m)	(m)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Analysis Completed Date				2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08
Analysis Completed Time				15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.5	3	0.5	0.01	0.02	0.09	3	0.02	0.001	0.01	0.5	0.01	0.1	3	0.03	0.1
Crustal Abundance: To				0.079	81000	2.1	340	1.9	0.025	50000	0.15	60	30	140	1.9	68	63000	19	3.3
Y936675	TLG-ZJ21-227	49.00	50.00	*0.25*	100000	1.3	170	1	0.29	54000	0.17	17.7	30	220	2	33	58000	19	2.1
Y936677	TLG-ZJ21-232	103.00	104.00	*0.25*	85000	1.1	86	0.6	0.11	58000	0.03	24.9	30	210	1	31	62000	18	2
Y936661	TLG-ZJ21-236	96.00	97.00	*0.25*	91000	0.9	180	0.75	0.12	37000	0.03	42.3	20	51	1	78	42000	21	2.4
Y936674	TLG-ZJ21-237	37.00	38.00	*0.25*	89000	1.1	290	0.7	0.14	38000	0.19	27.4	17	57	0.36	28	36000	21	2.8
Y936666	TLG-ZJ21-240	195.00	196.00	*0.25*	95000	1.6	210	0.82	0.46	50000	0.07	74.4	21	39	1	120	65000	22	2.1
Y936670	TLG-ZJ21-241	95.00	96.00	*0.25*	73000	2.8	660	0.96	0.16	24000	0.13	59.3	4	6.6	0.87	41	19000	19	2.5
Y936673	TLG-ZJ21-242	43.00	44.00	0.5	90000	1.7	300	0.76	0.21	42000	0.15	27	24	250	2	120	54000	20	2.5
Y936672	TLG-ZJ21-242	84.00	85.00	*0.25*	85000	1.2	180	0.63	2	28000	0.05	24.5	17	120	5	8.3	70000	19	2.3
Y936654	TLG-ZJ21-249	69.00	70.00	*0.25*	87000	2.4	340	0.71	0.91	25000	0.03	26	23	72	2	80	31000	20	2.7
Y936676	TLG-ZJ21-285	128.00	129.00	*0.25*	83000	1.7	380	0.87	0.39	59000	0.09	28.7	30	170	2	76	62000	19	1.4
Y936653	TLG-ZJ418-051	125.00	126.00	*0.25*	79000	1.6	8	3	0.12	5800	0.17	23.4	0.24	4.4	2	11	5800	29	3.9
Y936657	TLG-ZJ418-052	111.00	112.00	*0.25*	89000	0.9	190	0.66	1	52000	0.03	27.4	10	110	0.79	73	46000	20	1.7
Y936655	TLG-ZJ418-056	90.00	91.00	0.6	88000	1.8	260	0.64	1	41000	3	28.6	26	160	2	64	46000	19	2
Y936658	TLG-ZJ418-060	112.00	113.00	*0.25*	89000	0.8	170	0.62	0.22	33000	0.05	30.3	14	58	1	300	38000	21	2.5
Y936659	TLG-ZJ418-069	24.00	25.00	*0.25*	90000	0.6	410	0.77	0.16	31000	0.05	22.9	22	72	3	92	50000	21	2.1
Y936671	TLG-ZJ418-071	190.00	191.00	*0.25*	87000	1.1	230	0.71	0.39	28000	0.03	87.5	19	34	2	250	42000	23	2.8
Y936679	TLG-ZJ418-077	114.00	115.00	*0.25*	96000	1.8	410	0.59	0.28	39000	0.03	27.7	24	240	3	52	77000	24	2.4
Y936669	TLG-ZJ419-091	158.00	160.00	*0.25*	74000	1.7	280	0.9	0.24	50000	0.07	75.8	44	450	7	45	53000	18	2.4
Y936680	TLG-ZJ419-094	7.10	8.00	*0.25*	83000	4.4	210	1	1	70000	0.13	34.9	19	220	0.09	140	89000	19	1.3
Y936662	TLG-ZJ419-099	75.00	76.00	*0.25*	93000	0.8	210	0.68	0.09	41000	0.04	27	19	110	0.48	45	45000	21	2.6
Y936668	TLG-ZJ419-111	61.00	63.00	*0.25*	88000	2	200	1	0.37	58000	0.07	19	24	220	2	100	45000	19	1.5
Y936660	TLG-ZJ419-113	86.00	88.00	*0.25*	90000	1.3	360	0.64	*0.045*	39000	0.03	25.8	24	140	1	140	47000	19	2.2
Y936663	TLG-ZJ419-148	154.00	156.00	*0.25*	85000	3.2	170	0.6	0.81	28000	0.1	35.4	34	41	1	220	50000	20	2.9
Y936652	TLG-ZJ419-151	260.00	262.00	*0.25*	77000	1.1	960	1	*0.045*	14000	0.06	61.1	2	3.7	1	56	10000	18	2.3
Y936656	TLG-ZJ419-156	69.00	71.00	*0.25*	87000	0.9	210	0.94	0.84	31000	0.06	30.5	14	44	2	230	40000	22	2.5
Y936651	TLG-ZJ419-157	199.00	201.00	*0.25*	88000	1.7	610	0.97	0.55	28000	0.1	86.7	15	19	3	350	40000	23	2.1
Y936667	TLG-ZJ419-163	63.00	65.00	*0.25*	78000	1.5	190	0.42	0.44	65000	0.07	25.8	32	220	2	210	99000	17	1
Y936678	TLG-ZJ419-163	171.00	173.00	0.9	63000	2.1	830	0.95	0.37	15000	0.17	22	8	28	2	120	16000	17	2
Y936664	TLG-ZJ419-166	85.00	87.00	*0.25*	90000	3	580	0.79	0.38	41000	0.12	28.2	37	120	1	350	55000	20	2.2
Y936665	TLG-ZJ419-169	86.00	88.00	*0.25*	90000	1.4	350	0.56	0.64	43000	0.03	29.5	28	73	0.01	36	54000	20	2.5
All Data																			
Maximum				0.9	100000	4.4	960	3	2	70000	3	87.5	44	450	7	350	99000	29	3.9
Minimum				0.25	63000	0.6	8	0.42	0.045	5800	0.03	17.7	0.24	3.7	0.01	8.3	5800	17	1
Mean				0.29	86067	1.65	321	0.84	0.46	38927	0.18	36.7	21	119	1.79	117	48227	20.3	2.26
Standard Deviation				0.14	7497	0.83	214	0.44	0.42	15323	0.54	20.2	10.1	101	1.43	98.1	20670	2.38	0.55
10 Percentile				0.25	76700	0.89	170	0.6	0.11	23100	0.03	22.8	7.6	17.8	0.47	30.7	18700	18	1.49
25 Percentile				0.25	83500	1.1	190	0.64	0.16	28000	0.032	25.8	15.5	41.8	1	45	40000	19	2.02
Median				0.25	88000	1.55	245	0.76	0.37	39000	0.07	28	21.5	91.5	2	79	46500	20	2.3
75 Percentile				0.25	90000	1.8	375	0.95	0.62	50000	0.13	35.3	27.5	200	2	140	57250	21	2.5
90 Percentile				0.28	93200	2.82	615	1	1	58100	0.17	74.5	32.2	222	3	255	70700	23	2.8
Interquartile Range (IQR) [1]				0	6500	0.7	185	0.31	0.46	22000	0.095	9.47	12	158	1	95	17250	2	0.48
Variance				0.019	56202299	0.69	45850	0.19	0.18	2.35E+08	0.29	408	103	10232	2.03	9627	4.27E+08	5.65	0.3
Skewness				3.65	-1.11	1.58	1.51	4.34	1.92	0.002	5.4	1.61	-0.11	1.29	2.03	1.19	0.18	1.79	0.24
Coefficient of Variation (CoV) [2]				0.47	0.087	0.5	0.67	0.52	0.92	0.39	3	0.55	0.48	0.85	0.8	0.84	0.43	0.12	0.24
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample		Interval		Mercury	Indium	Potassium	Lanthanum	Lithium	Lutetium	Magnesium	Manganese	Molybdenum	Sodium	Niobium	Nickel	Phosphorus	Lead	Rubidium	Antimony
Id.	Drillhole	From	To	Hg	In	K	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Sb
		(m)	(m)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Analysis Completed Date				2022-06-07	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08
Analysis Completed Time				15:10	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.05	0.01	3	0.001	2	0.001	3	0.1	0.1	3	0.1	0.1	3	0.05	0.004	0.8
Crustal Abundance: To				0.067	0.16	15000	34	17	0.57	29000	1100	1.1	23000	17	90	990	10	60	0.2
Y936675	TLG-ZJ21-227	49.00	50.00	*0.025*	0.14	7400	7.69	34	0.23	40000	1600	1.6	18000	2.7	123	540	4	27.4	159
Y936677	TLG-ZJ21-232	103.00	104.00	*0.025*	0.19	9600	10.3	21	0.25	46000	1000	10	30000	3.7	132	590	2	63.9	*0.4*
Y936661	TLG-ZJ21-236	96.00	97.00	0.09	0.16	10000	19.9	34	0.16	23000	510	2.9	33000	3.7	43	910	2	65.3	*0.4*
Y936674	TLG-ZJ21-237	37.00	38.00	*0.025*	0.12	8400	13.2	20	0.16	19000	1100	1.3	25000	3	42	550	6	21.6	*0.4*
Y936666	TLG-ZJ21-240	195.00	196.00	*0.025*	0.12	9800	33	25	0.31	27000	520	2.1	32000	4.8	43	1300	2	58.7	*0.4*
Y936670	TLG-ZJ21-241	95.00	96.00	*0.025*	0.17	16000	28.3	17	0.13	5500	1000	1.1	24000	4	6.6	480	13	34.1	*0.4*
Y936673	TLG-ZJ21-242	43.00	44.00	*0.025*	0.17	8100	12.7	31	0.2	31000	2000	3	27000	2.5	115	550	4	26	*0.4*
Y936672	TLG-ZJ21-242	84.00	85.00	*0.025*	0.13	9500	11.5	24	0.098	27000	440	2.4	24000	1.1	77	530	4	34.7	*0.4*
Y936654	TLG-ZJ21-249	69.00	70.00	*0.025*	0.19	21000	11.8	37	0.15	21000	140	2.6	27000	1.8	49	700	2	110	*0.4*
Y936676	TLG-ZJ21-285	128.00	129.00	*0.025*	0.14	13000	12.1	24	0.25	32000	1400	1	17000	3.2	70	720	2	42.5	*0.4*
Y936653	TLG-ZJ418-051	125.00	126.00	*0.025*	0.17	25000	11.1	4.4	0.1	370	370	2.8	43000	7	0.7	25	43	160	*0.4*
Y936657	TLG-ZJ418-052	111.00	112.00	*0.025*	0.13	12000	12.7	20	0.2	24000	600	2.1	30000	3.3	70	710	2	60.6	*0.4*
Y936655	TLG-ZJ418-056	90.00	91.00	*0.025*	0.19	14000	13.5	22	0.18	21000	500	6.2	42000	3.1	71	620	59	68.1	*0.4*
Y936658	TLG-ZJ418-060	112.00	113.00	*0.025*	0.14	11000	14.9	30	0.15	18000	280	2.2	33000	3	39	580	2	77.4	*0.4*
Y936659	TLG-ZJ418-069	24.00	25.00	*0.025*	0.26	29000	11	29	0.15	22000	450	25	17000	3.5	65	650	0.81	210	*0.4*
Y936671	TLG-ZJ418-071	190.00	191.00	*0.025*	0.11	17000	48.5	24	0.18	21000	200	7.3	33000	3.8	42	670	1	100	*0.4*
Y936679	TLG-ZJ418-077	114.00	115.00	*0.025*	0.23	24000	12.6	18	0.22	33000	560	1.4	24000	3.9	111	610	0.94	100	*0.4*
Y936669	TLG-ZJ419-091	158.00	160.00	*0.025*	0.14	9300	36.6	20	0.15	77000	990	1.7	27000	1.7	373	1100	3	44	*0.4*
Y936680	TLG-ZJ419-094	7.10	8.00	*0.025*	0.3	8300	19.6	10	0.24	26000	1000	190	26000	3.3	119	390	4	25.7	*0.4*
Y936662	TLG-ZJ419-099	75.00	76.00	*0.025*	0.16	6700	12.6	14	0.18	22000	860	2.8	37000	3.7	58	700	1	43.2	*0.4*
Y936668	TLG-ZJ419-111	61.00	63.00	*0.025*	0.27	7900	8.45	18	0.26	25000	1000	6.9	29000	4.1	72	380	8	62.8	*0.4*
Y936660	TLG-ZJ419-113	86.00	88.00	*0.025*	0.15	16000	11.9	20	0.19	29000	530	8.9	29000	3.6	87	530	2	110	*0.4*
Y936663	TLG-ZJ419-148	154.00	156.00	*0.025*	0.13	22000	12.5	12	0.2	21000	300	6.3	27000	2.9	82	780	2	120	*0.4*
Y936652	TLG-ZJ419-151	260.00	262.00	*0.025*	0.14	23000	29.5	24	0.11	6500	120	11	30000	3.7	3.2	240	4	61.1	*0.4*
Y936656	TLG-ZJ419-156	69.00	71.00	*0.025*	0.15	10000	14.5	26	0.17	16000	350	4.9	37000	3.1	39	620	2	45.8	*0.4*
Y936651	TLG-ZJ419-157	199.00	201.00	*0.025*	0.19	22000	42.2	38	0.17	14000	500	11	32000	5.2	25	930	5	88.6	*0.4*
Y936667	TLG-ZJ419-163	63.00	65.00	*0.025*	0.31	9900	16.7	15	0.28	33000	1300	3.3	22000	2.4	205	390	3	31.2	*0.4*
Y936678	TLG-ZJ419-163	171.00	173.00	*0.025*	0.08	25000	9.85	17	0.11	6600	250	31	26000	2.3	18	200	5	47.5	*0.4*
Y936664	TLG-ZJ419-166	85.00	87.00	*0.025*	0.26	18000	13.5	19	0.14	20000	710	2.7	30000	3	72	610	4	80.1	*0.4*
Y936665	TLG-ZJ419-169	86.00	88.00	*0.025*	0.15	14000	13.8	20	0.24	25000	1100	3.3	24000	3.5	60	620	3	40.8	*0.4*

All Data

	Hg	In	K	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Sb
Maximum	0.09	0.31	29000	48.5	38	0.31	77000	2000	190	43000	7	373	1300	59	210	159
Minimum	0.025	0.08	6700	7.69	4.4	0.098	370	120	1	17000	1.1	0.7	25	0.81	21.6	0.4
Mean	0.027	0.17	14563	17.5	22.2	0.19	24399	723	12	28500	3.35	77.1	608	6.52	68.7	5.69
Standard Deviation	0.012	0.057	6495	10.4	7.84	0.055	13975	460	34.3	6334	1.1	70.8	251	12.5	42.4	29
10 Percentile	0.025	0.12	8080	10.3	13.8	0.11	6590	245	1.39	21600	2.25	16.9	366	1	27.3	0.4
25 Percentile	0.025	0.14	9525	11.8	18	0.15	19250	388	2.12	24250	2.92	42	530	2	41.2	0.4
Median	0.025	0.16	12500	13	20.5	0.18	22500	545	2.95	28000	3.3	67.5	610	3	60.8	0.4
75 Percentile	0.025	0.19	20250	18.9	25.8	0.23	28500	1000	7.2	32000	3.7	85.8	700	4	86.5	0.4
90 Percentile	0.025	0.26	24100	33.4	34	0.25	33700	1310	12.4	37000	4.17	124	912	8.5	111	0.4
Interquartile Range (IQR) [1]	0	0.05	10725	7.05	7.75	0.078	9250	612	5.08	7750	0.78	43.8	170	2	45.2	0
Variance	0.00014	0.0033	42184471	109	61.4	0.003	195305547	211441	1177	40120690	1.21	5016	62798	156	1802	838
Skewness	5.48	1.03	0.69	1.75	0.14	0.36	1.72	0.93	5.16	0.32	1	2.76	0.4	3.61	1.63	5.48
Coefficient of Variation (CoV) [2]	0.44	0.33	0.45	0.59	0.35	0.29	0.57	0.64	2.87	0.22	0.33	0.92	0.41	1.92	0.62	5.09
Count	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample		Interval		Scandium	Selenium	Tin	Strontium	Tantalum	Terbium	Tellurium	Titanium	Thallium	Uranium	Vanadium	Tungsten	Yttrium	Ytterbium	Zinc	Zirconium
Id.	Drillhole	From	To	Sc	Se	Sn	Sr	Ta	Tb	Te	Ti	Tl	U	V	W	Y	Yb	Zn	Zr
		(m)	(m)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Analysis Completed Date				2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08	2022-06-08
Analysis Completed Time				15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27	15:27
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.03	0.7	6	0.02	0.01	0.001	0.1	0.1	0.02	0.002	1	0.04	0.004	0.001	0.7	0.03
Crustal Abundance: To				26	0.05	2.2	360	1.7	0.93	0.001	6600	0.54	1.8	190	1.1	29	2.8	78	130
Y936675	TLG-ZJ21-227	49.00	50.00	41	*0.35*	*3*	180	0.15	0.43	0.2	4000	0.23	0.39	150	0.36	13.3	1.54	170	80
Y936677	TLG-ZJ21-232	103.00	104.00	50	*0.35*	*3*	220	0.21	0.54	*0.05*	4300	0.33	0.93	160	0.25	15.5	1.67	69	82
Y936661	TLG-ZJ21-236	96.00	97.00	27	*0.35*	*3*	340	0.22	0.43	*0.05*	3600	0.43	0.72	95	0.2	10.5	1.06	37	92
Y936674	TLG-ZJ21-237	37.00	38.00	23	*0.35*	*3*	290	0.19	0.36	0.1	3200	0.19	0.46	83	0.22	9.16	1.02	110	120
Y936666	TLG-ZJ21-240	195.00	196.00	45	*0.35*	*3*	420	0.22	0.71	0.2	4600	0.4	0.78	170	0.55	18.4	2.07	50	86
Y936670	TLG-ZJ21-241	95.00	96.00	8	*0.35*	*3*	200	0.28	0.34	*0.05*	1600	0.44	1.76	30	0.32	8.49	0.81	95	96
Y936673	TLG-ZJ21-242	43.00	44.00	37	*0.35*	*3*	230	0.16	0.44	0.4	3300	0.22	0.34	120	0.3	11.4	1.31	200	99
Y936672	TLG-ZJ21-242	84.00	85.00	29	0.9	*3*	240	0.09	0.31	1.3	2000	0.31	0.33	94	0.33	5.7	0.63	52	85
Y936654	TLG-ZJ21-249	69.00	70.00	30	0.8	*3*	220	0.13	0.33	0.3	2700	0.72	0.44	92	1	7.51	0.92	18	98
Y936676	TLG-ZJ21-285	128.00	129.00	50	*0.35*	*3*	230	0.16	0.56	0.2	5900	0.3	0.22	210	0.61	15.4	1.71	130	47
Y936653	TLG-ZJ418-051	125.00	126.00	12	*0.35*	*3*	13	0.67	0.24	*0.05*	200	0.95	17.7	2	0.22	6.81	0.64	43	61
Y936657	TLG-ZJ418-052	111.00	112.00	37	*0.35*	*3*	270	0.21	0.44	0.3	4000	0.44	0.43	120	0.77	12	1.28	29	58
Y936655	TLG-ZJ418-056	90.00	91.00	41	*0.35*	*3*	310	0.2	0.44	0.8	3900	0.52	0.48	120	0.97	11.8	1.24	160	67
Y936658	TLG-ZJ418-060	112.00	113.00	27	*0.35*	*3*	300	0.19	0.38	0.2	3400	0.34	0.5	94	0.39	9.8	1.01	29	94
Y936659	TLG-ZJ418-069	24.00	25.00	33	*0.35*	*3*	73	0.21	0.32	0.1	3900	0.83	0.44	100	0.42	8.49	0.96	37	80
Y936671	TLG-ZJ418-071	190.00	191.00	25	*0.35*	*3*	330	0.23	0.49	0.2	3700	0.56	0.81	90	0.64	10.4	1.15	30	100
Y936679	TLG-ZJ418-077	114.00	115.00	42	*0.35*	18	330	0.23	0.47	*0.05*	4500	0.35	0.46	190	0.31	13.8	1.52	61	87
Y936669	TLG-ZJ419-091	158.00	160.00	44	*0.35*	*3*	510	0.08	0.51	0.1	2600	0.25	1.18	120	0.12	10.1	1.03	77	110
Y936680	TLG-ZJ419-094	7.10	8.00	49	*0.35*	*3*	280	0.16	0.46	*0.05*	3700	0.13	0.76	170	0.57	13.9	1.64	72	41
Y936662	TLG-ZJ419-099	75.00	76.00	32	*0.35*	*3*	370	0.21	0.4	0.1	4100	0.22	0.37	120	0.35	10.8	1.2	39	100
Y936668	TLG-ZJ419-111	61.00	63.00	44	*0.35*	*3*	220	0.2	0.43	*0.05*	3200	0.34	2.19	130	0.4	14.2	1.7	58	45
Y936660	TLG-ZJ419-113	86.00	88.00	36	*0.35*	*3*	290	0.19	0.38	0.1	3700	0.45	0.94	120	0.28	11.1	1.27	42	77
Y936663	TLG-ZJ419-148	154.00	156.00	28	1.5	*3*	210	0.21	0.44	0.2	3300	0.68	1.32	95	0.87	11.4	1.3	37	120
Y936652	TLG-ZJ419-151	260.00	262.00	10	*0.35*	*3*	290	0.29	0.25	*0.05*	920	0.3	1.02	13	0.84	6.03	0.64	16	77
Y936656	TLG-ZJ419-156	69.00	71.00	27	*0.35*	*3*	250	0.22	0.39	0.2	3400	0.25	0.61	90	0.34	10.9	1.14	28	110
Y936651	TLG-ZJ419-157	199.00	201.00	31	*0.35*	*3*	470	0.35	0.53	0.1	3200	0.41	1.47	82	2	11.8	1.16	63	78
Y936667	TLG-ZJ419-163	63.00	65.00	56	*0.35*	*3*	210	0.14	0.45	*0.05*	4000	0.19	0.52	160	0.41	15.3	1.9	100	36
Y936678	TLG-ZJ419-163	171.00	173.00	7	*0.35*	*3*	190	0.15	0.19	*0.05*	1000	0.37	1.52	26	0.76	5.85	0.72	35	64
Y936664	TLG-ZJ419-166	85.00	87.00	31	*0.35*	*3*	230	0.21	0.36	0.2	3200	0.49	0.7	100	0.57	9.35	0.93	100	72
Y936665	TLG-ZJ419-169	86.00	88.00	32	*0.35*	*3*	220	0.23	0.45	0.2	3900	0.31	0.47	110	0.3	13.5	1.6	56	94
All Data																			
Maximum				56	1.5	18	510	0.67	0.71	1.3	5900	0.95	17.7	210	2	18.4	2.07	200	120
Minimum				7	0.35	3	13	0.08	0.19	0.05	200	0.13	0.22	2	0.12	5.7	0.63	16	36
Mean				32.8	0.42	3.5	265	0.21	0.42	0.2	3301	0.4	1.34	109	0.52	11.1	1.23	68.1	81.9
Standard Deviation				12.6	0.24	2.74	100	0.1	0.1	0.26	1185	0.19	3.13	48.9	0.37	3.13	0.38	46.6	22.3
10 Percentile				11.8	0.35	3	189	0.14	0.3	0.05	1540	0.22	0.37	29.6	0.22	6.73	0.71	28.9	46.8
25 Percentile				27	0.35	3	220	0.16	0.36	0.05	3200	0.26	0.44	90.5	0.3	9.21	0.97	37	68.2
Median				32	0.35	3	245	0.21	0.43	0.1	3500	0.34	0.66	105	0.4	11	1.18	54	83.5
75 Percentile				41.8	0.35	3	308	0.22	0.46	0.2	3975	0.45	1	128	0.63	13.4	1.54	90.5	97.5
90 Percentile				49.1	0.4	3	375	0.28	0.53	0.31	4320	0.68	1.54	170	0.88	15.3	1.7	133	110
Interquartile Range (IQR) [1]				14.8	0	0	87.5	0.06	0.098	0.15	775	0.18	0.55	37	0.33	4.24	0.56	53.5	29.2
Variance				159	0.058	7.5	10092	0.01	0.011	0.066	1403600	0.037	9.77	2395	0.14	9.79	0.15	2175	497
Skewness				-0.4	3.75	5.48	0.17	3.21	0.28	3.3	-0.85	1.28	5.28	-0.25	2.43	0.15	0.32	1.39	-0.35
Coefficient of Variation (CoV) [2]				0.38	0.57	0.78	0.38	0.48	0.25	1.28	0.36	0.48	2.33	0.45	0.7	0.28	0.31	0.68	0.27
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **Whole Rock by XRF**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From (m)	Interval To (m)	Al_2O_3 (%)	CaO (%)	Cr_2O_3 (%)	Fe_2O_3 (%)	K_2O (%)	MgO (%)	MnO (%)	Na_2O (%)	P_2O_5 (%)	SiO_2 (%)	TiO_2 (%)	V_2O_5 (%)	LOI (%)	Total (%)
Method																	
MDL				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
Y936675	TLG-ZJ21-227	49.00	50.00	14.6	7.32	0.04	7.57	0.89	5.92	0.18	2.18	0.11	58.5	0.65	0.03	1.76	99.75
Y936677	TLG-ZJ21-232	103.00	104.00	14.1	8.01	0.04	8.6	1.1	7.35	0.13	3.65	0.12	54.8	0.64	0.03	0.97	99.54
Y936661	TLG-ZJ21-236	96.00	97.00	15.4	5.02	*0.005*	5.65	1.19	3.72	0.05	4.05	0.2	63	0.55	0.02	1	99.86
Y936674	TLG-ZJ21-237	37.00	38.00	15.5	5.24	0.02	4.95	0.95	3.07	0.13	3.14	0.12	65.2	0.49	0.01	1.08	99.90
Y936666	TLG-ZJ21-240	195.00	196.00	17	7.13	*0.005*	9.11	1.18	4.41	0.07	4.01	0.29	54	0.88	0.03	1.56	99.68
Y936670	TLG-ZJ21-241	95.00	96.00	14.1	3.61	*0.005*	2.66	1.88	0.92	0.18	3.28	0.1	70.7	0.27	*0.005*	1.92	99.63
Y936673	TLG-ZJ21-242	43.00	44.00	15	5.18	0.03	7.44	0.92	3.81	0.25	3.5	0.11	60.8	0.52	0.02	2.22	99.80
Y936672	TLG-ZJ21-242	84.00	85.00	15.5	3.87	0.03	9.57	1.13	4.75	0.06	3.11	0.12	56.6	0.57	0.03	4.57	99.91
Y936654	TLG-ZJ21-249	69.00	70.00	15.6	3.47	0.02	4.99	2.45	3.49	0.02	3.37	0.16	62.9	0.58	0.03	2.64	99.72
Y936676	TLG-ZJ21-285	128.00	129.00	15.7	9.1	0.03	9.11	1.46	5.48	0.18	2.43	0.18	53.7	0.99	0.04	1.67	100.07
Y936653	TLG-ZJ418-051	125.00	126.00	13.7	0.77	*0.005*	0.8	2.73	0.07	0.04	5.69	*0.005*	75.4	0.03	*0.005*	0.52	99.77
Y936657	TLG-ZJ418-052	111.00	112.00	14.9	6.43	0.03	6.02	1.34	3.71	0.07	3.95	0.14	61.9	0.59	0.02	0.84	99.94
Y936655	TLG-ZJ418-056	90.00	91.00	14.9	5.39	0.02	5.95	1.55	3.1	0.05	5.61	0.13	60.5	0.61	0.02	1.82	99.65
Y936658	TLG-ZJ418-060	112.00	113.00	15.4	4.51	0.01	5.38	1.14	2.78	0.03	4.34	0.13	64.4	0.51	0.02	0.98	99.63
Y936659	TLG-ZJ418-069	24.00	25.00	15.1	4.26	0.01	6.75	2.94	3.24	0.05	2.4	0.13	62.5	0.58	0.02	1.62	99.60
Y936671	TLG-ZJ418-071	190.00	191.00	15.9	3.8	0.01	6.04	1.89	3.45	0.02	4.37	0.14	62.1	0.57	0.01	1.48	99.78
Y936679	TLG-ZJ418-077	114.00	115.00	16.2	4.96	0.04	10.5	2.72	5.01	0.06	3.01	0.14	55	0.66	0.02	1.47	99.79
Y936669	TLG-ZJ419-091	158.00	160.00	12	6.83	0.11	7.41	1	12.2	0.12	3.11	0.21	53.7	0.45	0.02	2.48	99.64
Y936680	TLG-ZJ419-094	7.10	8.00	14.5	8.43	0.03	9.52	1.04	3.74	0.11	3.84	0.09	56.3	0.52	0.03	1.76	99.91
Y936662	TLG-ZJ419-099	75.00	76.00	15.6	5.3	0.02	6.01	0.87	3.44	0.1	4.69	0.14	62.3	0.61	0.02	0.81	99.91
Y936668	TLG-ZJ419-111	61.00	63.00	15	8.32	0.06	6.91	0.94	4.76	0.13	3.76	0.09	58.2	0.55	0.03	1.29	100.04
Y936660	TLG-ZJ419-113	86.00	88.00	14.8	5.29	0.03	6.39	1.68	4.35	0.06	3.7	0.11	60.9	0.54	0.02	1.17	99.04
Y936663	TLG-ZJ419-148	154.00	156.00	15	4.32	0.01	6.82	2.18	3.8	0.04	3.58	0.18	61.6	0.58	0.02	1.79	99.92
Y936652	TLG-ZJ419-151	260.00	262.00	13.4	1.71	*0.005*	1.27	2.84	0.98	*0.005*	3.79	0.05	73.8	0.16	*0.005*	1.46	99.48
Y936656	TLG-ZJ419-156	69.00	71.00	15.1	3.48	0.01	5.25	1.27	2.19	0.03	4.81	0.11	66	0.46	0.02	1.31	100.04
Y936651	TLG-ZJ419-157	199.00	201.00	14.6	3.55	*0.005*	5.4	2.64	2.14	0.07	3.9	0.18	65.5	0.45	0.02	1.18	99.64
Y936667	TLG-ZJ419-163	63.00	65.00	13.9	8.76	0.05	14.4	1.39	5.56	0.15	3.06	0.09	50.9	0.63	0.03	1.01	99.93
Y936678	TLG-ZJ419-163	171.00	173.00	13.5	2.38	*0.005*	2.69	2.97	1.39	0.03	3.59	0.06	71.1	0.23	*0.005*	1.91	99.86
Y936664	TLG-ZJ419-166	85.00	87.00	13.1	5	0.02	8.05	1.89	2.9	0.08	2.86	0.1	63.2	0.41	0.01	2	99.62
Y936665	TLG-ZJ419-169	86.00	88.00	15.6	5.54	0.02	7.29	1.53	4.06	0.13	3.25	0.13	60	0.62	0.02	1.68	99.87
All Data																	
Maximum				17	9.1	0.11	14.4	2.97	12.2	0.25	5.69	0.29	75.4	0.99	0.04	4.57	
Minimum				12	0.77	0.005	0.8	0.87	0.07	0.005	2.18	0.005	50.9	0.03	0.005	0.52	
Mean				14.8	5.23	0.024	6.62	1.66	3.86	0.088	3.67	0.13	61.5	0.53	0.02	1.6	
Standard Deviation				1.02	2.08	0.022	2.76	0.7	2.22	0.06	0.83	0.053	5.99	0.19	0.0091	0.75	
10 Percentile				13.5	3.36	0.005	2.69	0.94	1.35	0.029	2.82	0.087	54	0.27	0.005	0.96	
25 Percentile				14.2	3.82	0.01	5.38	1.11	2.94	0.042	3.12	0.1	57	0.47	0.02	1.1	
Median				15	5.1	0.02	6.57	1.42	3.72	0.07	3.62	0.12	61.8	0.56	0.02	1.52	
75 Percentile				15.5	6.73	0.03	7.93	2.11	4.66	0.13	4	0.14	64.1	0.61	0.03	1.81	
90 Percentile				15.7	8.33	0.041	9.52	2.74	5.6	0.18	4.7	0.18	70.7	0.65	0.03	2.25	
Interquartile Range (IQR) [1]				1.3	2.91	0.02	2.55	1	1.72	0.088	0.88	0.038	7.1	0.14	0.01	0.71	
Variance				1.04	4.33	0.00048	7.6	0.49	4.91	0.0035	0.68	0.0028	35.9	0.035	0.000083	0.56	
Skewness				-0.64	0.098	2.26	0.24	0.72	1.74	0.89	0.66	0.64	0.5	-0.43	-0.14	2.19	
Coefficient of Variation (CoV) [2]				0.069	0.4	0.91	0.42	0.42	0.57	0.68	0.23	0.41	0.097	0.35	0.45	0.47	
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **QA/QC Data - Comparison on ICP Metals and Whole Rock Analyses**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From	Interval To	Whole Rock Al * (ppm)	ICP Al (ppm)	Difference (%) [3]	Whole Rock Ca * (ppm)	ICP Ca (ppm)	Difference (%) [3]	Whole Rock Cr * (ppm)	ICP Cr (ppm)	Difference (%) [3]	Whole Rock Fe * (ppm)	ICP Fe (ppm)	Difference (%) [3]	Whole Rock K * (ppm)	ICP K (ppm)	Difference (%) [3]	Whole Rock Mg * (ppm)	ICP Mg (ppm)	Difference (%) [3]
Y936675	TLG-ZJ21-227	49	50	77267	100000	29.42	52316	54000	3.22	274	220	-19.62	52947	58000	9.54	7388	7400	0.16	35702	40000	12.04
Y936677	TLG-ZJ21-232	103	104	74621	85000	13.91	57247	58000	1.32	274	210	-23.27	60152	62000	3.07	9131	9600	5.13	44326	46000	3.78
Y936661	TLG-ZJ21-236	96	97	81501	91000	11.66	35878	37000	3.13	34	51	49.08	39518	42000	6.28	9878	10000	1.23	22434	23000	2.52
Y936674	TLG-ZJ21-237	37	38	82030	89000	8.50	37450	38000	1.47	137	57	-58.35	34622	36000	3.98	7886	8400	6.52	18514	19000	2.62
Y936666	TLG-ZJ21-240	195	196	89969	95000	5.59	50958	50000	-1.88	34	39	14.00	63719	65000	2.01	9795	9800	0.05	26596	27000	1.52
Y936670	TLG-ZJ21-241	95	96	74621	73000	-2.17	25800	24000	-6.98	34	7	-80.71	18605	19000	2.12	15606	16000	2.52	5548	5500	-0.87
Y936673	TLG-ZJ21-242	43	44	79384	90000	13.37	37021	42000	13.45	205	250	21.79	52038	54000	3.77	7637	8100	6.06	22977	31000	34.92
Y936672	TLG-ZJ21-242	84	85	82030	85000	3.62	27659	28000	1.23	205	120	-41.54	66936	70000	4.58	9380	9500	1.28	28646	27000	-5.75
Y936654	TLG-ZJ21-249	69	70	82559	87000	5.38	24800	25000	0.81	137	72	-47.38	34902	31000	-11.18	20338	21000	3.26	21047	21000	-0.23
Y936676	TLG-ZJ21-285	128	129	83089	83000	-0.11	65037	59000	-9.28	205	170	-17.18	63719	62000	-2.70	12120	13000	7.26	33049	32000	-3.17
Y936653	TLG-ZJ418-051	125	126	72504	79000	8.96	5503	5800	5.39	34	4	-87.14	5595	5800	3.65	22662	25000	10.32	422	370	-12.35
Y936657	TLG-ZJ418-052	111	112	78855	89000	12.87	45955	52000	13.15	205	110	-46.41	42106	46000	9.25	11124	12000	7.88	22374	24000	7.27
Y936655	TLG-ZJ418-056	90	91	78855	88000	11.60	38522	41000	6.43	137	160	16.92	41616	46000	10.53	12867	14000	8.81	18695	21000	12.33
Y936658	TLG-ZJ418-060	112	113	81501	89000	9.20	32233	33000	2.38	68	58	-15.23	37630	38000	0.98	9463	11000	16.24	16766	18000	7.36
Y936659	TLG-ZJ418-069	24	25	79913	90000	12.62	30446	31000	1.82	68	72	5.23	47212	50000	5.91	24405	29000	18.83	19540	22000	12.59
Y936671	TLG-ZJ418-071	190	191	84147	87000	3.39	27158	28000	3.10	68	34	-50.31	42246	42000	-0.58	15689	17000	8.36	20806	21000	0.93
Y936679	TLG-ZJ418-077	114	115	85735	96000	11.97	35449	39000	10.02	274	240	-12.31	73441	77000	4.85	22579	24000	6.29	30214	33000	9.22
Y936669	TLG-ZJ419-091	158	160	63507	74000	16.52	48814	50000	2.43	753	450	-40.21	51828	53000	2.26	8301	9300	12.03	73575	77000	4.65
Y936680	TLG-ZJ419-094	7.1	8	76738	83000	8.16	60249	70000	16.19	205	220	7.18	66586	89000	33.66	8633	8300	-3.86	22555	26000	15.27
Y936662	TLG-ZJ419-099	75	76	82559	93000	12.65	37879	41000	8.24	137	110	-19.62	42036	45000	7.05	7222	6700	-7.23	20746	22000	6.05
Y936668	TLG-ZJ419-111	61	63	79384	88000	10.85	59462	58000	-2.46	411	220	-46.41	48331	45000	-6.89	7803	7900	1.24	28706	25000	-12.91
Y936660	TLG-ZJ419-113	86	88	78326	90000	14.90	37807	39000	3.15	205	140	-31.79	44694	47000	5.16	13946	16000	14.73	26234	29000	10.54
Y936663	TLG-ZJ419-148	154	156	79384	85000	7.07	30875	28000	-9.31	68	41	-40.08	47702	50000	4.82	18096	22000	21.57	22917	21000	-8.36
Y936652	TLG-ZJ419-151	260	262	70916	77000	8.58	12221	14000	14.55	34	4	-89.18	8883	10000	12.58	23575	23000	-2.44	5910	6500	9.98
Y936656	TLG-ZJ419-156	69	71	79913	87000	8.87	24871	31000	24.64	68	44	-35.69	36720	40000	8.93	10542	10000	-5.15	13207	16000	21.14
Y936651	TLG-ZJ419-157	199	201	77267	88000	13.89	25372	28000	10.36	34	19	-44.46	37770	40000	5.91	21915	22000	0.39	12906	14000	8.48
Y936667	TLG-ZJ419-163	63	65	73563	78000	6.03	62607	65000	3.82	342	220	-35.69	100719	99000	-1.71	11539	9900	-14.20	33531	33000	-1.58
Y936678	TLG-ZJ419-163	171	173	71446	63000	-11.82	17010	15000	-11.82	34	28	-18.15	18815	16000	-14.96	24654	25000	1.40	8383	6600	-21.27
Y936664	TLG-ZJ419-166	85	87	69329	90000	29.82	35735	41000	14.73	137	120	-12.31	56305	55000	-2.32	15689	18000	14.73	17489	20000	14.36
Y936665	TLG-ZJ419-169	86	88	82559	90000	9.01	39594	43000	8.60	137	73	-46.65	50989	54000	5.91	12701	14000	10.23	24485	25000	2.10
All Data																					
Maximum						29.8			24.6			49.1			33.7			21.6			34.9
Minimum						-11.8			-11.8			-89.2			-15			-14.2			-21.3
Mean						9.81			4.4			-28.2			3.88			5.12			4.44
Standard Deviation						7.87			8.17			31.8			8.25			7.92			10.9
10 Percentile						3.04			-7.21			-60.6			-3.12			-3.99			-8.76
25 Percentile						6.29			1.25			-46.4			1.24			0.6			-0.71
Median						9.11			3.14			-33.7			4.28			5.6			4.22
75 Percentile						12.8			9.66			-13			6.19			9.87			10.4
90 Percentile						15.1			14.6			14.3			9.64			14.9			14.4
Interquartile Range (IQR) [1]						6.52			8.41			33.4			4.95			9.28			11.1
Variance						62			66.8			1010			68.1			62.7			118
Skewness						0.2			0.16			0.23			1.03			-0.078			0.18
Coefficient of Variation (CoV) [2]						0.8			1.86			-1.13			2.13			1.55			2.45
Count						30			30			30			30			30			30

[3] Difference (%) = (ICP - Whole Rock) * 100 / Whole Rock
* Element calculated from Whole Rock XRF analysis

Al (Whole Rock) = (Al_2O_3*2*10000*26.98)/(2*26.98+3*16)
Ca (Whole Rock) = (CaO*10000*40.08)/(40.08+16)
Cr (Whole Rock) = (Cr_2O_3*2*10000*52.00)/(2*52.00+3*16)

Fe (Whole Rock) = (Fe_2O_3*2*10000*55.85)/(2*55.85+3*16)
K (Whole Rock) = (K_2O*2*10000*39.09)/(39.09*2+16)
Mg (Whole Rock) = (MgO*10000*24.31)/(24.31+16)

Project: **Troilus Gold - J4 Zone**
Client: Troilus Gold Corp
Data: **QA/QC Data - Comparison on ICP Metals and Whole Rock Analyses**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From	Interval To	Whole Rock Mn * (ppm)	ICP Mn (ppm)	Difference (%) [3]	Whole Rock Na * (ppm)	ICP Na (ppm)	Difference (%) [3]	Whole Rock P * (ppm)	ICP P (ppm)	Difference (%) [3]	Whole Rock Ti * (ppm)	ICP Ti (ppm)	Difference (%) [3]	Whole Rock V * (ppm)	ICP V (ppm)	Difference (%) [3]
Y936675	TLG-ZJ21-227	49	50	1394	1600	14.78	16172	18000	11.30	480	540	12.50	3896	4000	2.68	84	150	78.52
Y936677	TLG-ZJ21-232	103	104	1007	1000	-0.67	27078	30000	10.79	524	590	12.67	3836	4300	12.10	84	160	90.42
Y936661	TLG-ZJ21-236	96	97	387	510	31.71	30045	33000	9.84	873	910	4.27	3296	3600	9.21	56	95	69.60
Y936674	TLG-ZJ21-237	37	38	1007	1100	9.26	23294	25000	7.32	524	550	5.03	2937	3200	8.96	28	83	196.35
Y936666	TLG-ZJ21-240	195	196	542	520	-4.08	29748	32000	7.57	1266	1300	2.73	5274	4600	-12.78	84	170	102.32
Y936670	TLG-ZJ21-241	95	96	1394	1000	-28.27	24333	24000	-1.37	436	480	10.00	1618	1600	-1.12	14	30	114.23
Y936673	TLG-ZJ21-242	43	44	1936	2000	3.30	25965	27000	3.99	480	550	14.58	3117	3300	5.89	56	120	114.23
Y936672	TLG-ZJ21-242	84	85	465	440	-5.31	23072	24000	4.02	524	530	1.21	3416	2000	-41.46	84	94	11.87
Y936654	TLG-ZJ21-249	69	70	155	140	-9.61	25000	27000	8.00	698	700	0.26	3476	2700	-22.33	84	92	9.49
Y936676	TLG-ZJ21-285	128	129	1394	1400	0.43	18027	17000	-5.70	785	720	-8.34	5933	5900	-0.56	112	210	87.45
Y936653	TLG-ZJ418-051	125	126	310	370	19.44	42211	43000	1.87	22	25	14.58	180	200	11.23	14	2	-85.72
Y936657	TLG-ZJ418-052	111	112	542	600	10.68	29303	30000	2.38	611	710	16.22	3536	4000	13.12	56	120	114.23
Y936655	TLG-ZJ418-056	90	91	387	500	29.12	41618	42000	0.92	567	620	9.29	3656	3900	6.68	56	120	114.23
Y936658	TLG-ZJ418-060	112	113	232	280	20.51	32196	33000	2.50	567	580	2.24	3057	3400	11.23	56	94	67.81
Y936659	TLG-ZJ418-069	24	25	387	450	16.21	17804	17000	-4.52	567	650	14.58	3476	3900	12.19	56	100	78.52
Y936671	TLG-ZJ418-071	190	191	155	200	29.12	32419	33000	1.79	611	670	9.67	3416	3700	8.31	28	90	221.34
Y936679	TLG-ZJ418-077	114	115	465	560	20.51	22330	24000	7.48	611	610	-0.15	3956	4500	13.76	56	190	239.19
Y936669	TLG-ZJ419-091	158	160	929	990	6.53	23072	27000	17.03	916	1100	20.03	2697	2600	-3.60	56	120	114.23
Y936680	TLG-ZJ419-094	7.1	8	852	1000	17.38	28487	26000	-8.73	393	390	-0.70	3117	3700	18.72	84	170	102.32
Y936662	TLG-ZJ419-099	75	76	774	860	11.05	34793	37000	6.34	611	700	14.58	3656	4100	12.15	56	120	114.23
Y936668	TLG-ZJ419-111	61	63	1007	1000	-0.67	27894	29000	3.97	393	380	-3.24	3296	3200	-2.92	84	130	54.72
Y936660	TLG-ZJ419-113	86	88	465	530	14.06	27449	29000	5.65	480	530	10.41	3236	3700	14.32	56	120	114.23
Y936663	TLG-ZJ419-148	154	156	310	300	-3.16	26558	27000	1.66	785	780	-0.70	3476	3300	-5.07	56	95	69.60
Y936652	TLG-ZJ419-151	260	262	39	120	209.89	28116	30000	6.70	218	240	10.00	959	920	-4.06	14	13	-7.17
Y936656	TLG-ZJ419-156	69	71	232	350	50.64	35683	37000	3.69	480	620	29.16	2757	3400	23.33	56	90	60.67
Y936651	TLG-ZJ419-157	199	201	542	500	-7.77	28932	32000	10.60	785	930	18.40	2697	3200	18.65	56	82	46.39
Y936667	TLG-ZJ419-163	63	65	1162	1300	11.91	22701	22000	-3.09	393	390	-0.70	3776	4000	5.94	84	160	90.42
Y936678	TLG-ZJ419-163	171	173	232	250	7.60	26632	26000	-2.37	262	200	-23.61	1378	1000	-27.46	14	26	85.66
Y936664	TLG-ZJ419-166	85	87	620	710	14.60	21217	30000	41.40	436	610	39.79	2457	3200	30.23	28	100	257.04
Y936665	TLG-ZJ419-169	86	88	1007	1100	9.26	24110	24000	-0.46	567	620	9.29	3716	3900	4.96	56	110	96.37
All Data																		
Maximum						210			41.4			39.8			30.2			257
Minimum						-28.3			-8.73			-23.6			-41.5			-85.7
Mean						16.6			5.02			8.13			4.08			94.1
Standard Deviation						39.4			8.87			11.6			15			69.8
10 Percentile						-5.56			-3.23			-0.95			-13.7			11.6
25 Percentile						-0.4			1.1			0.5			-2.47			68.3
Median						10.9			3.98			9.48			7.49			90.4
75 Percentile						18.9			7.55			14.6			12.2			114
90 Percentile						29.4			10.8			18.6			18.7			199
Interquartile Range (IQR) [1]						19.3			6.44			14.1			14.7			46
Variance						1556			78.6			134			224			4869
Skewness						4.27			2.35			0.089			-1.26			0.25
Coefficient of Variation (CoV) [2]						2.37			1.77			1.42			3.67			0.74
Count						30			30			30			30			30

[3] Difference (%) = (ICP - Whole Rock) * 100 / Whole Rock
* Element calculated from Whole Rock XRF analysis

Mn (Whole Rock) = (MnO*10000*54.94)/(54.94+16)
Na (Whole Rock) = (Na_2O*2*10000*22.99)/(22.99*2+16)
P (Whole Rock) = (P_2O5*2*10000*30.97)/(2*30.97+5*16)

Ti (Whole Rock) = (TiO_2*10000*47.867)/(47.867+2*16)
V (Whole Rock) = (V_2O_5*10000*50.9415)/(50.9415*2+5*16)

APPENDIX B. ML-ARD Analyses for the 30 Selected Samples from the 87 Ore Zone

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **Notes for Data and Calculations**

All Data

[1] Interquartile Range (IQR) = 75th percentile minus 25th percentile
[2] Coefficient of Variation (CoV) = standard deviation divided by mean

Data shown in blue represents calculated data.
If data was reported as <detection limit half the detection limit is shown in italics and was used in subsequent calculations.
If data was reported as > detection limit the detection limit is shown in bold and was used in subsequent calculations.

ABA Calculations

% S (Sulphide) Calculated = % S (Total) - % S (Sulphate) Carb Leach
%S($BaSO_4$) = Ba (ppm) * 0.0001 * 32.06 / 137.37
Ba (ppm) data by ICP was used for calculation
% S (del actual) = %S(Total) Leco - %S(Sulphide) Leco - %S(Sulphate) Carb Leach - %S($BaSO_4$)
If %S(Sulphide) Leco is unavailable, % S (del actual) = 0
% S (del) = % S (del actual) unless <0, then 0
TAP = % S (Total) * 31.25
SAP = % S (Sulphide + del) * 31.25

Unavailable NP = 10
Available NP = NP - Unavailable NP
Total CaNP = % C * 10 * 100.09 / 12.01
Inorganic CaNP = % CO_2 * 10 * 100.09 / 44.01 or or Inorganic CaNP = % CO_3 * 10 * 100.09 / 60.01
(Ca) CaNP = (Ca(ppm) * 100.09 / 40.08) / 1000
(Ca+Mg) CaNP = ((Ca(ppm) * 100.09 / 40.08) + (Mg(ppm) * 100.09 / 24.31)) / 1000

TNNP = NP - TAP
Adjusted TNNP = (NP - Unavailable NP) - TAP
SNNP = NP - SAP
Adjusted SNNP = (NP - Unavailable NP) - SAP
Unavailable NP = 10
TNPR = NP / TAP
Note: If % S(Total) <0.01 then TNPR = 200
Note: If % S(Total) > 0.01 and NP <= 0 then TNPR = 0.001
Adjusted TNPR = (NP - Unavailable NP) / TAP
Note: If % S(Total) <0.01 then Adjusted TNPR = 200
Note: If % S(Total) > 0.01 and (NP - Unavailable NP) <= 0 then Adjusted TNPR = 0.001
SNPR = NP / SAP
Note: If % S(Sulphide + del) <0.01 then SNPR = 200
Note: If % S(Sulphide + del) > 0.01 and NP <= 0 then SNPR = 0.001
Adjusted SNPR = (NP - Unavailable NP) / SAP
Note: If % S(Sulphide + del) <0.01 then Adjusted SNPR = 200
Note: If % S(Sulphide + del) > 0.01 and (NP - Unavailable NP) <= 0 then Adjusted SNPR = 0.001

Solid-Phase Elements

Crustal Abundance Data: Curated data provided by Mathematica's ElementData function from Wolfram Research, Inc.:
https://periodictable.com/Properties/A/CrustAbundance.al.html

$\boxed{2}$ NOTE: if data is boxed, then data is 3 times the maximum crustal abundance.

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **Sample Information**
Comments: Samples collected by Troilus personnel.

Sample		Interval							No échantillon BD Troilus	Certificat d'analyse BD Troilus
Id.	Drillhole	From (m)	To (m)	Interval (m)	Zone	Lithology	Description	Weight		
A00488529	87-21-400	336	337	1.00	Z87	V1	Felsic volcanics including rhyolite	0.93	C550003	SD21131870
A00488521	87-21-401	180	181	1.00	Z87	V2	Intermediate volcanics including andesite	0.99	C550425	SD21138290
A00488525	87-21-403	54	55	1.00	Z87	V3	Mafic volcanics including basalt	1.01	C550689	SD21130587
A00488524	87-21-404	21	22	1.00	Z87	V3	Mafic volcanics including basalt	0.84	C551104	SD21145334
A00488503	TLG-GT20-Z87-05	24	25	1.00	Z87	I2J	Non-brecciated diorite	1.53	B929013	SD21086191
A00488526	TLG-Z8718-002	374	375	1.00	Z87	V3	Mafic volcanics including basalt	0.70	E6049547	18O383818 mod
A00488510	TLG-Z8718-004	245	246	1.00	Z87	I2J;BR	Brecciated diorite	0.93	E6124953	18O355788 mod
A00488523	TLG-Z8718-007	327	328	1.00	Z87	V2	Intermediate volcanics including andesite	0.89	E6121544	18O323056 mod
A00488522	TLG-Z8718-007	364	365	1.00	Z87	V2	Intermediate volcanics including andesite	0.79	E6121584	18O323056 mod
A00488520	TLG-Z8718-010	370	371	1.00	Z87	T (tuff)	Various tuffs	0.83	E5955805	18O336166 mod
A00488515	TLG-Z8718-011	143	144	1.00	Z87	I1	Felsic intrusive including granite	1.03	E6050894	18O328764 mod
A00488519	TLG-Z8718-011	151	152	1.00	Z87	T (tuff)	Various tuffs	0.80	E6050904	18O328764 mod
A00488518	TLG-Z8718-014	144.9	145.9	1.00	Z87	T (tuff)	Various tuffs	0.71	E6121968	18O339261 mod
A00488516	TLG-Z8718-037	265	266	1.00	Z87	I1	Felsic intrusive including granite	0.89	E5958005	18O355785 mod
A00488530	TLG-Z8718-039	80	81	1.00	Z87	I3&I4	Mafic intrusive including gabbro	0.76	E6126355	18O349534
A00488505	TLG-Z8718-041	59	60	1.00	Z87	I2J	Non-brecciated diorite	0.83	E6125839	18O351577 mod
A00488502	TLG-Z8718-042	64	65	1.00	Z87	I2J	Non-brecciated diorite	0.82	E6126195	18O352407 mod
A00488504	TLG-Z8718-044W	22	23	1.00	Z87	I2J	Non-brecciated diorite	0.83	E5387426	18O359000 mod
A00488508	TLG-Z8718-044W	198	199	1.00	Z87	I2J;BR	Brecciated diorite	0.74	E5386317	18O359004 mod
A00488501	TLG-Z8718-086	189	190	1.00	Z87	I2J	Non-brecciated diorite	0.82	Y388876	SD18213691 mod
A00488506	TLG-Z8718-088	204	205	1.00	Z87	I2J;BR	Brecciated diorite	0.93	Y388551	SD18213699
A00488507	TLG-Z87N21-256	93	94	1.00	Z87	I2J;BR	Brecciated diorite	0.82	C545935	SD21070596
A00488517	TLG-Z87N21-260	174	175	1.00	Z87	I1	Felsic intrusive including granite	0.79	C547269	SD21072923
A00488513	TLG-Z87N21-261	261	262	1.00	Z87	I1	Felsic intrusive including granite	0.76	C547667	SD21072888
A00488528	TLG-Z87N21-263	341	342	1.00	Z87	V	Undifferentiated volcanics	0.90	C548401	SD21083075
A00488527	TLG-Z87N21-264	162	163	1.00	Z87	QFP	Quartz feldspar porphyry	0.77	C548610	SD21083085
A00488511	TLG-Z87N21-265	115	116	1.00	Z87	I2J;BR	Brecciated diorite	0.83	C548850	SD21093257
A00488509	TLG-Z87S19-132	228	230	2.00	Z87	I2J;BR	Brecciated diorite	1.77	A0119667	SD19090792
A00488514	TLG-Z87S19-132	316	318	2.00	Z87	I1	Felsic intrusive including granite	1.75	A0119716	SD19090792
A00488512	TLG-Z87S19-134	180	182	2.00	Z87	I1	Felsic intrusive including granite	1.55	A0260390	SD19103152

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: Samples collected by Troilus personnel.
The pH of water used for paste and rinse pH testing ranged from 6.0.

Sample		Interval		Paste				Carbonate Leach	HCl Leachable				Without $BaSO_4$	Without $BaSO_4$			Sobek	Available	Total	Inorganic	Inorganic
Id.	Drillhole	From	To	pH	S (Total)	S (Sulphide)	S (Sulphide)	S (Sulphate)	S (Sulphate)	$S(BaSO_4)$	$S(del_{actual})$	S(del)	$S(del_{actual})$	S(del)	TAP	SAP	NP	NP	C	C	CO_2
		(m)	(m)	Unity	(% Leco)	(% Leco)	(% Calc)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(% Leco)	(%)	(%)
Method				OA-ELE07	S-IR08	S-IR07	Calculated	S-GRA06	S-GRA06a	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	OA-VOL08	Calculated	C-IR07	C-GAS05	C-GAS05
MDL				0.1	0.01	0.01	0.01	0.01	0.01								1		0.01	0.05	0.2
A00488529	87-21-400	336	337	9.7	0.36	0.29	0.355	0.005	0.01	0.012	0.053	0.053	0.065	0.065	11.3	10.7	10	0	0.07	0.025	0.1
A00488521	87-21-401	180	181	9.5	1.63	1.44	1.625	0.005	0.01	0.013	0.172	0.172	0.185	0.185	50.9	50.4	13	3	0.02	0.025	0.1
A00488525	87-21-403	54	55	9.9	0.1	0.1	0.095	0.005	0.01	0.008	-0.013	0.000	-0.005	0.000	3.1	3.1	15	5	0.04	0.025	0.1
A00488524	87-21-404	21	22	9.3	1.47	1.43	1.46	0.01	0.01	0.006	0.024	0.024	0.030	0.030	45.9	45.4	16	6	0.06	0.025	0.1
A00488503	TLG-GT20-Z87-05	24	25	9.9	0.12	0.11	0.115	0.005	0.005	0.012	-0.007	0.000	0.005	0.005	3.8	3.4	17	7	0.05	0.05	0.2
A00488526	TLG-Z8718-002	374	375	9.8	0.05	0.04	0.045	0.005	0.01	0.004	0.001	0.001	0.005	0.005	1.6	1.3	17	7	0.05	0.025	0.1
A00488510	TLG-Z8718-004	245	246	10	0.01	0.01	0.005	0.005	0.01	0.011	-0.016	0.000	-0.005	0.000	0.3	0.3	21	11	0.08	0.07	0.2
A00488523	TLG-Z8718-007	327	328	9.6	0.67	0.61	0.665	0.005	0.01	0.007	0.048	0.048	0.055	0.055	20.9	20.6	20	10	0.11	0.09	0.3
A00488522	TLG-Z8718-007	364	365	10	0.17	0.15	0.165	0.005	0.01	0.009	0.006	0.006	0.015	0.015	5.3	4.9	44	34	0.33	0.31	1.1
A00488520	TLG-Z8718-010	370	371	10	0.03	0.03	0.025	0.005	0.01	0.005	-0.010	0.000	-0.005	0.000	0.9	0.9	20	10	0.06	0.025	0.1
A00488515	TLG-Z8718-011	143	144	9.6	0.1	0.09	0.095	0.005	0.01	0.006	-0.001	0.000	0.005	0.005	3.1	2.8	16	6	0.08	0.06	0.2
A00488519	TLG-Z8718-011	151	152	9.4	0.16	0.16	0.15	0.01	0.005	0.026	-0.036	0.000	-0.010	0.000	5.0	5.0	4	-6	0.03	0.025	0.1
A00488518	TLG-Z8718-014	144.9	145.9	8.6	2.68	2.61	2.67	0.01	0.005	0.003	0.057	0.057	0.060	0.060	83.8	83.4	9	-1	0.03	0.025	0.1
A00488516	TLG-Z8718-037	265	266	9.2	0.02	0.02	0.015	0.005	0.01	0.005	-0.010	0.000	-0.005	0.000	0.6	0.6	19	9	0.14	0.12	0.4
A00488530	TLG-Z8718-039	80	81	9.5	0.1	0.1	0.095	0.005	0.02	0.005	-0.010	0.000	-0.005	0.000	3.1	3.1	21	11	0.17	0.15	0.6
A00488505	TLG-Z8718-041	59	60	9.8	0.02	0.02	0.015	0.005	0.01	0.007	-0.012	0.000	-0.005	0.000	0.6	0.6	23	13	0.12	0.12	0.4
A00488502	TLG-Z8718-042	64	65	9.6	0.25	0.21	0.245	0.005	0.005	0.020	0.015	0.015	0.035	0.035	7.8	7.0	19	9	0.1	0.08	0.3
A00488504	TLG-Z8718-044W	22	23	9.8	0.03	0.04	0.025	0.005	0.005	0.002	-0.017	0.000	-0.015	0.000	0.9	1.3	14	4	0.04	0.025	0.1
A00488508	TLG-Z8718-044W	198	199	9.9	0.05	0.06	0.045	0.005	0.005	0.011	-0.026	0.000	-0.015	0.000	1.6	1.9	21	11	0.03	0.025	0.1
A00488501	TLG-Z8718-086	189	190	9.6	0.9	0.85	0.89	0.01	0.005	0.009	0.031	0.031	0.040	0.040	28.1	27.5	21	11	0.11	0.11	0.4
A00488506	TLG-Z8718-088	204	205	9.5	0.86	0.88	0.855	0.005	0.005	0.017	-0.042	0.000	-0.025	0.000	26.9	27.5	16	6	0.04	0.025	0.1
A00488507	TLG-Z87N21-256	93	94	9.8	0.25	0.26	0.245	0.005	0.005	0.007	-0.022	0.000	-0.015	0.000	7.8	8.1	19	9	0.02	0.025	0.1
A00488517	TLG-Z87N21-260	174	175	10.1	0.02	0.02	0.01	0.01	0.02	0.001	-0.011	0.000	-0.010	0.000	0.6	0.6	6	-4	0.03	0.025	0.1
A00488513	TLG-Z87N21-261	261	262	9.4	0.21	0.17	0.205	0.005	0.01	0.010	0.025	0.025	0.035	0.035	6.6	6.1	6	-4	0.02	0.025	0.1
A00488528	TLG-Z87N21-263	341	342	9.6	0.17	0.16	0.16	0.01	0.01	0.013	-0.013	0.000	0.000	0.000	5.3	5.0	14	4	0.04	0.025	0.1
A00488527	TLG-Z87N21-264	162	163	9.6	0.33	0.28	0.325	0.005	0.01	0.009	0.036	0.036	0.045	0.045	10.3	9.9	20	10	0.19	0.16	0.6
A00488511	TLG-Z87N21-265	115	116	10	0.02	0.03	0.015	0.005	0.01	0.004	-0.019	0.000	-0.015	0.000	0.6	0.9	16	6	0.06	0.025	0.1
A00488509	TLG-Z87S19-132	228	230	9.8	0.05	0.05	0.045	0.005	0.01	0.008	-0.013	0.000	-0.005	0.000	1.6	1.6	17	7	0.06	0.05	0.2
A00488514	TLG-Z87S19-132	316	318	9.8	0.12	0.12	0.115	0.005	0.01	0.003	-0.008	0.000	-0.005	0.000	3.8	3.8	17	7	0.09	0.08	0.3
A00488512	TLG-Z87S19-134	180	182	9.1	2.33	2.15	2.325	0.005	0.01	0.012	0.163	0.163	0.175	0.175	72.8	72.3	14	4	0.03	0.025	0.1
All Data																					
Maximum				10.1	2.68	2.61	2.67	0.01	0.02	0.026	0.17	0.17	0.18	0.18	83.8	83.4	44	34	0.33	0.31	1.1
Minimum				8.6	0.01	0.01	0.005	0.005	0.005	0.00056	-0.042	0	-0.025	0	0.31	0.31	4	-6	0.02	0.025	0.1
Mean				9.65	0.44	0.42	0.44	0.006	0.0092	0.0088	0.012	0.021	0.02	0.025	13.8	13.7	16.8	6.83	0.077	0.062	0.23
Standard Deviation				0.32	0.7	0.66	0.7	0.002	0.0037	0.0054	0.049	0.043	0.05	0.047	21.8	21.7	7.05	7.05	0.065	0.062	0.22
10 Percentile				9.29	0.02	0.02	0.015	0.005	0.005	0.0032	-0.023	0	-0.015	0	0.62	0.62	8.7	-1.3	0.029	0.025	0.1
25 Percentile				9.5	0.05	0.042	0.045	0.005	0.005	0.0052	-0.013	0	-0.005	0	1.56	1.36	14	4	0.032	0.025	0.1
Median				9.65	0.14	0.14	0.13	0.005	0.01	0.0079	-0.009	0	-0.0025	4.3E-18	4.38	4.31	17	7	0.06	0.025	0.1
75 Percentile				9.88	0.35	0.29	0.35	0.005	0.01	0.012	0.025	0.025	0.035	0.035	11	10.5	20	10	0.098	0.08	0.3
90 Percentile				10	1.49	1.43	1.48	0.01	0.01	0.013	0.053	0.053	0.061	0.061	46.4	45.9	21	11	0.14	0.12	0.42
Interquartile Range (IQR) [1]				0.38	0.3	0.24	0.3	0	0.005	0.0068	0.038	0.025	0.04	0.035	9.45	9.15	6	6	0.065	0.055	0.2
Variance				0.1	0.49	0.44	0.49	0.0000041	0.000014	0.000029	0.0024	0.0019	0.0025	0.0022	475	469	49.7	49.7	0.0042	0.0039	0.049
Skewness				-1.3	2.16	2.21	2.16	1.58	1.35	1.24	2.25	2.78	2.34	2.61	2.16	2.17	1.59	1.59	2.36	2.49	2.51
Coefficient of Variation (CoV) [2]				0.033	1.58	1.59	1.6	0.34	0.41	0.62	4.26	2.06	2.46	1.87	1.58	1.58	0.42	1.03	0.85	1	0.96
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

NPR <1.0 or NPR = 1.0
1.0 <NPR <2.0
NPR > 2.0 or NPR =2.0

% NPR <1.0 or NPR = 1.0 of Total
% 1.0 <NPR <2.0 of Total
% NPR > 2.0 or NPR =2.0 of Total

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From	Interval To	Excess C	Total CaNP	Inorganic CaNP	(Ca) CaNP	(Ca+Mg) CaNP	TNNP	Adjusted TNNP	SNNP	Adjusted SNNP	Total CaNP-TAP NNP	(Ca+Mg) CaNP-TAP NNP	TNPR	Adjusted TNPR	SNPR	Adjusted SNPR	Total CaNP/TAP NPR	(Ca+Mg) CaNP/TAP NPR	Fizz Rating	Comparison of Fizz Rating & NP
		(m)	(m)	(%)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)							Unity	
Method				Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	OA-VOL08	
MDL																						
A00488529	87-21-400	336	337	0.045	5.8	2.3	30.0	55.5	-1.3	-11.3	-0.7	-10.7	-5.4	44.2	0.889	0.001	0.933	0.001	0.519	4.93	1	Agree
A00488521	87-21-401	180	181	0	1.7	2.3	32.5	61.3	-37.9	-47.9	-37.4	-47.4	-49.3	10.3	0.255	0.0589	0.258	0.0596	0.0327	1.2	1	Agree
A00488525	87-21-403	54	55	0.015	3.3	2.3	62.4	103.2	11.9	1.9	11.9	1.9	0.2	100.1	4.8	1.6	4.8	1.6	1.07	33	1	Agree
A00488524	87-21-404	21	22	0.035	5.0	2.3	35.0	96.7	-29.9	-39.9	-29.4	-39.4	-40.9	50.8	0.348	0.131	0.352	0.132	0.109	2.11	1	Agree
A00488503	TLG-GT20-Z87-05	24	25	0	4.2	4.5	64.9	110.2	13.3	3.3	13.6	3.6	0.4	106.5	4.53	1.87	4.95	2.04	1.11	29.4	1	Agree
A00488526	TLG-Z8718-002	374	375	0.025	4.2	2.3	104.9	183.1	15.4	5.4	15.7	5.7	2.6	181.5	10.9	4.48	13.2	5.43	2.67	117	1	Agree
A00488510	TLG-Z8718-004	245	246	0.01	6.7	4.5	94.9	169.0	20.7	10.7	20.7	10.7	6.4	168.7	67.2	35.2	67.2	35.2	21.3	541	1	Agree
A00488523	TLG-Z8718-007	327	328	0.02	9.2	6.8	57.4	98.6	-0.9	-10.9	-0.6	-10.6	-11.8	77.7	0.955	0.478	0.973	0.486	0.438	4.71	1	Agree
A00488522	TLG-Z8718-007	364	365	0.02	27.5	25.0	87.4	161.5	38.7	28.7	39.1	29.1	22.2	156.2	8.28	6.4	9.02	6.97	5.18	30.4	2	Disagree
A00488520	TLG-Z8718-010	370	371	0.035	5.0	2.3	84.9	154.9	19.1	9.1	19.1	9.1	4.1	154.0	21.3	10.7	21.3	10.7	5.33	165	1	Agree
A00488515	TLG-Z8718-011	143	144	0.02	6.7	4.5	92.4	124.5	12.9	2.9	13.2	3.2	3.5	121.4	5.12	1.92	5.69	2.13	2.13	39.8	1	Agree
A00488519	TLG-Z8718-011	151	152	0.005	2.5	2.3	5.5	18.7	-1.0	-11.0	-1.0	-11.0	-2.5	13.7	0.8	0.001	0.8	0.001	0.5	3.73	1	Agree
A00488518	TLG-Z8718-014	144.9	145.9	0.005	2.5	2.3	12.7	33.7	-74.8	-84.8	-74.4	-84.4	-81.2	-50.0	0.107	0.001	0.108	0.001	0.0299	0.403	1	Agree
A00488516	TLG-Z8718-037	265	266	0.02	11.7	9.1	84.9	117.8	18.4	8.4	18.4	8.4	11.0	117.2	30.4	14.4	30.4	14.4	18.7	189	1	Agree
A00488530	TLG-Z8718-039	80	81	0.02	14.2	13.6	99.9	141.1	17.9	7.9	17.9	7.9	11.0	137.9	6.72	3.52	6.72	3.52	4.53	45.1	1	Agree
A00488505	TLG-Z8718-041	59	60	0	10.0	9.1	21.0	49.8	22.4	12.4	22.4	12.4	9.4	49.2	36.8	20.8	36.8	20.8	16	79.7	1	Agree
A00488502	TLG-Z8718-042	64	65	0.02	8.3	6.8	77.4	110.4	11.2	1.2	12.0	2.0	0.5	102.5	2.43	1.15	2.7	1.28	1.07	14.1	1	Agree
A00488504	TLG-Z8718-044W	22	23	0.015	3.3	2.3	45.0	94.4	13.1	3.1	12.8	2.8	2.4	93.4	14.9	4.27	11.2	3.2	3.56	101	1	Agree
A00488508	TLG-Z8718-044W	198	199	0.005	2.5	2.3	127.4	395.0	19.4	9.4	19.1	9.1	0.9	393.4	13.4	7.04	11.2	5.87	1.6	253	1	Agree
A00488501	TLG-Z8718-086	189	190	0	9.2	9.1	62.4	116.0	-7.1	-17.1	-6.5	-16.5	-19.0	87.8	0.747	0.391	0.763	0.4	0.326	4.12	1	Agree
A00488506	TLG-Z8718-088	204	205	0.015	3.3	2.3	57.4	78.8	-10.9	-20.9	-11.5	-21.5	-23.5	52.0	0.595	0.223	0.582	0.218	0.124	2.93	1	Agree
A00488507	TLG-Z87N21-256	93	94	0	1.7	2.3	69.9	197.6	11.2	1.2	10.9	0.9	-6.1	189.7	2.43	1.15	2.34	1.11	0.213	25.3	1	Agree
A00488517	TLG-Z87N21-260	174	175	0.005	2.5	2.3	4.2	4.9	5.4	-4.6	5.4	-4.6	1.9	4.2	9.6	0.001	9.6	0.001	4	7.78	1	Agree
A00488513	TLG-Z87N21-261	261	262	0	1.7	2.3	23.7	44.3	-0.6	-10.6	-0.1	-10.1	-4.9	37.7	0.914	0.001	0.982	0.001	0.254	6.75	1	Agree
A00488528	TLG-Z87N21-263	341	342	0.015	3.3	2.3	82.4	122.8	8.7	-1.3	9.0	-1.0	-2.0	117.4	2.64	0.753	2.8	0.8	0.627	23.1	1	Agree
A00488527	TLG-Z87N21-264	162	163	0.03	15.8	13.6	23.5	35.0	9.7	-0.3	10.1	0.1	5.5	24.7	1.94	0.97	2.02	1.01	1.54	3.39	1	Agree
A00488511	TLG-Z87N21-265	115	116	0.035	5.0	2.3	62.4	111.8	15.4	5.4	15.1	5.1	4.4	111.2	25.6	9.6	17.1	6.4	8	179	1	Agree
A00488509	TLG-Z87S19-132	228	230	0.01	5.0	4.5	92.4	131.5	15.4	5.4	15.4	5.4	3.4	129.9	10.9	4.48	10.9	4.48	3.2	84.2	1	Agree
A00488514	TLG-Z87S19-132	316	318	0.01	7.5	6.8	14.2	37.3	13.3	3.3	13.3	3.3	3.8	33.5	4.53	1.87	4.53	1.87	2	9.94	1	Agree
A00488512	TLG-Z87S19-134	180	182	0.005	2.5	2.3	54.9	100.2	-58.8	-68.8	-58.3	-68.3	-70.3	27.4	0.192	0.0549	0.194	0.0553	0.0343	1.38	1	Agree
All Data																						
Maximum				0.045	27.5	25	127	395	38.7	28.7	39.1	29.1	22.2	393	67.2	35.2	67.2	35.2	21.3	541		
Minimum				0	1.67	2.27	4.25	4.86	-74.8	-84.8	-74.4	-84.4	-81.2	-50	0.11	0.001	0.11	0.001	0.03	0.4		
Mean				0.015	6.39	5.23	58.9	109	3	-7	3.16	-6.84	-7.44	94.8	9.67	4.45	9.35	4.34	3.54	66.7		
Standard Deviation				0.012	5.43	5.04	33	73.2	24.3	24.3	24.2	24.2	23.6	81.3	14.5	7.59	14.2	7.53	5.53	112		
10 Percentile				0	2.42	2.27	14.1	34.9	-30.7	-40.7	-30.2	-40.2	-41.8	13.3	0.34	0.001	0.34	0.001	0.1	2.04		
25 Percentile				0.005	2.71	2.27	30.6	56.9	-0.98	-11	-0.68	-10.7	-5.96	39.4	0.9	0.15	0.94	0.15	0.35	4.27		
Median				0.015	5	2.27	62.4	107	11.5	1.53	11.9	1.92	0.73	96.7	4.53	1.38	4.66	1.44	1.33	24.2		
75 Percentile				0.02	8.13	6.82	84.9	130	15.4	5.44	15.6	5.64	3.98	128	10.9	4.48	11.1	5.19	3.89	83.1		
90 Percentile				0.035	11.9	9.55	95.4	170	19.6	9.56	19.3	9.28	9.54	170	26.1	11.1	22.2	11.1	8.8	180		
Interquartile Range (IQR) [1]				0.015	5.42	4.55	54.3	72.8	16.4	16.4	16.3	16.3	9.95	88.4	10	4.33	10.2	5.04	3.54	78.8		
Variance				0.00016	29.5	25.4	1086	5355	590	590	584	584	556	6616	209	57.6	200	56.7	30.6	12535		
Skewness				0.67	2.36	2.51	-0.021	2.01	-1.88	-1.88	-1.88	-1.88	-1.99	1.56	2.64	2.85	2.83	2.95	2.32	3		
Coefficient of Variation (CoV) [2]				0.85	0.85	0.96	0.56	0.67	8.09	-3.47	7.64	-3.54	-3.17	0.86	1.49	1.71	1.51	1.74	1.56	1.68		
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30		
NPR <1.0 or NPR = 1.0															10	13	10	12	12	1		
1.0 <NPR <2.0															1	6	0	5	5	2		
NPR > 2.0 or NPR =2.0															19	11	20	13	13	27		
% NPR <1.0 or NPR = 1.0 of Total															33.33	43.33	33.33	40.00	40.00	3.33		
% 1.0 <NPR <2.0 of Total															3.33	20.00	0.00	16.67	16.67	6.67		
% NPR > 2.0 or NPR =2.0 of Total															63.33	36.67	66.67	43.33	43.33	90.00		

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample		Interval		Silver	Aluminum	Arsenic	Barium	Beryllium	Bismuth	Calcium	Cadmium	Cerium	Cobalt	Chromium	Cesium	Copper	Iron	Gallium	Hafnium
Id.	Drillhole	From	To	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Hf
		(m)	(m)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Analysis Completed Date				2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-12-09	2022-11-22	2022-11-22	2022-12-09	2022-11-22	2022-11-22	2022-12-09	2022-12-12
Analysis Completed Time				13:35	13:35	13:35	13:35	13:35	13:35	13:35	13:35	7:56	13:36	13:36	7:56	13:36	13:41	7:56	10:26
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.5	3	0.5	0.01	0.02	0.09	3	0.02	0.001	0.01	0.5	0.01	0.1	3	0.03	0.1
Crustal Abundance: To				0.079	81000	2.1	340	1.9	0.025	50000	0.15	60	30	140	1.9	68	63000	19	3.3
A00488529	87-21-400	336	337	*0.25*	83000	2.5	520	1.1	0.11	12000	0.12	110	7.2	37	4	59	23000	20	3.7
A00488521	87-21-401	180	181	2	85000	6.4	560	0.6	0.52	13000	0.34	24.7	14	100	2	250	60000	21	2.7
A00488525	87-21-403	54	55	*0.25*	97000	1.1	350	1	0.16	25000	0.05	22.6	15	110	3	90	43000	20	3.2
A00488524	87-21-404	21	22	1.5	74000	4.3	240	1.2	2.7	14000	0.19	28.9	32	140	5	980	55000	20	2.5
A00488503	TLG-GT20-Z87-05	24	25	*0.25*	92000	1	520	0.8	0.19	26000	0.1	25.3	15	48	2	98	38000	21	1.7
A00488526	TLG-Z8718-002	374	375	*0.25*	90000	4.2	160	0.76	0.11	42000	0.17	33.3	45	77	0.81	22	36000	22	2.6
A00488510	TLG-Z8718-004	245	246	*0.25*	87000	4.4	450	0.72	*0.045*	38000	0.04	36.9	17	56	1	23	38000	20	2.5
A00488523	TLG-Z8718-007	327	328	*0.25*	93000	1.6	300	0.72	0.24	23000	3	45.9	7.7	110	1	160	31000	21	3
A00488522	TLG-Z8718-007	364	365	*0.25*	89000	2.9	380	0.68	0.21	35000	0.18	22.1	15	87	2	51	42000	21	2.4
A00488520	TLG-Z8718-010	370	371	*0.25*	96000	7	220	0.81	0.25	34000	0.05	29.8	20	89	2	22	33000	22	2.6
A00488515	TLG-Z8718-011	143	144	*0.25*	88000	4.2	240	1.2	0.2	37000	0.07	48	6.4	71	1	27	18000	20	4
A00488519	TLG-Z8718-011	151	152	*0.25*	99000	1.7	1100	1.3	0.15	2200	0.1	29.9	1.5	40	2	4.1	9000	21	6.9
A00488518	TLG-Z8718-014	144.9	145.9	*0.25*	99000	69	110	0.68	0.84	5100	0.83	130	34	140	2	200	53000	24	3.7
A00488516	TLG-Z8718-037	265	266	*0.25*	80000	4.2	200	1.1	0.09	34000	0.08	54.5	4.1	50	1	17	17000	20	3.2
A00488530	TLG-Z8718-039	80	81	*0.25*	91000	2.5	230	1.2	0.26	40000	0.14	31.2	5	52	1	420	17000	19	2.3
A00488505	TLG-Z8718-041	59	60	*0.25*	16000	1.5	280	0.13	0.12	8400	0.03	73.5	8.4	77	1	55	25000	8	*0.05*
A00488502	TLG-Z8718-042	64	65	*0.25*	97000	2.3	860	1.2	0.47	31000	0.16	42	6.2	50	2	91	29000	20	3.1
A00488504	TLG-Z8718-044W	22	23	*0.25*	21000	1.8	100	0.29	*0.045*	18000	0.06	35.2	12	77	0.98	12	39000	9	0.4
A00488508	TLG-Z8718-044W	198	199	*0.25*	76000	1.2	490	1.6	0.34	51000	0.08	82.4	41	270	12	59	57000	18	3.3
A00488501	TLG-Z8718-086	189	190	1.1	88000	2.9	400	0.88	1	25000	0.38	36.5	62	110	2	700	73000	22	7.3
A00488506	TLG-Z8718-088	204	205	*0.25*	100000	7.9	710	0.96	0.3	23000	0.13	66.5	13	35	3	110	40000	22	5.7
A00488507	TLG-Z87N21-256	93	94	*0.25*	87000	1.6	320	0.71	0.22	28000	0.17	25.5	36	85	5	650	85000	22	3.9
A00488517	TLG-Z87N21-260	174	175	*0.25*	87000	*0.25*	24	1.5	*0.045*	1700	*0.01*	8.79	0.29	40	15	11	2900	28	2.5
A00488513	TLG-Z87N21-261	261	262	*0.25*	84000	2.7	410	2.2	0.26	9500	0.14	123	2.6	67	4	18	18000	29	3.5
A00488528	TLG-Z87N21-263	341	342	*0.25*	93000	0.7	540	0.93	0.31	33000	0.18	31.8	18	82	5	88	57000	21	2.9
A00488527	TLG-Z87N21-264	162	163	0.6	71000	27	370	1.1	*0.045*	9400	0.36	163	2.1	37	3	11	16000	21	3.7
A00488511	TLG-Z87N21-265	115	116	*0.25*	94000	0.8	170	0.78	*0.045*	25000	0.05	41.9	17	61	3	9.2	39000	22	3.2
A00488509	TLG-Z87S19-132	228	230	*0.25*	90000	2.1	330	0.76	0.16	37000	0.13	33.5	15	83	1	460	39000	21	3.6
A00488514	TLG-Z87S19-132	316	318	*0.25*	15000	13	140	0.18	0.14	5700	0.79	67.8	15	72	2	160	22000	8	1.2
A00488512	TLG-Z87S19-134	180	182	1.4	97000	1.9	530	0.95	1.7	22000	0.38	30	33	75	3	1500	68000	22	3.3
All Data																			
Maximum				2	100000	69	1100	2.2	2.7	51000	3	163	62	270	15	1500	85000	29	7.3
Minimum				0.25	15000	0.25	24	0.13	0.045	1700	0.01	8.79	0.29	35	0.81	4.1	2900	8	0.05
Mean				0.43	81967	6.16	375	0.93	0.38	23600	0.28	51.1	17.3	80.9	3.06	212	37430	20.2	3.16
Standard Deviation				0.45	23096	12.9	232	0.42	0.56	13197	0.55	36.7	14.8	45.6	3.13	341	19600	4.59	1.52
10 Percentile				0.25	66000	0.98	137	0.57	0.045	5640	0.049	24.5	2.55	39.7	1	11	16900	17.1	1.65
25 Percentile				0.25	83250	1.6	222	0.72	0.11	12250	0.073	29.8	6.6	50.5	1	22	22250	20	2.5
Median				0.25	88500	2.5	340	0.9	0.2	25000	0.14	35.8	15	76	2	73.5	38000	21	3.15
75 Percentile				0.25	93750	4.28	512	1.18	0.31	34000	0.19	63.5	19.5	88.5	3	190	50500	22	3.68
90 Percentile				1.13	97200	8.41	575	1.32	0.86	38200	0.42	111	36.5	113	5	655	60800	22.2	4.17
Interquartile Range (IQR) [1]				0	10500	2.68	290	0.46	0.2	21750	0.12	33.7	12.9	38	2	168	28250	2	1.18
Variance				0.2	5.33E+08	167	54011	0.17	0.31	1.74E+08	0.3	1344	219	2082	9.82	116523	3.84E+08	21	2.31
Skewness				2.53	-2.34	4.39	1.24	0.67	3.17	-0.021	4.49	1.7	1.33	2.61	2.82	2.52	0.5	-1.43	0.82
Coefficient of Variation (CoV) [2]				1.05	0.28	2.1	0.62	0.44	1.48	0.56	1.94	0.72	0.85	0.56	1.02	1.61	0.52	0.23	0.48
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample		Interval		Mercury	Indium	Potassium	Lanthanum	Lithium	Lutetium	Magnesium	Manganese	Molybdenum	Sodium	Niobium	Nickel	Phosphorus	Lead	Rubidium	Antimony
Id.	Drillhole	From	To	Hg	In	K	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Sb
		(m)	(m)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Analysis Completed Date				2022-11-07	2022-12-09	2022-11-22	2022-12-09	2022-11-22	2022-12-09	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-12-12	2022-11-22	2022-11-22	2022-11-22	2022-12-09	2022-11-22
Analysis Completed Time				11:14	7:56	13:36	7:56	13:36	7:56	13:36	13:36	13:37	13:37	10:26	13:37	13:37	13:37	7:56	13:37
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.05	0.01	3	0.001	2	0.001	3	0.1	0.1	3	0.1	0.1	3	0.05	0.004	0.8
Crustal Abundance: To				0.067	0.16	15000	34	17	0.57	29000	1100	1.1	23000	17	90	990	10	60	0.2
A00488529	87-21-400	336	337	*0.025*	0.02	22000	47.4	35	0.27	6200	270	6.4	19000	11	6.4	290	22	75.6	*0.4*
A00488521	87-21-401	180	181	*0.025*	0.09	31000	11	26	0.21	7000	620	4	6600	9.2	42	510	18	119	*0.4*
A00488525	87-21-403	54	55	*0.025*	0.02	22000	9.02	41	0.15	9900	210	4.6	24000	11	43	590	12	132	*0.4*
A00488524	87-21-404	21	22	*0.025*	0.04	11000	12	32	0.16	15000	280	9	31000	9.5	82	290	29	59.6	0.9
A00488503	TLG-GT20-Z87-05	24	25	*0.025*	0.09	15000	12.5	20	0.1	11000	270	4.6	30000	9.5	37	490	2	59.4	*0.4*
A00488526	TLG-Z8718-002	374	375	*0.025*	0.04	7300	15.9	9.3	0.15	19000	600	6.6	30000	7.3	410	500	10	33.8	*0.4*
A00488510	TLG-Z8718-004	245	246	*0.025*	0.08	13000	17.4	13	0.14	18000	390	3.5	27000	14	52	580	4	42.5	*0.4*
A00488523	TLG-Z8718-007	327	328	*0.025*	0.14	21000	26.6	14	0.13	10000	620	4.9	36000	12	31	590	6	61.1	*0.4*
A00488522	TLG-Z8718-007	364	365	*0.025*	0.03	19000	11.5	18	0.13	18000	910	6	34000	7.7	36	540	7	71.3	*0.4*
A00488520	TLG-Z8718-010	370	371	*0.025*	0.04	16000	14.2	14	0.14	17000	350	6.2	26000	10	61	620	8	70.6	*0.4*
A00488515	TLG-Z8718-011	143	144	*0.025*	0.02	4300	15.9	7.5	0.18	7800	290	9.6	34000	17	12	140	8	15.2	*0.4*
A00488519	TLG-Z8718-011	151	152	*0.025*	*0.005*	45000	11.2	20	0.14	3200	65	4.8	1600	14	2.6	56	15	120	*0.4*
A00488518	TLG-Z8718-014	144.9	145.9	*0.025*	*0.005*	43000	78.4	22	0.15	5100	99	9.2	4100	15	29	690	14	143	1.6
A00488516	TLG-Z8718-037	265	266	*0.025*	0.02	5500	16.4	16	0.22	8000	160	7.1	32000	15	8.3	45	9	14.2	*0.4*
A00488530	TLG-Z8718-039	80	81	*0.025*	0.06	5900	16.1	14	0.11	10000	250	4.9	31000	9.6	12	72	4	17.2	*0.4*
A00488505	TLG-Z8718-041	59	60	*0.025*	0.02	9100	32.1	9.1	0.12	7000	520	6.4	960	4.2	13	520	3	34.6	*0.4*
A00488502	TLG-Z8718-042	64	65	*0.025*	0.07	14000	21.1	10	0.13	8000	340	5.4	33000	32	14	540	4	40.3	*0.4*
A00488504	TLG-Z8718-044W	22	23	*0.025*	0.04	2700	15.8	11	0.12	12000	340	4.3	4400	6	33	530	2	11	*0.4*
A00488508	TLG-Z8718-044W	198	199	*0.025*	0.07	14000	35	36	0.13	65000	950	1.6	23000	11	320	1000	7	63.5	*0.4*
A00488501	TLG-Z8718-086	189	190	*0.025*	0.08	13000	19.4	31	0.15	13000	520	5.6	27000	52	84	630	9	57	*0.4*
A00488506	TLG-Z8718-088	204	205	*0.025*	0.05	24000	28.7	36	0.18	5200	320	3.9	20000	40	23	970	16	76.4	0.8
A00488507	TLG-Z87N21-256	93	94	*0.025*	0.08	7800	10	26	0.18	31000	310	9.2	36000	16	91	930	9	48.5	*0.4*
A00488517	TLG-Z87N21-260	174	175	*0.025*	*0.005*	71000	3.96	2.1	0.058	150	240	6.8	20000	14	2.3	32	72	451	*0.4*
A00488513	TLG-Z87N21-261	261	262	*0.025*	0.02	39000	61.3	49	0.26	5000	470	10	17000	15	5.3	100	34	177	*0.4*
A00488528	TLG-Z87N21-263	341	342	*0.025*	0.11	26000	14.6	63	0.18	9800	1500	7.8	14000	9.5	44	610	18	94.8	*0.4*
A00488527	TLG-Z87N21-264	162	163	*0.025*	0.04	20000	77.8	40	0.3	2800	1100	6.5	26000	16	4.9	170	83	64.3	1.3
A00488511	TLG-Z87N21-265	115	116	*0.025*	0.04	15000	24.5	33	0.12	12000	180	3.9	31000	13	36	740	4	81.1	*0.4*
A00488509	TLG-Z87S19-132	228	230	*0.025*	0.06	8500	15.8	15	0.12	9500	750	4.9	28000	14	38	710	3	34.7	*0.4*
A00488514	TLG-Z87S19-132	316	318	*0.025*	0.02	7500	29	11	0.2	5600	320	4.9	930	2.8	19	140	71	42.3	*0.4*
A00488512	TLG-Z87S19-134	180	182	*0.025*	0.04	31000	14.2	33	0.16	11000	570	3.7	17000	12	51	660	22	122	*0.4*
All Data																			
Maximum				0.025	0.14	71000	78.4	63	0.3	65000	1500	10	36000	52	410	1000	83	451	1.6
Minimum				0.025	0.005	2700	3.96	2.1	0.058	150	65	1.6	930	2.8	2.3	32	2	11	0.4
Mean				0.025	0.048	19453	24	23.6	0.16	12075	460	5.88	22153	14.3	54.8	476	17.5	81.1	0.5
Standard Deviation				1.1E-17	0.033	14856	18.9	14.1	0.052	11702	319	2.05	11288	10.1	88.5	281	21.2	81	0.29
10 Percentile				0.025	0.019	5860	10.9	9.28	0.12	4820	178	3.88	3850	7.17	5.26	70.4	3	17	0.4
25 Percentile				0.025	0.02	8650	12.9	13.2	0.13	6400	270	4.6	17000	9.5	12.2	200	4.5	40.8	0.4
Median				0.025	0.04	15000	16	20	0.15	9850	340	5.5	26000	12	34.5	535	9	62.3	0.4
75 Percentile				0.025	0.07	23500	28.2	33	0.18	12750	592	6.75	31000	15	49.2	628	18	91.4	0.4
90 Percentile				0.025	0.09	39400	48.8	40.1	0.22	18100	914	9.2	34000	18.5	84.7	759	37.7	133	0.81
Interquartile Range (IQR) [1]				0	0.05	14850	15.2	19.8	0.05	6350	322	2.15	14000	5.5	37	428	13.5	50.6	0
Variance				NA	0.0011	2.21E+08	357	198	0.0027	136928405	102029	4.19	1.27E+08	103	7834	79156	450	6556	0.081
Skewness				-1.05	0.88	1.75	1.94	0.85	0.99	3.47	1.58	0.43	-0.76	2.53	3.32	-0.1	2.21	3.5	3.04
Coefficient of Variation (CoV) [2]				4.2E-16	0.69	0.76	0.79	0.6	0.33	0.97	0.69	0.35	0.51	0.71	1.62	0.59	1.21	1	0.57
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample		Interval		Scandium	Selenium	Tin	Strontium	Tantalum	Terbium	Tellurium	Titanium	Thallium	Uranium	Vanadium	Tungsten	Yttrium	Ytterbium	Zinc	Zirconium
Id.	Drillhole	From	To	Sc	Se	Sn	Sr	Ta	Tb	Te	Ti	Tl	U	V	W	Y	Yb	Zn	Zr
		(m)	(m)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Analysis Completed Date				2022-12-09	2022-11-22	2022-11-22	2022-11-22	2022-12-12	2022-12-09	2022-12-12	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-12-09	2022-11-22	2022-11-22
Analysis Completed Time				7:56	13:37	13:37	13:37	10:26	7:56	10:26	13:37	13:37	13:37	13:37	13:38	13:38	7:56	13:38	13:38
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.03	0.7	6	0.02	0.01	0.001	0.1	0.1	0.02	0.002	1	0.04	0.004	0.001	0.7	0.03
Crustal Abundance: To				26	0.05	2.2	360	1.7	0.93	0.001	6600	0.54	1.8	190	1.1	29	2.8	78	130
A00488529	87-21-400	336	337	4	*0.35*	*3*	140	0.74	0.66	0.1	2000	0.64	2.23	18	2.7	17	1.71	44	130
A00488521	87-21-401	180	181	19	*0.35*	*3*	76	0.3	0.56	0.3	7500	0.89	0.51	210	12	14	1.42	66	130
A00488525	87-21-403	54	55	13	*0.35*	*3*	200	0.37	0.34	0.2	4600	0.72	1.1	90	2.9	11	1.03	25	140
A00488524	87-21-404	21	22	13	2.2	*3*	160	0.51	0.3	0.8	3000	0.45	2.12	75	3.1	8.9	1.03	47	100
A00488503	TLG-GT20-Z87-05	24	25	10	*0.35*	*3*	380	0.17	0.29	0.2	3900	0.3	0.8	88	0.81	8.3	0.69	59	72
A00488526	TLG-Z8718-002	374	375	12	*0.35*	*3*	380	0.29	0.44	0.2	3900	0.15	0.74	83	1	12	1.07	73	110
A00488510	TLG-Z8718-004	245	246	14	*0.35*	*3*	380	0.44	0.38	0.2	4300	0.17	0.81	89	0.74	10	0.91	36	140
A00488523	TLG-Z8718-007	327	328	10	*0.35*	*3*	170	0.35	0.35	0.1	4600	0.36	0.91	89	1.8	9.3	0.9	640	150
A00488522	TLG-Z8718-007	364	365	10	*0.35*	*3*	250	0.27	0.35	0.1	4500	0.41	0.94	98	4.6	10	0.91	99	110
A00488520	TLG-Z8718-010	370	371	13	*0.35*	*3*	280	0.37	0.36	0.1	4500	0.39	0.73	94	1.8	10	0.9	55	150
A00488515	TLG-Z8718-011	143	144	7	*0.35*	*3*	420	0.82	0.49	0.1	3700	0.08	1.57	40	2.3	13	1.25	33	180
A00488519	TLG-Z8718-011	151	152	1	*0.35*	*3*	42	0.76	0.24	0.3	4000	0.66	2.22	17	8.6	8.5	0.86	22	270
A00488518	TLG-Z8718-014	144.9	145.9	11	*0.35*	*3*	49	0.5	0.47	*0.05*	3800	0.75	1.71	95	40	12	0.98	77	170
A00488516	TLG-Z8718-037	265	266	9	*0.35*	*3*	420	0.74	0.61	0.3	3600	0.09	1.24	30	1.5	17	1.59	29	130
A00488530	TLG-Z8718-039	80	81	8	*0.35*	*3*	580	0.51	0.24	0.2	2800	0.1	0.53	23	1.7	7	0.72	31	110
A00488505	TLG-Z8718-041	59	60	3	*0.35*	*3*	43	0.01	0.36	*0.05*	2300	0.17	1.42	27	0.24	10	0.84	57	4
A00488502	TLG-Z8718-042	64	65	6	*0.35*	*3*	510	0.54	0.32	0.2	3300	0.25	0.79	45	1.3	10	0.88	46	290
A00488504	TLG-Z8718-044W	22	23	9	*0.35*	*3*	78	0.01	0.37	*0.05*	2700	0.13	0.54	91	0.5	10	0.83	50	12
A00488508	TLG-Z8718-044W	198	199	22	*0.35*	*3*	520	0.13	0.5	0.3	3400	0.58	1.57	120	0.37	11	0.86	82	170
A00488501	TLG-Z8718-086	189	190	14	*0.35*	6.5	220	0.37	0.39	0.9	4300	0.47	1.29	110	2.8	12	1	49	650
A00488506	TLG-Z8718-088	204	205	10	*0.35*	*3*	280	0.5	0.48	0.3	3900	0.64	1.2	73	6.7	14	1.17	37	420
A00488507	TLG-Z87N21-256	93	94	18	0.9	*3*	500	0.41	0.33	0.3	5000	0.31	1.72	140	0.82	12	1.11	59	190
A00488517	TLG-Z87N21-260	174	175	2	*0.35*	*3*	16	1.22	0.14	*0.05*	510	4	10.2	1.7	1.3	4.8	0.41	3.7	89
A00488513	TLG-Z87N21-261	261	262	3	*0.35*	*3*	150	0.79	0.63	*0.05*	1100	1.3	21.7	6.7	3	18	1.76	59	130
A00488528	TLG-Z87N21-263	341	342	14	*0.35*	*3*	200	0.34	0.45	0.2	4400	0.9	0.73	100	1.3	13	1.28	110	130
A00488527	TLG-Z87N21-264	162	163	3	*0.35*	*3*	67	0.83	0.93	0.2	1400	0.48	1.86	1.8	2	14	2.11	110	140
A00488511	TLG-Z87N21-265	115	116	11	*0.35*	*3*	220	0.37	0.37	0.2	4500	0.44	0.87	94	0.9	9.2	0.79	27	160
A00488509	TLG-Z87S19-132	228	230	14	*0.35*	*3*	380	0.47	0.38	0.3	4600	0.18	0.72	97	1.9	10	0.87	61	190
A00488514	TLG-Z87S19-132	316	318	3	*0.35*	*3*	18	0.02	0.46	0.2	1300	0.25	2.06	15	0.65	13	1.29	150	25
A00488512	TLG-Z87S19-134	180	182	14	*0.35*	*3*	170	0.34	0.37	0.7	4100	0.74	0.66	110	3.1	11	1.1	87	180
All Data																			
Maximum				22	2.2	6.5	580	1.22	0.93	0.9	7500	4	21.7	210	40	18	2.11	640	650
Minimum				1	0.35	3	16	0.01	0.14	0.05	510	0.08	0.51	1.7	0.24	4.8	0.41	3.7	4
Mean				10	0.43	3.12	243	0.45	0.42	0.24	3584	0.57	2.18	72.4	3.75	11.3	1.08	77.5	162
Standard Deviation				5.28	0.35	0.64	168	0.27	0.15	0.21	1403	0.71	4.07	47.5	7.31	2.91	0.36	111	122
10 Percentile				3	0.35	3	42.9	0.12	0.28	0.05	1390	0.13	0.65	14.2	0.64	8.48	0.78	26.8	67.3
25 Percentile				6.25	0.35	3	93.5	0.31	0.34	0.1	2850	0.2	0.75	27.8	0.92	10	0.86	36.2	110
Median				10	0.35	3	210	0.39	0.38	0.2	3900	0.42	1.15	88.5	1.8	11	0.99	56	140
75 Percentile				13.8	0.35	3	380	0.53	0.48	0.3	4475	0.66	1.72	96.5	2.98	13	1.23	76	178
90 Percentile				14.4	0.35	3	501	0.79	0.61	0.34	4600	0.89	2.22	111	6.89	14.3	1.6	110	272
Interquartile Range (IQR) [1]				7.5	0	0	286	0.22	0.13	0.2	1625	0.46	0.97	68.8	2.05	3	0.37	39.8	67.5
Variance				27.9	0.12	0.41	28138	0.075	0.023	0.044	1967590	0.5	16.6	2254	53.4	8.49	0.13	12242	14951
Skewness				0.11	4.9	5.48	0.4	0.65	1.36	2.02	-0.056	4.14	4.33	0.48	4.54	0.41	1.13	4.83	2.51
Coefficient of Variation (CoV) [2]				0.53	0.81	0.21	0.69	0.61	0.36	0.87	0.39	1.25	1.86	0.66	1.95	0.26	0.33	1.43	0.75
Count				30	30	30	30	30	30	30	30	30	30	30	30	30	30	30	30

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **Whole Rock by XRF**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From (m)	Interval To (m)	Al_2O_3 (%)	CaO (%)	Cr_2O_3 (%)	Fe_2O_3 (%)	K_2O (%)	MgO (%)	MnO (%)	Na_2O (%)	P_2O_5 (%)	SiO_2 (%)	TiO_2 (%)	V_2O_5 (%)	LOI (%)	Total (%)
Analysis Completed Date				2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	
Analysis Completed Time				16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	
MDL				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
A00488529	87-21-400	336	337	14.2	1.62	0.01	2.67	2.66	1.02	0.03	2.63	0.07	72.7	0.24	*0.005*	1.72	99.58
A00488521	87-21-401	180	181	14.6	2.34	0.03	8.10	3.39	1.33	0.07	1.17	0.12	64.5	1.19	0.05	2.48	99.37
A00488525	87-21-403	54	55	16.5	3.68	0.03	6.31	2.50	1.64	0.03	3.46	0.16	62.8	0.61	0.02	1.50	99.24
A00488524	87-21-404	21	22	13.8	2.70	0.06	6.30	1.47	2.70	0.03	4.45	0.07	65.8	0.43	0.02	1.82	99.65
A00488503	TLG-GT20-Z87-05	24	25	15.3	3.98	0.03	5.08	1.77	2.06	0.04	3.93	0.12	65.3	0.52	0.01	1.00	99.14
A00488526	TLG-Z8718-002	374	375	15.5	5.86	0.02	4.71	0.90	3.23	0.08	4.14	0.12	63.1	0.52	0.02	0.94	99.14
A00488510	TLG-Z8718-004	245	246	15.1	5.53	0.02	5.24	1.68	3.26	0.05	3.74	0.14	62.2	0.56	0.03	1.24	98.79
A00488523	TLG-Z8718-007	327	328	15.9	3.03	0.02	3.76	3.06	1.67	0.08	4.78	0.13	65.4	0.60	0.02	1.08	99.53
A00488522	TLG-Z8718-007	364	365	14.8	5.24	0.03	5.86	2.25	3.24	0.12	4.59	0.12	60.5	0.55	0.02	1.85	99.17
A00488520	TLG-Z8718-010	370	371	16.1	4.48	0.03	4.35	2.00	2.90	0.03	3.65	0.13	63.6	0.57	0.03	1.33	99.20
A00488515	TLG-Z8718-011	143	144	15.1	5.22	0.03	2.55	0.56	1.41	0.03	4.47	0.04	68.6	0.53	*0.005*	1.02	99.57
A00488519	TLG-Z8718-011	151	152	16.0	0.29	0.03	1.13	5.09	0.53	*0.005*	0.25	*0.005*	72.6	0.54	*0.005*	2.63	99.11
A00488518	TLG-Z8718-014	144.9	145.9	15.5	0.83	0.02	8.84	4.74	0.97	*0.005*	0.64	0.15	61.0	0.53	0.02	5.94	99.19
A00488516	TLG-Z8718-037	265	266	14.6	4.91	0.03	2.26	0.69	1.40	0.02	4.50	0.01	68.9	0.46	0.01	1.59	99.38
A00488530	TLG-Z8718-039	80	81	15.8	5.36	0.01	2.28	0.78	1.78	0.03	4.42	0.02	67.1	0.39	*0.005*	1.61	99.59
A00488505	TLG-Z8718-041	59	60	15.5	3.70	0.02	3.97	1.87	1.30	0.07	4.29	0.12	67.0	0.40	*0.005*	1.27	99.52
A00488502	TLG-Z8718-042	64	65	15.5	4.18	0.02	3.73	1.59	1.34	0.03	4.29	0.11	66.7	0.38	*0.005*	1.42	99.30
A00488504	TLG-Z8718-044W	22	23	15.1	5.66	0.03	5.69	0.49	2.41	0.06	4.24	0.14	64.2	0.53	0.02	0.78	99.35
A00488508	TLG-Z8718-044W	198	199	12.6	7.15	0.10	7.42	1.74	11.1	0.12	3.15	0.22	53.3	0.52	0.03	1.88	99.33
A00488501	TLG-Z8718-086	189	190	15.2	3.48	0.02	9.58	1.93	2.23	0.07	3.57	0.15	60.4	0.63	0.02	2.01	99.29
A00488506	TLG-Z8718-088	204	205	16.6	3.39	0.03	6.02	2.55	1.01	0.04	2.95	0.23	64.4	0.52	0.02	1.81	99.57
A00488507	TLG-Z87N21-256	93	94	14.6	3.98	0.02	11.2	0.94	5.36	0.03	4.80	0.21	55.8	0.65	0.02	1.55	99.16
A00488517	TLG-Z87N21-260	174	175	14.8	0.23	0.03	0.53	8.59	0.05	0.20	2.87	*0.005*	72.4	0.02	*0.005*	0.42	100.15
A00488513	TLG-Z87N21-261	261	262	14.1	1.39	0.03	2.41	5.06	0.86	0.07	2.27	0.02	71.6	0.10	*0.005*	1.66	99.58
A00488528	TLG-Z87N21-263	341	342	16.1	4.35	0.04	6.37	3.12	1.51	0.15	2.29	0.15	63.4	0.63	0.02	1.40	99.53
A00488527	TLG-Z87N21-264	162	163	13.3	1.59	0.02	2.06	2.41	0.53	0.11	3.38	0.04	74.3	0.14	*0.005*	2.11	100.00
A00488511	TLG-Z87N21-265	115	116	15.8	3.50	0.03	5.02	1.88	2.11	0.02	4.22	0.16	65.0	0.60	0.02	0.80	99.16
A00488509	TLG-Z87S19-132	228	230	15.6	5.23	0.05	4.85	1.04	1.57	0.09	4.05	0.16	65.2	0.61	0.02	0.94	99.41
A00488514	TLG-Z87S19-132	316	318	13.7	2.33	0.03	3.04	2.68	1.00	0.04	3.52	0.03	71.7	0.20	*0.005*	1.16	99.44
A00488512	TLG-Z87S19-134	180	182	15.8	2.95	0.02	8.68	3.67	1.71	0.07	2.25	0.15	60.8	0.59	0.02	2.39	99.10

All Data

	Al_2O_3	CaO	Cr_2O_3	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	V_2O_5	LOI
Maximum	16.6	7.15	0.1	11.2	8.59	11.1	0.2	4.8	0.23	74.3	1.19	0.05	5.94
Minimum	12.6	0.23	0.01	0.53	0.49	0.05	0.005	0.25	0.005	53.3	0.02	0.005	0.42
Mean	15.1	3.61	0.03	5	2.44	2.11	0.061	3.43	0.11	65.3	0.49	0.016	1.64
Standard Deviation	0.95	1.74	0.017	2.6	1.71	2	0.044	1.2	0.065	4.92	0.21	0.011	0.97
10 Percentile	13.8	1.33	0.02	2.24	0.77	0.83	0.02	2.14	0.019	60.5	0.19	0.005	0.93
25 Percentile	14.6	2.43	0.02	2.76	1.5	1.09	0.03	2.89	0.048	62.9	0.41	0.005	1.1
Median	15.2	3.69	0.03	4.93	1.96	1.6	0.045	3.7	0.12	65.1	0.53	0.02	1.52
75 Percentile	15.8	5.14	0.03	6.31	2.96	2.37	0.078	4.29	0.15	68.2	0.6	0.02	1.84
90 Percentile	16.1	5.54	0.041	8.7	4.77	3.24	0.12	4.51	0.17	72.4	0.63	0.03	2.4
Interquartile Range (IQR) [1]	1.2	2.71	0.01	3.54	1.46	1.28	0.048	1.4	0.1	5.35	0.19	0.015	0.74
Variance	0.89	3.04	0.00028	6.76	2.91	4.01	0.002	1.44	0.0042	24.2	0.046	0.00011	0.93
Skewness	-0.79	-0.24	2.86	0.47	1.85	3.41	1.37	-1.23	-0.18	-0.2	0.4	0.98	3.14
Coefficient of Variation (CoV) [2]	0.063	0.48	0.56	0.52	0.7	0.95	0.73	0.35	0.59	0.075	0.43	0.65	0.59
Count	30	30	30	30	30	30	30	30	30	30	30	30	30

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **QA/QC Data - Comparison on ICP Metals and Whole Rock Analyses**
Comments: Samples collected by Troilus personnel.

Sample Id.	Sample Drillhole	Interval From	Interval To	Whole Rock Al * (ppm)	ICP Al (ppm)	Difference (%) [3]	Whole Rock Ca * (ppm)	ICP Ca (ppm)	Difference (%) [3]	Whole Rock Cr * (ppm)	ICP Cr (ppm)	Difference (%) [3]	Whole Rock Fe * (ppm)	ICP Fe (ppm)	Difference (%) [3]	Whole Rock K * (ppm)	ICP K (ppm)	Difference (%) [3]	Whole Rock Mg * (ppm)	ICP Mg (ppm)	Difference (%) [3]
A00488529	87-21-400	336	337	75150	83000	10.45	11578	12000	3.64	68	37	-45.92	18675	23000	23.16	22081	22000	-0.37	6151	6200	0.79
A00488521	87-21-401	180	181	77267	85000	10.01	16724	13000	-22.27	205	100	-51.28	56654	60000	5.91	28141	31000	10.16	8021	7000	-12.73
A00488525	87-21-403	54	55	87322	97000	11.08	26301	25000	-4.95	205	110	-46.41	44134	43000	-2.57	20753	22000	6.01	9890	9900	0.10
A00488524	87-21-404	21	22	73033	74000	1.32	19297	14000	-27.45	411	140	-65.90	44064	55000	24.82	12203	11000	-9.86	16283	15000	-7.88
A00488503	TLG-GT20-Z87-0	24	25	80972	92000	13.62	28445	26000	-8.59	205	48	-76.62	35531	38000	6.95	14693	15000	2.09	12423	11000	-11.46
A00488526	TLG-Z8718-002	374	375	82030	90000	9.72	41881	42000	0.28	137	77	-43.73	32943	36000	9.28	7471	7300	-2.29	19479	19000	-2.46
A00488510	TLG-Z8718-004	245	246	79913	87000	8.87	39523	38000	-3.85	137	56	-59.08	36650	38000	3.68	13946	13000	-6.78	19660	18000	-8.44
A00488523	TLG-Z8718-007	327	328	84147	93000	10.52	21655	23000	6.21	137	110	-19.62	26299	31000	17.88	25401	21000	-17.33	10071	10000	-0.71
A00488522	TLG-Z8718-007	364	365	78326	89000	13.63	37450	35000	-6.54	205	87	-57.62	40987	42000	2.47	18678	19000	1.73	19540	18000	-7.88
A00488520	TLG-Z8718-010	370	371	85206	96000	12.67	32018	34000	6.19	205	89	-56.64	30425	33000	8.46	16602	16000	-3.63	17489	17000	-2.80
A00488515	TLG-Z8718-011	143	144	79913	88000	10.12	37307	37000	-0.82	205	71	-65.41	17836	18000	0.92	4649	4300	-7.50	8503	7800	-8.27
A00488519	TLG-Z8718-011	151	152	84676	99000	16.92	2073	2200	6.15	205	40	-80.51	7904	9000	13.87	42253	45000	6.50	3196	3200	0.12
A00488518	TLG-Z8718-014	144.9	145.9	82030	99000	20.69	5932	5100	-14.02	137	140	2.31	61830	53000	-14.28	39347	43000	9.28	5850	5100	-12.82
A00488516	TLG-Z8718-037	265	266	77267	80000	3.54	35091	34000	-3.11	205	50	-75.64	15807	17000	7.55	5728	5500	-3.98	8443	8000	-5.25
A00488530	TLG-Z8718-039	80	81	83618	91000	8.83	38308	40000	4.42	68	52	-24.00	15947	17000	6.60	6475	5900	-8.88	10735	10000	-6.84
A00488505	TLG-Z8718-041	59	60	82030	16000	-80.49	26444	8400	-68.23	137	77	-43.73	27768	25000	-9.97	15523	9100	-41.38	7840	7000	-10.71
A00488502	TLG-Z8718-042	64	65	82030	97000	18.25	29874	31000	3.77	137	50	-63.46	26089	29000	11.16	13199	14000	6.07	8081	8000	-1.01
A00488504	TLG-Z8718-044W	22	23	79913	21000	-73.72	40452	18000	-55.50	205	77	-62.49	39798	39000	-2.00	4068	2700	-33.62	14534	12000	-17.44
A00488508	TLG-Z8718-044W	198	199	66683	76000	13.97	51101	51000	-0.20	684	270	-60.54	51898	57000	9.83	14444	14000	-3.07	66941	65000	-2.90
A00488501	TLG-Z8718-086	189	190	80443	88000	9.39	24871	25000	0.52	137	110	-19.62	67006	73000	8.95	16021	13000	-18.86	13449	13000	-3.34
A00488506	TLG-Z8718-088	204	205	87852	100000	13.83	24228	23000	-5.07	205	35	-82.95	42106	40000	-5.00	21168	24000	13.38	6091	5200	-14.63
A00488507	TLG-Z87N21-256	93	94	77267	87000	12.60	28445	28000	-1.56	137	85	-37.88	78337	85000	8.51	7803	7800	-0.04	32325	31000	-4.10
A00488517	TLG-Z87N21-260	174	175	78326	87000	11.07	1644	1700	3.42	205	40	-80.51	3707	2900	-21.77	71307	71000	-0.43	302	150	-50.26
A00488513	TLG-Z87N21-261	261	262	74621	84000	12.57	9934	9500	-4.37	205	67	-67.36	16856	18000	6.78	42004	39000	-7.15	5186	5000	-3.60
A00488528	TLG-Z87N21-263	341	342	85206	93000	9.15	31089	33000	6.15	274	82	-70.04	44554	57000	27.93	25900	26000	0.39	9106	9800	7.62
A00488527	TLG-Z87N21-264	162	163	70387	71000	0.87	11364	9400	-17.28	137	37	-72.96	14408	16000	11.05	20006	20000	-0.03	3196	2800	-12.40
A00488511	TLG-Z87N21-265	115	116	83618	94000	12.42	25014	25000	-0.06	205	61	-70.28	35112	39000	11.07	15606	15000	-3.88	12725	12000	-5.70
A00488509	TLG-Z87S19-132	228	230	82559	90000	9.01	37378	37000	-1.01	342	83	-75.74	33923	39000	14.97	8633	8500	-1.54	9468	9500	0.33
A00488514	TLG-Z87S19-132	316	318	72504	15000	-79.31	16652	5700	-65.77	205	72	-64.92	21263	22000	3.47	22247	7500	-66.29	6031	5600	-7.14
A00488512	TLG-Z87S19-134	180	182	83618	97000	16.00	21083	22000	4.35	137	75	-45.19	60711	68000	12.01	30465	31000	1.76	10313	11000	6.67
All Data																					
Maximum						20.7			6.21			2.31			27.9			13.4			7.62
Minimum						-80.5			-68.2			-82.9			-21.8			-66.3			-50.3
Mean						2.25			-8.85			-56.1			6.72			-5.98			-6.84
Standard Deviation						27.5			20.3			20.7			10.7			16.3			10.1
10 Percentile						-6.59			-30.3			-77			-5.5			-20.3			-13
25 Percentile						8.9			-8.08			-70.2			2.72			-7.41			-10.1
Median						10.5			-1.29			-61.5			8			-1.92			-5.47
75 Percentile						13.4			3.59			-45.4			11.1			1.75			-1.37
90 Percentile						16.1			6.15			-23.6			18.4			6.78			0.38
Interquartile Range (IQR) [1]						4.48			11.7			24.8			8.42			9.16			8.78
Variance						756			410			427			114			266			102
Skewness						-2.69			-2.12			1.07			-0.54			-2.26			-2.75
Coefficient of Variation (CoV) [2]						12.2			-2.29			-0.37			1.59			-2.72			-1.48
Count						30			30			30			30			30			30

[3] Difference (%) = (ICP - Whole Rock) * 100 / Whole Rock
* Element calculated from Whole Rock XRF analysis

Al (Whole Rock) = (Al_2O_3*2*10000*26.98)/(2*26.98+3*16)
Ca (Whole Rock) = (CaO*10000*40.08)/(40.08+16)
Cr (Whole Rock) = (Cr_2O_3*2*10000*52.00)/(2*52.00+3*16)

Fe (Whole Rock) = (Fe_2O_3*2*10000*55.85)/(2*55.85+3*16)
K (Whole Rock) = (K_2O*2*10000*39.09)/(39.09*2+16)
Mg (Whole Rock) = (MgO*10000*24.31)/(24.31+16)

Project: **Troilus Gold - 87 Zone**
Client: Troilus Gold Corp
Data: **QA/QC Data - Comparison on ICP Metals and Whole Rock Analyses**
Comments: Samples collected by Troilus personnel.

Sample	Sample	Interval		Whole Rock	ICP		Whole Rock	ICP		Whole Rock	ICP		Whole Rock	ICP		Whole Rock	ICP	
Id.	Drillhole	From	To	Mn *	Mn	Difference	Na *	Na	Difference	P *	P	Difference	Ti *	Ti	Difference	V *	V	Difference
				(ppm)	(ppm)	(%) [3]	(ppm)	(ppm)	(%) [3]	(ppm)	(ppm)	(%) [3]	(ppm)	(ppm)	(%) [3]	(ppm)	(ppm)	(%) [3]
A00488529	87-21-400	336	337	232	270	16.21	19511	19000	-2.62	305	290	-5.06	1438	2000	39.04	14	18	28.54
A00488521	87-21-401	180	181	542	620	14.37	8680	6600	-23.96	524	510	-2.61	7132	7500	5.16	140	210	49.96
A00488525	87-21-403	54	55	232	210	-9.61	25668	24000	-6.50	698	590	-15.50	3656	4600	25.82	56	90	60.67
A00488524	87-21-404	21	22	232	280	20.51	33012	31000	-6.10	305	290	-5.06	2577	3000	16.41	56	75	33.89
A00488503	TLG-GT20-Z87-0	24	25	310	270	-12.84	29155	30000	2.90	524	490	-6.43	3117	3900	25.14	28	88	214.20
A00488526	TLG-Z8718-002	374	375	620	600	-3.16	30713	30000	-2.32	524	500	-4.52	3117	3900	25.14	56	83	48.17
A00488510	TLG-Z8718-004	245	246	387	390	0.72	27745	27000	-2.69	611	580	-5.06	3356	4300	28.12	84	89	5.92
A00488523	TLG-Z8718-007	327	328	620	620	0.07	35461	36000	1.52	567	590	4.00	3596	4600	27.92	56	89	58.88
A00488522	TLG-Z8718-007	364	365	929	910	-2.08	34051	34000	-0.15	524	540	3.12	3296	4500	36.52	56	98	74.95
A00488520	TLG-Z8718-010	370	371	232	350	50.64	27078	26000	-3.98	567	620	9.29	3416	4500	31.73	84	94	11.87
A00488515	TLG-Z8718-011	143	144	232	290	24.82	33161	34000	2.53	175	140	-19.79	3176	3700	16.48	14	40	185.63
A00488519	TLG-Z8718-011	151	152	39	65	67.86	1855	1600	-13.73	22	56	156.66	3236	4000	23.59	14	17	21.39
A00488518	TLG-Z8718-014	144.9	145.9	39	99	155.66	4748	4100	-13.65	655	690	5.41	3176	3800	19.63	56	95	69.60
A00488516	TLG-Z8718-037	265	266	155	160	3.30	33383	32000	-4.14	44	45	3.12	2757	3600	30.58	28	30	7.11
A00488530	TLG-Z8718-039	80	81	232	250	7.60	32790	31000	-5.46	87	72	-17.50	2337	2800	19.79	14	23	64.24
A00488505	TLG-Z8718-041	59	60	542	520	-4.08	31825	960	-96.98	524	520	-0.70	2397	2300	-4.06	14	27	92.80
A00488502	TLG-Z8718-042	64	65	232	340	46.34	31825	33000	3.69	480	540	12.50	2277	3300	44.90	14	45	221.34
A00488504	TLG-Z8718-044W	22	23	465	340	-26.83	31455	4400	-86.01	611	530	-13.25	3176	2700	-15.00	56	91	62.45
A00488508	TLG-Z8718-044W	198	199	929	950	2.22	23368	23000	-1.58	960	1000	4.16	3117	3400	9.10	84	120	42.82
A00488501	TLG-Z8718-086	189	190	542	520	-4.08	26484	27000	1.95	655	630	-3.75	3776	4300	13.88	56	110	96.37
A00488506	TLG-Z8718-088	204	205	310	320	3.30	21885	20000	-8.61	1004	970	-3.36	3117	3900	25.14	56	73	30.32
A00488507	TLG-Z87N21-256	93	94	232	310	33.43	35609	36000	1.10	916	930	1.48	3896	5000	28.35	56	140	149.93
A00488517	TLG-Z87N21-260	174	175	1549	240	-84.51	21291	20000	-6.06	22	32	46.66	120	510	325.47	14	2	-87.86
A00488513	TLG-Z87N21-261	261	262	542	470	-13.30	16840	17000	0.95	87	100	14.58	599	1100	83.54	14	7	-52.16
A00488528	TLG-Z87N21-263	341	342	1162	1500	29.12	16988	14000	-17.59	655	610	-6.81	3776	4400	16.53	56	100	78.52
A00488527	TLG-Z87N21-264	162	163	852	1100	29.12	25075	26000	3.69	175	170	-2.61	839	1400	66.85	14	2	-87.15
A00488511	TLG-Z87N21-265	115	116	155	180	16.21	31306	31000	-0.98	698	740	5.99	3596	4500	25.14	56	94	67.81
A00488509	TLG-Z87S19-132	228	230	697	750	7.60	30045	28000	-6.81	698	710	1.69	3656	4600	25.82	56	97	73.17
A00488514	TLG-Z87S19-132	316	318	310	320	3.30	26113	930	-96.44	131	140	6.94	1199	1300	8.45	14	15	7.11
A00488512	TLG-Z87S19-134	180	182	542	570	5.14	16692	17000	1.85	655	660	0.83	3536	4100	15.95	56	110	96.37
All Data																		
Maximum						156			3.69			157			325			221
Minimum						-84.5			-97			-19.8			-15			-87.9
Mean						12.6			-12.9			5.48			34.7			57.6
Standard Deviation						38			28			31			57.9			71.8
10 Percentile						-12.9			-30.2			-13.5			8.12			0.11
25 Percentile						-2.89			-8.16			-5.06			16.4			23.2
Median						4.22			-3.33			0.065			25.1			59.8
75 Percentile						23.7			1.06			5.1			30			77.6
90 Percentile						46.8			2.57			12.7			47.1			154
Interquartile Range (IQR) [1]						26.6			9.22			10.2			13.6			54.4
Variance						1445			785			958			3356			5160
Skewness						1.46			-2.57			4.32			4.65			0.33
Coefficient of Variation (CoV) [2]						3.02			-2.18			5.65			1.67			1.25
Count						30			30			30			30			30

[3] Difference (%) = (ICP - Whole Rock) * 100 / Whole Rock
* Element calculated from Whole Rock XRF analysis

Mn (Whole Rock) = (MnO*10000*54.94)/(54.94+16)
Na (Whole Rock) = (Na_2O*2*10000*22.99)/(22.99*2+16)
P (Whole Rock) = (P_2O5*2*10000*30.97)/(2*30.97+5*16)

Ti (Whole Rock) = (TiO_2*10000*47.867)/(47.867+2*16)
V (Whole Rock) = (V_2O_5*10000*50.9415)/(50.9415*2+5*16)

APPENDIX C. ML-ARD Analyses for the 29 Selected Samples from the Southwest Ore Zone

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **Notes for Data and Calculations**

All Data

[1] Interquartile Range (IQR) = 75th percentile minus 25th percentile

[2] Coefficient of Variation (CoV) = standard deviation divided by mean

Data shown in blue represents calculated data.

If data was reported as <detection limit half the detection limit is shown in italics and was used in subsequent calculations.

If data was reported as > detection limit the detection limit is shown in bold and was used in subsequent calculations.

ABA Calculations

% S (Sulphide) Calculated = % S (Total) - % S (Sulphate) Carb Leach
%S($BaSO_4$) = Ba (ppm) * 0.0001 * 32.06 / 137.37
Ba (ppm) data by ICP was used for calculation
% S (del actual) = %S(Total) Leco - %S(Sulphide) Leco - %S(Sulphate) Carb Leach - %S($BaSO_4$)
If %S(Sulphide) Leco is unavailable, % S (del actual) = 0
% S (del) = % S (del actual) unless <0, then 0
TAP = % S (Total) * 31.25
SAP = % S (Sulphide + del) * 31.25

Unavailable NP = 10
Available NP = NP - Unavailable NP
Total CaNP = % C * 10 * 100.09 / 12.01
Inorganic CaNP = % CO_2 * 10 * 100.09 / 44.01 or or Inorganic CaNP = % CO_3 * 10 * 100.09 / 60.01
(Ca) CaNP = (Ca(ppm) * 100.09 / 40.08) / 1000
(Ca+Mg) CaNP = ((Ca(ppm) * 100.09 / 40.08) + (Mg(ppm) * 100.09 / 24.31)) / 1000

TNNP = NP - TAP
Adjusted TNNP = (NP - Unavailable NP) - TAP
SNNP = NP - SAP
Adjusted SNNP = (NP - Unavailable NP) - SAP
Unavailable NP = 10
TNPR = NP / TAP
Note: If % S(Total) <0.01 then TNPR = 200
Note: If % S(Total) > 0.01 and NP <= 0 then TNPR = 0.001
Adjusted TNPR = (NP - Unavailable NP) / TAP
Note: If % S(Total) <0.01 then Adjusted TNPR = 200
Note: If % S(Total) > 0.01 and (NP - Unavailable NP) <= 0 then Adjusted TNPR = 0.001
SNPR = NP / SAP
Note: If % S(Sulphide + del) <0.01 then SNPR = 200
Note: If % S(Sulphide + del) > 0.01 and NP <= 0 then SNPR = 0.001
Adjusted SNPR = (NP - Unavailable NP) / SAP
Note: If % S(Sulphide + del) <0.01 then Adjusted SNPR = 200
Note: If % S(Sulphide + del) > 0.01 and (NP - Unavailable NP) <= 0 then Adjusted SNPR = 0.001

Solid-Phase Elements

Crustal Abundance Data: Curated data provided by Mathematica's ElementData function from Wolfram Research, Inc.:
https://periodictable.com/Properties/A/CrustAbundance.al.html

$\boxed{2}$ NOTE: if data is boxed, then data is 3 times the maximum crustal abundance.

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **Sample Information**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From (m)	Interval To (m)	Interval (m)	Zone	Lithology	Description	Weight	No échantillon BD Troilus	Certificat d'analyse BD Troilus
A00488552	SW-21-511	38	39	1.00	SW	QFP	Quartz feldspar porphyry	1.02	C786182	SD21156188
A00488559	SW-21-537	215	216	1.00	SW	I3&I4	Mafic intrusive including gabbro	0.98	D551673	SD21257117
A00488549	SW-21-540	125	126	1.00	SW	V	Undifferentiated volcanics	0.83	D553525	SD21276701
A00488542	SW-21-548	110	111	1.00	SW	V2	Intermediate volcanics including andesite	1.10	D340308	SD21309356
A00488545	SW-21-554	110	111	1.00	SW	V2	Intermediate volcanics including andesite	1.03	D342312	SD21314350
A00488544	SW-21-556	34	35	1.00	SW	V2	Intermediate volcanics including andesite	0.45	D555373	SD21276549
A00488547	SW-21-561	38	39	1.00	SW	V2	Intermediate volcanics including andesite	0.87	D550176	SD21290453
A00488543	SW-21-562	49	50	1.00	SW	V2	Intermediate volcanics including andesite	0.89	D552686	SD21294007
A00488532	SW-21-567	212	213	1.00	SW	V3	Mafic volcanics including basalt	0.81	D348278	SD21337570
A00488548	SW-21-596	125	126	1.00	SW	V	Undifferentiated volcanics	0.98	D407674	SD21348723
A00488535	SW-21-598	104	105	1.00	SW	V3	Mafic volcanics including basalt	0.90	D408407	SD21347504
A00488536	SW-21-619	164	165	1.00	SW	V3	Mafic volcanics including basalt	0.97	D409769	SD21348777
A00488534	SW-22-574	93	94	1.00	SW	V3	Mafic volcanics including basalt	0.86	D416396	SD22029321
A00488531	SW-22-575	254	255	1.00	SW	V3	Mafic volcanics including basalt	0.81	D416869	SD22029373
A00488551	SW-22-585	200	201	1.00	SW	QFP	Quartz feldspar porphyry	0.98	D410201	SD22023979
A00488553	SW-22-587	231	232	1.00	SW	QFP	Quartz feldspar porphyry	0.77	F330596	SD22073558
A00488550	SW-22-603	34	35	1.00	SW	V	Undifferentiated volcanics	0.83	D414582	SD22024090
A00488540	SW-22-603	143	144	1.00	SW	I2J	Non-brecciated diorite	1.16	D414701	SD22024092
A00488554	SW-22-605	63	64	1.00	SW	I2J;BR	Brecciated diorite	0.95	F323555	SD22052967
A00488538	SW-22-607	267	268	1.00	SW	I2J	Non-brecciated diorite	0.95	F315330	SD22034803
A00488546	SW-22-629	166	167	1.00	SW	V2	Intermediate volcanics including andesite	1.14	F329318	SD22065974
A00488533	SW-22-647	200	201	1.00	SW	V3	Mafic volcanics including basalt	0.89	F339047	SD22089335
A00488557	TLG-ZSW19-179	245	246	1.00	SW	V1	Felsic volcanics including rhyolite	0.72	A0268255	SD19318930
A00488556	TLG-ZSW20-183	41	42	1.00	SW	I2J;BR	Brecciated diorite	0.93	A0255884	SD20032385
A00488558	TLG-ZSW20-185	67	67.6	0.60	SW	I1	Felsic intrusive including granite	0.53	A0270614	SD20038306
A00488541	TLG-ZSW20-198	198	199	1.00	SW	I2J	Non-brecciated diorite	0.89	B922993	SD20236180
A00488539	TLG-ZSW20-201	55	56	1.00	SW	I2J	Non-brecciated diorite	0.92	B930047	SD20236229
A00488537	TLG-ZSW20-210	76	77	1.00	SW	I2J	Non-brecciated diorite	0.81	B927817	SD20287760
A00488555	TLG-ZSW21-283	141	142	1.00	SW	I2J;BR	Brecciated diorite	0.85	C566351	SD21127548

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: Samples collected by Troilus personnel.
The pH of water used for paste and rinse pH testing ranged from 6.0.

Sample		Interval		Paste				Carbonate Leach	HCl Leachable				Without BaSO$_4$	Without BaSO$_4$			Sobek	Available	Total	Inorganic	Inorganic
Id.	Drillhole	From	To	pH	S (Total)	S (Sulphide)	S (Sulphide)	S (Sulphate)	S (Sulphate)	S(BaSO$_4$)	S(del$_{actual}$)	S(del)	S(del$_{actual}$)	S(del)	TAP	SAP	NP	NP	C	C	CO$_2$
		(m)	(m)	Unity	(% Leco)	(% Leco)	(% Calc)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(kg CaCO$_3$/t)	(% Leco)	(%)	(%)
Method				OA-ELE07	S-IR08	S-IR07	Calculated	S-GRA06	S-GRA06a	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	OA-VOL08	Calculated	C-IR07	C-GAS05	C-GAS05
MDL				0.1	0.01	0.01	0.01	0.01	0.01								1		0.01	0.05	0.2
A00488552	SW-21-511	38	39	9.8	0.1	0.09	0.095	*0.005*	0.05	0.013	-0.008	0.000	0.005	0.005	3.1	2.8	15	5	0.05	*0.025*	*0.1*
A00488559	SW-21-537	215	216	9.5	0.16	0.14	0.14	0.02	0.05	0.009	-0.009	0.000	0.000	0.000	5.0	4.4	43	33	0.29	0.28	1
A00488549	SW-21-540	125	126	9.8	0.44	0.4	0.42	0.02	0.07	0.005	0.015	0.015	0.020	0.020	13.8	13.0	21	11	0.13	0.09	0.3
A00488542	SW-21-548	110	111	8.4	3.2	3.01	3.19	0.01	0.01	0.014	0.166	0.166	0.180	0.180	100.0	99.2	6	-4	0.05	*0.025*	*0.1*
A00488545	SW-21-554	110	111	9.5	0.28	0.26	0.27	0.01	0.05	0.001	0.009	0.009	0.010	0.010	8.8	8.4	21	11	0.1	0.08	0.3
A00488544	SW-21-556	34	35	9.5	0.15	0.14	0.14	0.01	0.02	0.010	-0.010	0.000	0.000	0.000	4.7	4.4	17	7	0.1	0.07	0.3
A00488547	SW-21-561	38	39	9.7	0.03	0.03	0.025	*0.005*	0.05	0.005	-0.010	0.000	-0.005	0.000	0.9	0.9	34	24	0.26	0.24	0.9
A00488543	SW-21-562	49	50	9.8	0.77	0.71	0.765	*0.005*	0.05	0.011	0.044	0.044	0.055	0.055	24.1	23.5	19	9	0.09	0.07	0.3
A00488532	SW-21-567	212	213	9.8	0.36	0.33	0.355	*0.005*	0.01	0.010	0.015	0.015	0.025	0.025	11.3	10.8	29	19	0.23	0.21	0.8
A00488548	SW-21-596	125	126	8.6	7.15	6.36	7.14	0.01	0.05	0.004	0.776	0.776	0.780	0.780	223.4	223.0	23	13	0.16	0.14	0.5
A00488535	SW-21-598	104	105	10	0.03	0.04	0.025	*0.005*	0.01	0.013	-0.028	0.000	-0.015	0.000	0.9	1.3	45	35	0.38	0.35	1.3
A00488536	SW-21-619	164	165	9.6	0.01	0.02	0.005	*0.005*	0.01	0.003	-0.018	0.000	-0.015	0.000	0.3	0.6	44	34	0.35	0.35	1.3
A00488534	SW-22-574	93	94	9.5	0.13	0.13	0.125	*0.005*	*0.005*	0.017	-0.022	0.000	-0.005	0.000	4.1	4.1	21	11	0.13	0.11	0.4
A00488531	SW-22-575	254	255	9.3	1.17	1.09	1.165	*0.005*	0.01	0.005	0.070	0.070	0.075	0.075	36.6	36.3	22	12	0.12	0.1	0.4
A00488551	SW-22-585	200	201	8.8	1.98	1.84	1.97	0.01	0.04	0.007	0.123	0.123	0.130	0.130	61.9	61.3	66	56	0.66	0.66	2.4
A00488553	SW-22-587	231	232	9.7	0.01	0.01	0.005	0.01	0.01	0.005	-0.015	0.000	-0.010	0.000	0.3	0.3	27	17	0.23	0.19	0.7
A00488550	SW-22-603	34	35	9.7	0.08	0.06	0.07	0.01	0.06	0.005	0.005	0.005	0.010	0.010	2.5	2.0	27	17	0.21	0.19	0.7
A00488540	SW-22-603	143	144	9.9	0.02	0.02	0.015	*0.005*	0.03	0.009	-0.014	0.000	-0.005	0.000	0.6	0.6	18	8	0.06	0.05	0.2
A00488554	SW-22-605	63	64	9.2	2.02	1.9	1.99	0.03	0.03	0.014	0.076	0.076	0.090	0.090	63.1	61.8	12	2	0.06	*0.025*	*0.1*
A00488538	SW-22-607	267	268	9.8	0.22	0.19	0.215	*0.005*	0.06	0.006	0.019	0.019	0.025	0.025	6.9	6.5	17	7	0.06	*0.025*	*0.1*
A00488546	SW-22-629	166	167	9.4	0.11	0.1	0.105	*0.005*	0.05	0.001	0.004	0.004	0.005	0.005	3.4	3.2	60	50	0.57	0.53	1.9
A00488533	SW-22-647	200	201	9.8	0.13	0.12	0.125	*0.005*	0.01	0.013	-0.008	0.000	0.005	0.005	4.1	3.8	24	14	0.13	0.1	0.4
A00488557	TLG-ZSW19-179	245	246	9.9	0.25	0.23	0.23	0.02	0.05	0.011	-0.011	0.000	0.000	0.000	7.8	7.2	14	4	0.1	0.08	0.3
A00488556	TLG-ZSW20-183	41	42	9.9	0.01	0.02	0.005	0.01	0.01	0.005	-0.025	0.000	-0.020	0.000	0.3	0.6	27	17	0.21	0.2	0.7
A00488558	TLG-ZSW20-185	67	67.6	9.5	0.1	0.1	0.09	0.01	0.05	0.019	-0.029	0.000	-0.010	0.000	3.1	3.1	28	18	0.18	0.17	0.6
A00488541	TLG-ZSW20-198	198	199	NSS	0.01	0.02	0.005	*0.005*	0.01	0.004	-0.019	0.000	-0.015	0.000	0.3	0.6	37	27	0.32	0.32	1.2
A00488539	TLG-ZSW20-201	55	56	9.8	0.07	0.08	0.065	*0.005*	0.06	0.006	-0.021	0.000	-0.015	0.000	2.2	2.5	18	8	0.1	0.08	0.3
A00488537	TLG-ZSW20-210	76	77	9.6	1.19	1.12	1.18	0.01	0.05	0.022	0.038	0.038	0.060	0.060	37.2	36.2	81	71	0.87	0.85	3.1
A00488555	TLG-ZSW21-283	141	142	9.9	0.07	0.06	0.05	0.02	0.07	0.005	-0.015	0.000	-0.010	0.000	2.2	1.9	13	3	0.06	0.05	0.2
All Data																					
Maximum				10	7.15	6.36	7.14	0.03	0.07	0.022	0.78	0.78	0.78	0.78	223	223	81	71	0.87	0.85	3.1
Minimum				8.4	0.01	0.01	0.005	0.005	0.005	0.00093	-0.029	0	-0.02	0	0.31	0.31	6	-4	0.05	0.025	0.1
Mean				9.56	0.7	0.64	0.69	0.0097	0.036	0.0088	0.038	0.047	0.047	0.051	21.8	21.5	28.6	18.6	0.22	0.2	0.72
Standard Deviation				0.39	1.45	1.31	1.45	0.0064	0.022	0.0053	0.15	0.15	0.15	0.15	45.5	45.3	17.1	17.1	0.2	0.2	0.72
10 Percentile				9.08	0.01	0.02	0.005	0.005	0.01	0.0036	-0.023	0	-0.015	0	0.31	0.62	13.8	3.8	0.06	0.025	0.1
25 Percentile				9.5	0.07	0.06	0.05	0.005	0.01	0.0049	-0.015	0	-0.01	0	2.19	1.88	18	8	0.1	0.07	0.3
Median				9.7	0.13	0.13	0.12	0.01	0.05	0.0075	-0.0083	0	0.005	0.005	4.06	4.06	23	13	0.13	0.11	0.4
75 Percentile				9.8	0.44	0.4	0.42	0.01	0.05	0.013	0.019	0.019	0.025	0.025	13.8	13	34	24	0.26	0.24	0.9
90 Percentile				9.9	1.99	1.85	1.97	0.02	0.06	0.015	0.086	0.086	0.098	0.098	62.1	61.4	48	38	0.42	0.39	1.42
Interquartile Range (IQR) [1]				0.3	0.37	0.34	0.37	0.005	0.04	0.0082	0.034	0.019	0.035	0.025	11.6	11.1	16	16	0.16	0.17	0.6
Variance				0.16	2.12	1.72	2.11	0.000041	0.00048	0.000028	0.022	0.021	0.022	0.022	2066	2052	294	294	0.038	0.039	0.51
Skewness				-1.7	3.54	3.42	3.55	1.67	-0.12	0.74	4.65	4.79	4.61	4.69	3.54	3.57	1.56	1.56	1.97	1.93	1.93
Coefficient of Variation (CoV) [2]				0.041	2.08	2.04	2.11	0.66	0.61	0.61	3.94	3.11	3.19	2.89	2.08	2.1	0.6	0.92	0.91	1.02	1
Count				28	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29

NPR <1.0 or NPR = 1.0
1.0 <NPR <2.0
NPR > 2.0 or NPR =2.0

% NPR <1.0 or NPR = 1.0 of Total
% 1.0 <NPR <2.0 of Total
% NPR > 2.0 or NPR =2.0 of Total

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From	Interval To	Excess C	Total CaNP	Inorganic CaNP	(Ca) CaNP	(Ca+Mg) CaNP	TNNP	Adjusted TNNP	SNNP	Adjusted SNNP	Total CaNP-TAP NNP	(Ca+Mg) CaNP-TAP NNP	TNPR	Adjusted TNPR	SNPR	Adjusted SNPR	Total CaNP/TAP NPR	(Ca+Mg) CaNP/TAP NPR	Fizz Rating	Comparison of Fizz Rating & NP
		(m)	(m)	(%)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)							Unity	
Method				Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Cakculated	Calculated	OA-VOL08	
MDL																						
A00488552	SW-21-511	38	39	0.025	4.2	2.3	49.9	99.4	11.9	1.9	12.2	2.2	1.0	96.2	4.8	1.6	5.33	1.78	1.33	31.8	1	Agree
A00488559	SW-21-537	215	216	0.01	24.2	22.7	97.4	163.3	38.0	28.0	38.6	28.6	19.2	158.3	8.6	6.6	9.83	7.54	4.83	32.7	2	Disagree
A00488549	SW-21-540	125	126	0.04	10.8	6.8	82.4	140.1	7.3	-2.8	8.0	-2.0	-2.9	126.3	1.53	0.8	1.62	0.849	0.788	10.2	1	Agree
A00488542	SW-21-548	110	111	0.025	4.2	2.3	4.5	13.1	-94.0	-104.0	-93.2	-103.2	-95.8	-86.9	0.06	0.001	0.0605	0.001	0.0417	0.131	1	Agree
A00488545	SW-21-554	110	111	0.02	8.3	6.8	127.4	242.6	12.3	2.3	12.6	2.6	-0.4	233.9	2.4	1.26	2.5	1.31	0.952	27.7	1	Agree
A00488544	SW-21-556	34	35	0.03	8.3	6.8	67.4	102.0	12.3	2.3	12.6	2.6	3.6	97.3	3.63	1.49	3.89	1.6	1.78	21.8	1	Agree
A00488547	SW-21-561	38	39	0.02	21.7	20.5	72.4	101.2	33.1	23.1	33.1	23.1	20.7	100.3	36.3	25.6	36.3	25.6	23.1	108	2	Disagree
A00488543	SW-21-562	49	50	0.02	7.5	6.8	57.4	102.7	-5.1	-15.1	-4.5	-14.5	-16.6	78.7	0.79	0.374	0.807	0.382	0.312	4.27	1	Agree
A00488532	SW-21-567	212	213	0.02	19.2	18.2	92.4	154.2	17.8	7.8	18.2	8.2	7.9	142.9	2.58	1.69	2.69	1.76	1.7	13.7	1	Agree
A00488548	SW-21-596	125	126	0.02	13.3	11.4	117.4	179.1	-200.4	-210.4	-200.0	-210.0	-210.1	-44.3	0.103	0.0582	0.103	0.0583	0.0597	0.802	1	Agree
A00488535	SW-21-598	104	105	0.03	31.7	29.6	89.9	151.7	44.1	34.1	43.8	33.8	30.7	150.7	48	37.3	36	28	33.8	162	2	Disagree
A00488536	SW-21-619	164	165	0	29.2	29.6	174.8	360.1	43.7	33.7	43.4	33.4	28.9	359.8	141	109	70.4	54.4	93.3	1150	2	Disagree
A00488534	SW-22-574	93	94	0.02	10.8	9.1	79.9	145.8	16.9	6.9	16.9	6.9	6.8	141.7	5.17	2.71	5.17	2.71	2.67	35.9	1	Agree
A00488531	SW-22-575	254	255	0.02	10.0	9.1	124.9	264.8	-14.6	-24.6	-14.3	-24.3	-26.6	228.3	0.602	0.328	0.607	0.331	0.274	7.24	1	Agree
A00488551	SW-22-585	200	201	0	55.0	54.6	144.8	219.0	4.1	-5.9	4.7	-5.3	-6.9	157.1	1.07	0.905	1.08	0.913	0.889	3.54	2	Agree
A00488553	SW-22-587	231	232	0.04	19.2	15.9	117.4	191.5	26.7	16.7	26.7	16.7	18.9	191.2	86.4	54.4	86.4	54.4	61.3	613	1	Agree
A00488550	SW-22-603	34	35	0.02	17.5	15.9	97.4	167.4	24.5	14.5	25.0	15.0	15.0	164.9	10.8	6.8	13.2	8.33	7	67	1	Agree
A00488540	SW-22-603	143	144	0.01	5.0	4.5	112.4	198.8	17.4	7.4	17.4	7.4	4.4	198.2	28.8	12.8	28.8	12.8	8	318	1	Agree
A00488554	SW-22-605	63	64	0.035	5.0	2.3	47.4	75.4	-51.1	-61.1	-49.8	-59.8	-58.1	12.3	0.19	0.0317	0.194	0.0324	0.0792	1.2	1	Agree
A00488538	SW-22-607	267	268	0.035	5.0	2.3	129.9	232.8	10.1	0.1	10.5	0.5	-1.9	225.9	2.47	1.02	2.6	1.07	0.727	33.9	1	Agree
A00488546	SW-22-629	166	167	0.04	47.5	43.2	197.3	353.7	56.6	46.6	56.8	46.8	44.1	350.3	17.5	14.5	18.5	15.4	13.8	103	2	Agree
A00488533	SW-22-647	200	201	0.03	10.8	9.1	64.9	106.1	19.9	9.9	20.3	10.3	6.8	102.0	5.91	3.45	6.4	3.73	2.67	26.1	1	Agree
A00488557	TLG-ZSW19-179	245	246	0.02	8.3	6.8	27.5	38.6	6.2	-3.8	6.8	-3.2	0.5	30.8	1.79	0.512	1.95	0.557	1.07	4.94	1	Agree
A00488556	TLG-ZSW20-183	41	42	0.01	17.5	15.9	59.9	88.8	26.7	16.7	26.4	16.4	17.2	88.4	86.4	54.4	43.2	27.2	56	284	1	Agree
A00488558	TLG-ZSW20-185	67	67.6	0.01	15.0	13.6	129.9	245.1	24.9	14.9	24.9	14.9	11.9	242.0	8.96	5.76	8.96	5.76	4.8	78.4	1	Agree
A00488541	TLG-ZSW20-198	198	199	0	26.7	27.3	67.4	95.8	36.7	26.7	36.4	26.4	26.4	95.5	118	86.4	59.2	43.2	85.3	307	2	Disagree
A00488539	TLG-ZSW20-201	55	56	0.02	8.3	6.8	47.4	81.6	15.8	5.8	15.5	5.5	6.1	79.4	8.23	3.66	7.2	3.2	3.81	37.3	1	Agree
A00488537	TLG-ZSW20-210	76	77	0.02	72.5	70.5	157.3	247.9	43.8	33.8	44.8	34.8	35.3	210.7	2.18	1.91	2.24	1.96	1.95	6.67	2	Close to Fizz Max
A00488555	TLG-ZSW21-283	141	142	0.01	5.0	4.5	42.5	73.3	10.8	0.8	11.1	1.1	2.8	71.1	5.94	1.37	6.93	1.6	2.29	33.5	1	Agree
All Data																						
Maximum				0.04	72.5	70.5	197	360	56.6	46.6	56.8	46.8	44.1	360	141	109	86.4	54.4	93.3	1150		
Minimum				0	4.17	2.27	4.5	13.1	-200	-210	-200	-210	-210	-86.9	0.06	0.001	0.06	0.001	0.042	0.13		
Mean				0.021	18	16.4	92.5	160	6.77	-3.23	7.06	-2.94	-3.83	138	22.1	15.1	15.9	10.6	14.3	122		
Standard Deviation				0.011	16.3	16.3	45	85.7	49.4	49.4	49.3	49.3	48.2	99.4	37.7	27.6	23	16.2	26.1	240		
10 Percentile				0.008	5	2.27	46.4	75	-21.9	-31.9	-21.4	-31.4	-32.9	27.1	0.52	0.27	0.52	0.28	0.24	3.07		
25 Percentile				0.01	8.33	6.82	59.9	99.4	7.25	-2.75	8.04	-1.96	-1.87	88.4	1.79	0.9	1.95	0.91	0.89	7.24		
Median				0.02	10.8	9.1	89.9	152	16.9	6.94	16.9	6.94	6.15	142	5.17	1.91	5.33	1.96	2.29	32.7		
75 Percentile				0.03	21.7	20.5	125	219	26.7	16.7	26.7	16.7	18.9	198	17.5	12.8	18.5	12.8	8	103		
90 Percentile				0.036	34.8	32.3	147	251	43.7	33.7	43.4	33.4	29.2	236	86.4	54.4	46.4	31	57.1	309		
Interquartile Range (IQR) [1]				0.02	13.3	13.6	64.9	120	19.4	19.4	18.6	18.6	20.7	110	15.7	11.9	16.6	11.9	7.11	95.8		
Variance				0.00013	266	266	2027	7349	2441	2441	2426	2426	2322	9879	1424	760	529	262	679	57667		
Skewness				-0.067	1.97	1.93	0.36	0.66	-3.1	-3.1	-3.11	-3.11	-3.22	0.11	2.13	2.34	1.85	1.82	2.15	3.33		
Coefficient of Variation (CoV) [2]				0.55	0.91	1	0.49	0.54	7.3	-15.3	6.98	-16.7	-12.6	0.72	1.71	1.83	1.44	1.53	1.82	1.98		
Count				29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29		
NPR <1.0 or NPR = 1.0															5	8	5	8	9	2		
1.0 <NPR <2.0															3	7	3	7	5	1		
NPR > 2.0 or NPR =2.0															21	14	21	14	15	26		
% NPR <1.0 or NPR = 1.0 of Total															17.24	27.59	17.24	27.59	31.03	6.90		
% 1.0 <NPR <2.0 of Total															10.34	24.14	10.34	24.14	17.24	3.45		
% NPR > 2.0 or NPR =2.0 of Total															72.41	48.28	72.41	48.28	51.72	89.66		

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample Id.	Drillhole	Interval From (m)	To (m)	Silver Ag (ppm)	Aluminum Al (ppm)	Arsenic As (ppm)	Barium Ba (ppm)	Beryllium Be (ppm)	Bismuth Bi (ppm)	Calcium Ca (ppm)	Cadmium Cd (ppm)	Cerium Ce (ppm)	Cobalt Co (ppm)	Chromium Cr (ppm)	Cesium Cs (ppm)	Copper Cu (ppm)	Iron Fe (ppm)	Gallium Ga (ppm)	Hafnium Hf (ppm)
Analysis Completed Date				2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-12-09	2022-11-22	2022-11-22	2022-12-09	2022-11-22	2022-11-22	2022-12-09	2022-12-12
Analysis Completed Time				13:35	13:35	13:35	13:35	13:35	13:35	13:35	13:35	7:56	13:36	13:36	7:56	13:36	13:41	7:56	10:26
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.5	3	0.5	0.01	0.02	0.09	3	0.02	0.001	0.01	0.5	0.01	0.1	3	0.03	0.1
Crustal Abundance: To				0.079	81000	2.1	340	1.9	0.025	50000	0.15	60	30	140	1.9	68	63000	19	3.3
A00488552	SW-21-511	38	39	0.5	79000	8.8	560	0.98	0.17	20000	0.15	104	15	85	5	360	38000	23	3.5
A00488559	SW-21-537	215	216	*0.25*	78000	2.1	390	0.75	0.18	39000	0.18	51.9	25	190	5	18	73000	23	7
A00488549	SW-21-540	125	126	*0.25*	78000	6.6	230	0.85	0.15	33000	0.15	78.3	41	200	4	260	63000	22	3.5
A00488542	SW-21-548	110	111	3.8	67000	100	620	0.75	7.3	1800	7.8	99.3	27	53	2	76	47000	16	3.6
A00488545	SW-21-554	110	111	*0.25*	80000	11	40	0.48	0.32	51000	0.36	14.1	86	260	2	200	110000	26	9.7
A00488544	SW-21-556	34	35	0.9	87000	3.3	410	0.7	0.24	27000	0.45	56.9	11	170	4	480	28000	21	4.5
A00488547	SW-21-561	38	39	*0.25*	86000	0.9	230	0.92	*0.045*	29000	0.04	27.4	7.7	60	3	1.3	37000	21	4
A00488543	SW-21-562	49	50	0.7	82000	7.5	490	0.85	0.57	23000	0.48	90.6	37	85	3	290	71000	21	5.5
A00488532	SW-21-567	212	213	*0.25*	84000	3.2	410	0.83	0.39	37000	0.1	94.5	13	66	7	34	43000	19	3.1
A00488548	SW-21-596	125	126	0.9	70000	4.6	190	0.6	1.1	47000	0.22	22.4	74	100	3	100	140000	25	3.7
A00488535	SW-21-598	104	105	*0.25*	78000	1.5	570	0.83	0.16	36000	0.27	81.2	15	84	5	3.9	41000	20	7.8
A00488536	SW-21-619	164	165	*0.25*	76000	3	130	0.22	0.14	70000	0.23	8.35	48	200	4	8.8	72000	14	8.1
A00488534	SW-22-574	93	94	*0.25*	80000	2.7	740	0.89	0.16	32000	0.22	74.7	15	84	9	19	46000	21	8.3
A00488531	SW-22-575	254	255	*0.25*	83000	13	210	0.49	1.6	50000	0.23	17.5	53	190	7	240	110000	19	2.2
A00488551	SW-22-585	200	201	*0.25*	73000	4.2	320	0.59	0.58	58000	0.23	38.5	15	120	7	61	140000	22	3.9
A00488553	SW-22-587	231	232	*0.25*	77000	2.5	200	0.71	0.1	47000	0.03	25	19	190	0.88	18	45000	19	3.5
A00488550	SW-22-603	34	35	*0.25*	78000	3.9	200	0.7	*0.045*	39000	0.07	78.6	12	120	2	4	54000	20	3.5
A00488540	SW-22-603	143	144	*0.25*	83000	5.4	390	0.78	*0.045*	45000	0.22	49.1	21	140	1	21	49000	20	5.3
A00488554	SW-22-605	63	64	*0.25*	70000	23	580	0.89	0.9	19000	0.07	76	14	150	3	8	34000	18	2.4
A00488538	SW-22-607	267	268	*0.25*	85000	5.8	260	0.76	0.64	52000	0.27	55	17	130	4	42	63000	21	5.6
A00488546	SW-22-629	166	167	*0.25*	69000	2.7	52	0.27	0.28	79000	0.1	5.67	42	460	4	35	71000	14	4.3
A00488533	SW-22-647	200	201	*0.25*	76000	1.9	570	0.92	0.21	26000	0.2	79.9	10	92	4	11	30000	19	8.1
A00488557	TLG-ZSW19-179	245	246	*0.25*	64000	4.3	490	1.1	0.17	11000	0.04	128	7.8	110	0.96	94	17000	15	2.9
A00488556	TLG-ZSW20-183	41	42	*0.25*	83000	9.5	220	0.62	0.12	24000	0.06	23.6	65	150	1	34	78000	26	3.9
A00488558	TLG-ZSW20-185	67	67.6	*0.25*	78000	8.8	800	1	0.25	52000	0.16	177	25	200	2	34	50000	23	3.9
A00488541	TLG-ZSW20-198	198	199	*0.25*	75000	4	160	0.83	0.1	27000	0.19	28.3	11	140	0.87	40	17000	17	4.8
A00488539	TLG-ZSW20-201	55	56	*0.25*	76000	2.3	250	1.1	0.39	19000	0.18	90.1	29	92	3	770	32000	21	5.4
A00488537	TLG-ZSW20-210	76	77	*0.25*	110000	43	950	1.1	0.83	63000	0.32	104	11	130	3	4.8	50000	30	7.5
A00488555	TLG-ZSW21-283	141	142	*0.25*	73000	1.5	210	1.1	0.15	17000	0.1	75.1	8.5	65	2	260	23000	17	3.6

All Data

	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Ce	Co	Cr	Cs	Cu	Fe	Ga	Hf
Maximum	3.8	110000	100	950	1.1	7.3	79000	7.8	177	86	460	9	770	140000	30	9.7
Minimum	0.25	64000	0.9	40	0.22	0.045	1800	0.03	5.67	7.7	53	0.87	1.3	17000	14	2.2
Mean	0.44	78552	10	375	0.78	0.6	37028	0.45	64	26.7	142	3.51	122	57655	20.4	4.93
Standard Deviation	0.67	8331	19.2	228	0.23	1.34	18029	1.42	40	20.9	80.5	2.08	177	32513	3.64	2.01
10 Percentile	0.25	69800	1.82	154	0.49	0.089	18600	0.056	16.8	9.7	65.8	0.99	4.64	27000	15.8	3.06
25 Percentile	0.25	75000	2.7	210	0.7	0.15	24000	0.1	27.4	12	85	2	18	37000	19	3.5
Median	0.25	78000	4.2	320	0.83	0.21	36000	0.19	74.7	17	130	3	35	49000	21	4
75 Percentile	0.25	83000	8.8	560	0.92	0.57	50000	0.23	90.1	37	190	4	200	71000	22	5.6
90 Percentile	0.74	85200	15	644	1.1	0.94	59000	0.38	104	55.4	200	7	304	110000	25.2	8.1
Interquartile Range (IQR) [1]	0	8000	6.1	350	0.22	0.42	26000	0.13	62.7	25	105	2	182	34000	3	2.1
Variance	0.45	69399015	368	52030	0.051	1.79	3.25E+08	2.01	1599	439	6485	4.31	31386	1.06E+09	13.3	4.06
Skewness	4.79	1.7	4.12	0.74	-0.71	4.81	0.36	5.33	0.63	1.47	2.31	0.86	2.24	1.27	0.37	0.87
Coefficient of Variation (CoV) [2]	1.52	0.11	1.91	0.61	0.29	2.24	0.49	3.13	0.63	0.78	0.57	0.59	1.46	0.56	0.18	0.41
Count	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample		Interval		Mercury	Indium	Potassium	Lanthanum	Lithium	Lutetium	Magnesium	Manganese	Molybdenum	Sodium	Niobium	Nickel	Phosphorus	Lead	Rubidium	Antimony
Id.	Drillhole	From	To	Hg	In	K	La	Li	Lu	Mg	Mn	Mo	Na	Nb	Ni	P	Pb	Rb	Sb
		(m)	(m)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Analysis Completed Date				2022-11-07	2022-12-09	2022-11-22	2022-12-09	2022-11-22	2022-12-09	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-12-12	2022-11-22	2022-11-22	2022-11-22	2022-12-09	2022-11-22
Analysis Completed Time				11:14	7:56	13:36	7:56	13:36	7:56	13:36	13:36	13:37	13:37	10:26	13:37	13:37	13:37	7:56	13:37
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.05	0.01	3	0.001	2	0.001	3	0.1	0.1	3	0.1	0.1	3	0.05	0.004	0.8
Crustal Abundance: To				0.067	0.16	15000	34	17	0.57	29000	1100	1.1	23000	17	90	990	10	60	0.2
A00488552	SW-21-511	38	39	*0.025*	0.01	17000	45	46	0.26	12000	260	5.4	23000	6.1	20	510	6	68.8	*0.4*
A00488559	SW-21-537	215	216	*0.025*	0.04	12000	22	56	0.33	16000	480	4	23000	8.5	54	520	5	67.9	1.5
A00488549	SW-21-540	125	126	*0.025*	*0.005*	10000	31.1	29	0.24	14000	550	4.4	25000	4.3	82	580	8	50.5	*0.4*
A00488542	SW-21-548	110	111	*0.025*	0.05	30000	42.4	7.6	0.37	2100	110	3.3	2500	5.5	3	100	150	93.2	1.9
A00488545	SW-21-554	110	111	*0.025*	0.14	3700	5.44	26	0.34	28000	980	2.6	23000	9.5	100	460	8	16.1	2.1
A00488544	SW-21-556	34	35	*0.025*	0.02	23000	32.7	40	0.41	8400	330	4.5	15000	4.4	41	550	9	95.2	1.1
A00488547	SW-21-561	38	39	*0.025*	0.04	15000	12.9	21	0.2	7000	330	2.8	27000	4.4	4.9	510	4	55.4	*0.4*
A00488543	SW-21-562	49	50	*0.025*	0.09	20000	36.9	24	0.28	11000	450	4.5	22000	7.7	35	870	11	77.4	*0.4*
A00488532	SW-21-567	212	213	*0.025*	0.06	21000	42.4	40	0.3	15000	1200	3.8	7400	10	20	480	28	69.6	*0.4*
A00488548	SW-21-596	125	126	*0.025*	0.08	9100	8.24	36	0.5	15000	2300	3.7	12000	6	58	530	18	40.7	*0.4*
A00488535	SW-21-598	104	105	*0.025*	0.08	14000	34.4	53	0.26	15000	730	2.7	25000	7.6	27	690	11	64.2	*0.4*
A00488536	SW-21-619	164	165	*0.025*	0.08	4700	3.26	33	0.2	45000	1100	1.6	15000	5.9	130	190	6	31.5	2.1
A00488534	SW-22-574	93	94	*0.025*	0.08	13000	31	59	0.22	16000	510	3	22000	8.1	26	810	8	57.5	*0.4*
A00488531	SW-22-575	254	255	*0.025*	0.13	9400	7.37	63	0.29	34000	2000	3.4	8000	8.8	93	360	10	33.7	1.3
A00488551	SW-22-585	200	201	*0.025*	*0.005*	11000	14.9	34	0.75	18000	800	2.8	6200	6.7	62	320	6	65.5	0.9
A00488553	SW-22-587	231	232	*0.025*	0.03	4300	12	18	0.17	18000	860	4.4	28000	4.6	59	500	4	17.1	*0.4*
A00488550	SW-22-603	34	35	*0.025*	0.02	4800	26.6	14	0.19	17000	480	3.6	34000	4.9	51	600	6	17	*0.4*
A00488540	SW-22-603	143	144	*0.025*	0.07	6800	22.4	15	0.19	21000	820	3.1	25000	5.6	45	690	9	21.3	*0.4*
A00488554	SW-22-605	63	64	*0.025*	*0.005*	18000	30.5	13	0.17	6800	300	7.1	16000	4	23	560	7	44.6	1.1
A00488538	SW-22-607	267	268	*0.025*	0.06	7100	24.9	15	0.21	25000	830	2.1	26000	5.5	56	940	10	24.7	*0.4*
A00488546	SW-22-629	166	167	*0.025*	0.1	3300	2.08	25	0.25	38000	1100	3.4	13000	4	150	180	5	21.1	2.7
A00488533	SW-22-647	200	201	*0.025*	0.09	14000	35	44	0.29	10000	430	5.4	19000	8.3	14	470	12	55	1.3
A00488557	TLG-ZSW19-179	245	246	*0.025*	*0.005*	13000	58.6	8.5	0.27	2700	240	5.2	28000	6.5	7.1	130	5	45.2	*0.4*
A00488556	TLG-ZSW20-183	41	42	*0.025*	0.01	4900	9.98	17	0.48	7000	600	3.5	46000	6.7	66	620	6	20.4	*0.4*
A00488558	TLG-ZSW20-185	67	67.6	*0.025*	0.03	7700	86.9	29	0.42	28000	790	3.4	31000	7.2	110	1000	16	22.4	1.1
A00488541	TLG-ZSW20-198	198	199	*0.025*	0.08	3200	9.96	12	0.38	6900	290	6.3	41000	5.8	15	270	7	13.6	*0.4*
A00488539	TLG-ZSW20-201	55	56	*0.025*	0.05	9900	40.6	20	0.25	8300	170	4.5	33000	6.2	17	410	6	54.3	*0.4*
A00488537	TLG-ZSW20-210	76	77	*0.025*	0.07	33000	43.3	29	0.27	22000	1100	1.6	11000	6.4	47	880	8	107	5.2
A00488555	TLG-ZSW21-283	141	142	*0.025*	*0.005*	6300	34.9	20	0.27	7500	160	4.9	35000	4.7	15	300	6	37	*0.4*
All Data																			
Maximum				0.025	0.14	33000	86.9	63	0.75	45000	2300	7.1	46000	10	150	1000	150	107	5.2
Minimum				0.025	0.005	3200	2.08	7.6	0.17	2100	110	1.6	2500	4	3	100	4	13.6	0.4
Mean				0.025	0.053	12041	27.9	29.2	0.3	16369	700	3.83	22141	6.34	49.3	518	13.6	47.9	1
Standard Deviation				1.1E-17	0.039	7733	18.7	15.6	0.12	10449	513	1.29	10485	1.68	38.2	237	26.7	26	1.04
10 Percentile				0.025	0.005	4180	6.98	12.8	0.19	6880	226	2.5	7880	4.38	12.6	188	5	17.1	0.4
25 Percentile				0.025	0.02	6300	12	17	0.22	8300	330	3	15000	4.9	20	360	6	22.4	0.4
Median				0.025	0.05	10000	30.5	26	0.27	15000	550	3.6	23000	6.1	45	510	8	45.2	0.4
75 Percentile				0.025	0.08	15000	36.9	40	0.34	21000	860	4.5	28000	7.6	62	620	10	65.5	1.3
90 Percentile				0.025	0.092	21400	43.6	53.6	0.43	29200	1120	5.4	34200	8.56	102	872	16.4	80.6	2.1
Interquartile Range (IQR) [1]				0	0.06	8700	24.9	23	0.12	12700	530	1.5	13000	2.7	42	260	4	43.1	0.9
Variance				NA	0.0015	59800369	349	242	0.015	109175074	262957	1.67	1.1E+08	2.81	1459	56186	712	675	1.08
Skewness				-1.06	0.42	1.14	1.02	0.67	1.97	1.08	1.61	0.51	0.16	0.49	1.04	0.2	5.11	0.53	2.67
Coefficient of Variation (CoV) [2]				4.2E-16	0.73	0.64	0.67	0.53	0.41	0.64	0.73	0.34	0.47	0.26	0.77	0.46	1.96	0.54	1.04
Count				29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: Samples collected by Troilus personnel.

Sample		Interval		Scandium	Selenium	Tin	Strontium	Tantalum	Terbium	Tellurium	Titanium	Thallium	Uranium	Vanadium	Tungsten	Yttrium	Ytterbium	Zinc	Zirconium
Id.	Drillhole	From	To	Sc	Se	Sn	Sr	Ta	Tb	Te	Ti	Tl	U	V	W	Y	Yb	Zn	Zr
		(m)	(m)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Analysis Completed Date				2022-12-09	2022-11-22	2022-11-22	2022-11-22	2022-12-12	2022-12-09	2022-12-12	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-11-22	2022-12-09	2022-11-22	2022-11-22
Analysis Completed Time				7:56	13:37	13:37	13:37	10:26	7:56	10:26	13:37	13:37	13:37	13:37	13:38	13:38	7:56	13:38	13:38
Method				4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid	4-acid
MDL				0.03	0.7	6	0.02	0.01	0.001	0.1	0.1	0.02	0.002	1	0.04	0.004	0.001	0.7	0.03
Crustal Abundance: To				26	0.05	2.2	360	1.7	0.93	0.001	6600	0.54	1.8	190	1.1	29	2.8	78	130
A00488552	SW-21-511	38	39	11	*0.35*	*3*	180	1.1	0.71	0.1	3200	0.88	1.53	68	1.8	15	1.68	37	140
A00488559	SW-21-537	215	216	33	*0.35*	*3*	180	3.09	0.8	0.1	7700	0.48	1.23	340	2.9	20	2.29	75	120
A00488549	SW-21-540	125	126	17	*0.35*	*3*	160	0.99	0.6	*0.05*	4200	0.44	1.11	130	1.3	15	1.68	90	110
A00488542	SW-21-548	110	111	5	*0.35*	*3*	31	1.04	0.74	1.2	950	0.77	1.95	4.2	2.1	20	2.4	1500	71
A00488545	SW-21-554	110	111	38	*0.35*	*3*	210	3.97	0.75	0.4	9300	0.18	0.17	390	1.2	22	2.37	77	57
A00488544	SW-21-556	34	35	16	*0.35*	*3*	190	1.12	0.78	*0.05*	4100	0.66	1.39	180	5	20	2.61	83	75
A00488547	SW-21-561	38	39	9	*0.35*	*3*	280	1.1	0.38	0.2	2900	0.6	0.68	60	0.85	10	1.27	33	120
A00488543	SW-21-562	49	50	18	*0.35*	*3*	180	1.54	0.7	0.3	5600	0.53	1.36	200	1.2	16	1.82	66	100
A00488532	SW-21-567	212	213	11	*0.35*	*3*	130	0.57	0.75	0.1	3800	0.88	1.63	58	2.5	21	2.01	95	130
A00488548	SW-21-596	125	126	40	1	*3*	110	1.16	1.14	0.3	11000	0.41	0.27	440	2.2	32	3.5	120	84
A00488535	SW-21-598	104	105	14	*0.35*	*3*	170	2.46	0.61	*0.05*	3500	0.51	1.29	95	1.2	15	1.7	80	98
A00488536	SW-21-619	164	165	46	*0.35*	*3*	91	2.68	0.34	0.2	3700	0.26	0.096	250	0.89	10	1.39	68	49
A00488534	SW-22-574	93	94	14	*0.35*	*3*	200	2.73	0.57	0.3	3700	0.61	1.17	110	2	14	1.46	69	94
A00488531	SW-22-575	254	255	35	1	*3*	100	0.4	0.58	0.4	7900	0.79	0.47	280	5.8	18	1.93	270	94
A00488551	SW-22-585	200	201	25	*0.35*	*3*	160	1.24	1.43	0.1	3000	0.74	1.35	130	49	48	5.41	240	110
A00488553	SW-22-587	231	232	16	*0.35*	*3*	290	1.02	0.37	0.2	3500	0.13	0.54	110	1	9.8	1.13	59	120
A00488550	SW-22-603	34	35	13	*0.35*	*3*	390	1.13	0.53	0.2	3500	0.16	1.22	130	1.4	11	1.26	54	87
A00488540	SW-22-603	143	144	17	*0.35*	*3*	430	1.65	0.49	*0.05*	3800	0.11	0.81	130	0.87	12	1.3	99	54
A00488554	SW-22-605	63	64	10	*0.35*	*3*	210	0.82	0.46	0.1	2800	0.31	1.02	74	12	10	1.1	22	69
A00488538	SW-22-607	267	268	20	*0.35*	*3*	430	1.7	0.53	0.2	4700	0.18	0.47	170	1.8	13	1.42	74	46
A00488546	SW-22-629	166	167	45	*0.35*	*3*	89	1.4	0.4	0.2	3900	0.19	0.3	240	12	13	1.64	110	54
A00488533	SW-22-647	200	201	9	*0.35*	*3*	180	2.78	0.61	*0.05*	2400	0.53	1.54	38	2.4	17	1.85	34	83
A00488557	TLG-ZSW19-179	245	246	5	*0.35*	*3*	110	1.07	0.69	0.1	1400	0.24	2.02	7.5	1.6	13	1.64	19	110
A00488556	TLG-ZSW20-183	41	42	44	*0.35*	*3*	150	1.11	1.29	*0.05*	12000	0.09	0.52	550	1.3	33	3.56	63	130
A00488558	TLG-ZSW20-185	67	67.6	27	*0.35*	*3*	690	1.16	1.2	0.2	7100	0.16	2.98	220	1.3	26	2.95	75	150
A00488541	TLG-ZSW20-198	198	199	13	*0.35*	*3*	200	1.54	1.3	0.2	2700	0.07	1.19	83	1.5	32	3.04	31	65
A00488539	TLG-ZSW20-201	55	56	10	*0.35*	*3*	290	1.67	0.68	0.8	2500	0.31	1.68	38	0.95	14	1.49	36	68
A00488537	TLG-ZSW20-210	76	77	22	*0.35*	*3*	370	2.36	0.72	0.2	4800	0.71	1.21	180	11	15	1.76	41	65
A00488555	TLG-ZSW21-283	141	142	9	*0.35*	*3*	170	0.99	0.43	0.2	1700	0.18	1.64	15	1.1	11	1.57	42	170
All Data																			
Maximum				46	1	3	690	3.97	1.43	1.2	12000	0.88	2.98	550	49	48	5.41	1500	170
Minimum				5	0.35	3	31	0.4	0.34	0.05	950	0.07	0.096	4.2	0.85	9.8	1.1	19	46
Mean				20.4	0.39	3	220	1.57	0.71	0.23	4529	0.42	1.13	163	4.49	18.1	2.04	126	93.9
Standard Deviation				12.6	0.17	0	136	0.84	0.29	0.24	2728	0.26	0.64	134	9.15	8.78	0.93	270	32.5
10 Percentile				9	0.35	3	98.2	0.96	0.4	0.05	2260	0.13	0.29	33.4	0.94	10	1.27	32.6	54
25 Percentile				11	0.35	3	150	1.07	0.53	0.1	2900	0.18	0.54	68	1.2	13	1.46	41	68
Median				16	0.35	3	180	1.16	0.68	0.2	3700	0.41	1.21	130	1.6	15	1.7	69	94
75 Percentile				27	0.35	3	280	1.7	0.75	0.2	4800	0.61	1.53	220	2.5	20	2.37	90	120
90 Percentile				40.8	0.35	3	398	2.74	1.22	0.4	8180	0.77	1.73	350	11.2	32	3.13	144	132
Interquartile Range (IQR) [1]				16	0	0	130	0.63	0.22	0.1	1900	0.43	0.99	152	1.3	7	0.91	49	52
Variance				160	0.028	0	18411	0.7	0.087	0.059	7442057	0.067	0.41	17997	83.8	77.1	0.87	72918	1054
Skewness				0.87	3.59	NA	1.76	1.23	1.13	2.89	1.4	0.34	0.55	1.27	4.43	1.82	2.03	5.04	0.44
Coefficient of Variation (CoV) [2]				0.62	0.42	0	0.62	0.53	0.41	1.06	0.6	0.62	0.57	0.82	2.04	0.48	0.46	2.14	0.35
Count				29	29	29	29	29	29	29	29	29	29	29	29	29	29	29	29

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **Whole Rock by XRF**
Comments: Samples collected by Troilus personnel.

Sample		Interval															
Id.	Drillhole	From	To	Al_2O_3	CaO	Cr_2O_3	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	TiO_2	V_2O_5	LOI	Total
		(m)	(m)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Analysis Completed Date				2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	2022-11-08	
Analysis Completed Time				16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	16:18	
MDL				0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
A00488552	SW-21-511	38	39	15.2	3.18	0.01	5.51	2.21	2.20	0.03	3.31	0.14	66.1	0.56	0.01	0.96	99.42
A00488559	SW-21-537	215	216	15.2	6.34	0.02	10.6	1.72	2.87	0.07	3.25	0.14	55.9	1.46	0.05	1.44	99.06
A00488549	SW-21-540	125	126	15.4	5.49	0.04	9.17	1.37	2.40	0.07	3.72	0.15	59.7	0.68	0.02	1.17	99.38
A00488542	SW-21-548	110	111	12.9	0.18	*0.005*	5.46	4.02	0.32	*0.005*	0.38	0.03	71.5	0.13	*0.005*	4.31	99.25
A00488545	SW-21-554	110	111	15.1	7.50	0.04	15.6	0.52	4.77	0.13	3.30	0.11	49.9	1.60	0.07	0.94	99.58
A00488544	SW-21-556	34	35	16.8	4.08	0.03	3.61	3.06	1.42	0.03	2.36	0.13	65.4	0.81	0.04	1.73	99.50
A00488547	SW-21-561	38	39	16.9	4.20	*0.005*	5.40	2.00	1.30	0.04	3.99	0.14	63.7	0.50	*0.005*	1.50	99.68
A00488543	SW-21-562	49	50	15.3	3.80	0.03	10.8	2.42	1.97	0.06	3.09	0.21	59.5	1.05	0.04	1.37	99.64
A00488532	SW-21-567	212	213	14.6	4.91	*0.005*	5.36	2.56	2.47	0.13	1.08	0.12	65.5	0.47	0.01	2.04	99.26
A00488548	SW-21-596	125	126	13.4	6.56	*0.005*	20.2	1.28	2.52	0.31	1.74	0.14	46.5	2.00	0.08	4.63	99.37
A00488535	SW-21-598	104	105	15.2	5.28	0.02	5.82	1.83	2.54	0.09	3.72	0.17	62.1	0.59	0.02	2.11	99.49
A00488536	SW-21-619	164	165	14.5	10.8	0.04	10.7	0.62	8.22	0.16	2.14	0.04	49.9	0.63	0.05	1.89	99.69
A00488534	SW-22-574	93	94	14.4	4.00	0.02	4.21	1.81	1.72	0.05	2.81	0.11	68.0	0.39	0.01	2.06	99.59
A00488531	SW-22-575	254	255	14.4	7.40	0.03	14.6	1.26	5.71	0.26	1.15	0.09	51.2	1.09	0.04	2.39	99.62
A00488551	SW-22-585	200	201	13.4	8.55	0.02	20.7	1.40	3.15	0.10	0.82	0.08	46.8	0.45	0.03	3.19	98.69
A00488553	SW-22-587	231	232	14.8	7.38	0.03	6.49	0.57	3.21	0.11	4.09	0.14	60.6	0.59	0.02	1.74	99.77
A00488550	SW-22-603	34	35	15.1	6.58	0.02	7.60	0.54	3.06	0.07	4.77	0.17	59.4	0.62	0.01	1.48	99.42
A00488540	SW-22-603	143	144	15.6	6.76	0.02	6.97	0.92	3.64	0.12	3.57	0.17	59.2	0.62	0.03	2.15	99.77
A00488554	SW-22-605	63	64	13.7	2.72	0.02	4.78	2.62	1.30	0.03	2.09	0.16	69.0	0.50	0.01	2.44	99.37
A00488538	SW-22-607	267	268	16.0	7.90	0.03	8.76	0.84	4.32	0.11	3.79	0.25	55.9	0.74	0.04	1.48	100.16
A00488546	SW-22-629	166	167	13.9	11.6	0.08	10.3	0.53	6.81	0.15	2.02	0.05	50.5	0.68	0.04	2.95	99.61
A00488533	SW-22-647	200	201	15.1	5.19	*0.005*	6.57	1.69	2.79	0.08	3.21	0.20	62.0	0.60	0.02	2.04	99.50
A00488557	TLG-ZSW19-179	245	246	12.3	1.57	0.02	2.42	1.79	0.49	0.03	4.10	0.04	75.8	0.15	*0.005*	1.07	99.79
A00488556	TLG-ZSW20-183	41	42	15.3	3.58	0.05	11.4	0.61	1.16	0.09	6.44	0.22	58.2	2.22	0.09	0.81	100.17
A00488558	TLG-ZSW20-185	67	67.6	14.7	7.86	0.03	7.38	1.08	5.04	0.11	4.40	0.27	56.0	1.21	0.04	1.34	99.46
A00488541	TLG-ZSW20-198	198	199	14.6	4.22	0.02	2.32	0.47	1.29	0.04	6.10	0.10	68.3	0.46	0.02	1.60	99.54
A00488539	TLG-ZSW20-201	55	56	14.8	2.77	0.02	4.53	1.35	1.52	0.02	4.95	0.11	68.4	0.40	0.01	0.86	99.74
A00488537	TLG-ZSW20-210	76	77	21.4	9.80	0.02	7.56	4.19	3.89	0.15	1.86	0.23	42.3	0.91	0.03	6.25	98.59
A00488555	TLG-ZSW21-283	141	142	14.5	2.63	0.02	3.11	0.91	1.36	0.02	5.21	0.08	71.0	0.29	*0.005*	0.76	99.90
All Data																	
Maximum				21.4	11.6	0.08	20.7	4.19	8.22	0.31	6.44	0.27	75.8	2.22	0.09	6.25	
Minimum				12.3	0.18	0.005	2.32	0.47	0.32	0.005	0.38	0.03	42.3	0.13	0.005	0.76	
Mean				15	5.61	0.024	8.2	1.59	2.88	0.092	3.22	0.14	59.9	0.77	0.029	2.02	
Standard Deviation				1.59	2.72	0.016	4.75	1	1.86	0.069	1.51	0.063	8.46	0.5	0.023	1.24	
10 Percentile				13.4	2.7	0.005	3.51	0.54	1.26	0.028	1.14	0.048	49.3	0.37	0.005	0.92	
25 Percentile				14.4	3.8	0.02	5.36	0.84	1.42	0.04	2.09	0.1	55.9	0.47	0.01	1.34	
Median				14.8	5.28	0.02	6.97	1.37	2.52	0.08	3.3	0.14	59.7	0.62	0.02	1.73	
75 Percentile				15.3	7.4	0.03	10.6	2	3.64	0.12	4.09	0.17	66.1	0.91	0.04	2.15	
90 Percentile				16.2	8.8	0.04	14.8	2.71	5.17	0.15	5	0.22	69.4	1.49	0.054	3.41	
Interquartile Range (IQR) [1]				0.9	3.6	0.01	5.24	1.16	2.22	0.08	2	0.07	10.2	0.44	0.03	0.81	
Variance				2.54	7.39	0.00025	22.6	1	3.44	0.0048	2.29	0.0039	71.5	0.25	0.00052	1.55	
Skewness				2.26	0.29	1.58	1.27	1.1	1.19	1.52	0.12	0.23	-0.25	1.5	1.11	1.93	
Coefficient of Variation (CoV) [2]				0.11	0.48	0.65	0.58	0.63	0.64	0.76	0.47	0.45	0.14	0.65	0.78	0.61	
Count				29	29	29	29	29	29	29	29	29	29	29	29	29	

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **QA/QC Data - Comparison on ICP Metals and Whole Rock Analyses**
Comments: Samples collected by Troilus personnel.

Sample Id.	Sample Drillhole	Interval From	Interval To	Whole Rock Al * (ppm)	ICP Al (ppm)	Difference (%) [3]	Whole Rock Ca * (ppm)	ICP Ca (ppm)	Difference (%) [3]	Whole Rock Cr * (ppm)	ICP Cr (ppm)	Difference (%) [3]	Whole Rock Fe * (ppm)	ICP Fe (ppm)	Difference (%) [3]	Whole Rock K * (ppm)	ICP K (ppm)	Difference (%) [3]	Whole Rock Mg * (ppm)	ICP Mg (ppm)	Difference (%) [3]
A00488552	SW-21-511	38	39	80443	79000	-1.79	22727	20000	-12.00	68	85	24.23	38539	38000	-1.40	18345	17000	-7.33	13268	12000	-9.55
A00488559	SW-21-537	215	216	80443	78000	-3.04	45312	39000	-13.93	137	190	38.85	74140	73000	-1.54	14278	12000	-15.95	17308	16000	-7.56
A00488549	SW-21-540	125	126	81501	78000	-4.30	39237	33000	-15.89	274	200	-26.92	64138	63000	-1.77	11373	10000	-12.07	14474	14000	-3.27
A00488542	SW-21-548	110	111	68270	67000	-1.86	1286	1800	39.92	34	53	54.92	38189	47000	23.07	33371	30000	-10.10	1930	2100	8.82
A00488545	SW-21-554	110	111	79913	80000	0.11	53602	51000	-4.85	274	260	-5.00	109112	110000	0.81	4317	3700	-14.28	28767	28000	-2.67
A00488544	SW-21-556	34	35	88910	87000	-2.15	29159	27000	-7.41	205	170	-17.18	25250	28000	10.89	25401	23000	-9.45	8564	8400	-1.91
A00488547	SW-21-561	38	39	89439	86000	-3.85	30017	29000	-3.39	34	60	75.38	37770	37000	-2.04	16602	15000	-9.65	7840	7000	-10.71
A00488543	SW-21-562	49	50	80972	82000	1.27	27158	23000	-15.31	205	85	-58.59	75539	71000	-6.01	20089	20000	-0.44	11881	11000	-7.41
A00488532	SW-21-567	212	213	77267	84000	8.71	35091	37000	5.44	34	66	92.92	37490	43000	14.70	21251	21000	-1.18	14896	15000	0.70
A00488548	SW-21-596	125	126	70916	70000	-1.29	46884	47000	0.25	34	100	192.31	141286	140000	-0.91	10625	9100	-14.36	15198	15000	-1.30
A00488535	SW-21-598	104	105	80443	78000	-3.04	37736	36000	-4.60	137	84	-38.62	40707	41000	0.72	15191	14000	-7.84	15318	15000	-2.08
A00488536	SW-21-619	164	165	76738	76000	-0.96	77187	70000	-9.31	274	200	-26.92	74840	72000	-3.79	5147	4700	-8.68	49573	45000	-9.22
A00488534	SW-22-574	93	94	76209	80000	4.97	28588	32000	11.94	137	84	-38.62	29446	46000	56.22	15025	13000	-13.48	10373	16000	54.25
A00488531	SW-22-575	254	255	76209	83000	8.91	52887	50000	-5.46	205	190	-7.44	102118	110000	7.72	10459	9400	-10.13	34436	34000	-1.27
A00488551	SW-22-585	200	201	70916	73000	2.94	61106	58000	-5.08	137	120	-12.31	144783	140000	-3.30	11622	11000	-5.35	18997	18000	-5.25
A00488553	SW-22-587	231	232	78326	77000	-1.69	52744	47000	-10.89	205	190	-7.44	45393	45000	-0.87	4732	4300	-9.12	19359	18000	-7.02
A00488550	SW-22-603	34	35	79913	78000	-2.39	47027	39000	-17.07	137	120	-12.31	53157	54000	1.59	4483	4800	7.08	18454	17000	-7.88
A00488540	SW-22-603	143	144	82559	83000	0.53	48313	45000	-6.86	137	140	2.31	48751	49000	0.51	7637	6800	-10.96	21952	21000	-4.34
A00488554	SW-22-605	63	64	72504	70000	-3.45	19440	19000	-2.26	137	150	9.62	33433	34000	1.70	21749	18000	-17.24	7840	6800	-13.27
A00488538	SW-22-607	267	268	84676	85000	0.38	56461	52000	-7.90	205	130	-36.67	61271	63000	2.82	6973	7100	1.82	26053	25000	-4.04
A00488546	SW-22-629	166	167	73563	69000	-6.20	82904	79000	-4.71	547	460	-15.96	72042	71000	-1.45	4400	3300	-24.99	41069	38000	-7.47
A00488533	SW-22-647	200	201	79913	76000	-4.90	37093	26000	-29.91	34	92	168.92	45953	30000	-34.72	14029	14000	-0.21	16826	10000	-40.57
A00488557	TLG-ZSW19-179	245	246	65095	64000	-1.68	11221	11000	-1.97	137	110	-19.62	16926	17000	0.44	14859	13000	-12.51	2955	2700	-8.63
A00488556	TLG-ZSW20-183	41	42	80972	83000	2.50	25586	24000	-6.20	342	150	-56.15	79736	78000	-2.18	5064	4900	-3.23	6996	7000	0.06
A00488558	TLG-ZSW20-185	67	67.6	77796	78000	0.26	56175	52000	-7.43	205	200	-2.56	51618	50000	-3.14	8965	7700	-14.11	30395	28000	-7.88
A00488541	TLG-ZSW20-198	198	199	77267	75000	-2.93	30160	27000	-10.48	137	140	2.31	16227	17000	4.76	3902	3200	-17.98	7780	6900	-11.31
A00488539	TLG-ZSW20-201	55	56	78326	76000	-2.97	19797	19000	-4.03	137	92	-32.77	31684	32000	1.00	11207	9900	-11.66	9167	8300	-9.46
A00488537	TLG-ZSW20-210	76	77	113255	110000	-2.87	70040	63000	-10.05	137	130	-5.00	52877	50000	-5.44	34782	33000	-5.12	23460	22000	-6.22
A00488555	TLG-ZSW21-283	141	142	76738	73000	-4.87	18796	17000	-9.56	137	65	-52.50	21752	23000	5.74	7554	6300	-16.60	8202	7500	-8.56
All Data																					
Maximum						8.91			39.9			192			56.2			7.08			54.2
Minimum						-6.2			-29.9			-58.6			-34.7			-25			-40.6
Mean						-0.88			-5.83			6.52			2.21			-9.49			-4.66
Standard Deviation						3.66			11.5			60.2			13.8			6.8			13.8
10 Percentile						-4.41			-15.4			-41.4			-4.12			-16.7			-10.8
25 Percentile						-3.04			-10.5			-26.9			-2.04			-14.1			-8.63
Median						-1.79			-6.86			-7.44			0.44			-10.1			-7.02
75 Percentile						0.38			-4.03			9.62			2.82			-5.35			-2.08
90 Percentile						3.35			1.29			78.9			11.7			-0.39			0.19
Interquartile Range (IQR) [1]						3.42			6.45			36.5			4.86			8.76			6.55
Variance						13.4			133			3622			191			46.3			191
Skewness						1.35			2.12			1.87			1.7			0.32			2.32
Coefficient of Variation (CoV) [2]						-4.14			-1.98			9.22			6.25			-0.72			-2.97
Count						29			29			29			29			29			29

[3] Difference (%) = (ICP - Whole Rock) * 100 / Whole Rock
* Element calculated from Whole Rock XRF analysis

Al (Whole Rock) = $(Al_2O_3*2*10000*26.98)/(2*26.98+3*16)$
Ca (Whole Rock) = $(CaO*10000*40.08)/(40.08+16)$
Cr (Whole Rock) = $(Cr_2O_3*2*10000*52.00)/(2*52.00+3*16)$

Fe (Whole Rock) = $(Fe_2O_3*2*10000*55.85)/(2*55.85+3*16)$
K (Whole Rock) = $(K_2O*2*10000*39.09)/(39.09*2+16)$
Mg (Whole Rock) = $(MgO*10000*24.31)/(24.31+16)$

Project: **Troilus Gold - SW Zone**
Client: Troilus Gold Corp
Data: **QA/QC Data - Comparison on ICP Metals and Whole Rock Analyses**
Comments: Samples collected by Troilus personnel.

Sample Id.	Sample Drillhole	Interval From	Interval To	Whole Rock Mn * (ppm)	ICP Mn (ppm)	Difference (%) [3]	Whole Rock Na * (ppm)	ICP Na (ppm)	Difference (%) [3]	Whole Rock P * (ppm)	ICP P (ppm)	Difference (%) [3]	Whole Rock Ti * (ppm)	ICP Ti (ppm)	Difference (%) [3]	Whole Rock V * (ppm)	ICP V (ppm)	Difference (%) [3]
A00488552	SW-21-511	38	39	232	260	11.91	24555	23000	-6.33	611	510	-16.52	3356	3200	-4.66	28	68	142.79
A00488559	SW-21-537	215	216	542	480	-11.46	24110	23000	-4.60	611	520	-14.88	8750	7700	-12.00	140	340	142.79
A00488549	SW-21-540	125	126	542	550	1.45	27597	25000	-9.41	655	580	-11.39	4075	4200	3.06	56	130	132.08
A00488542	SW-21-548	110	111	39	110	184.07	2819	2500	-11.32	131	100	-23.61	779	950	21.93	14	4	-70.01
A00488545	SW-21-554	110	111	1007	980	-2.66	24481	23000	-6.05	480	460	-4.17	9589	9300	-3.02	196	390	98.92
A00488544	SW-21-556	34	35	232	330	42.03	17508	15000	-14.32	567	550	-3.05	4855	4100	-15.54	112	180	60.67
A00488547	SW-21-561	38	39	310	330	6.53	29600	27000	-8.78	611	510	-16.52	2997	2900	-3.23	14	60	328.45
A00488543	SW-21-562	49	50	465	450	-3.16	22923	22000	-4.03	916	870	-5.06	6293	5600	-11.01	112	200	78.52
A00488532	SW-21-567	212	213	1007	1200	19.19	8012	7400	-7.64	524	480	-8.34	2817	3800	34.90	28	58	107.08
A00488548	SW-21-596	125	126	2401	2300	-4.20	12908	12000	-7.04	611	530	-13.25	11987	11000	-8.23	224	440	96.37
A00488535	SW-21-598	104	105	697	730	4.73	27597	25000	-9.41	742	690	-6.99	3536	3500	-1.02	56	95	69.60
A00488536	SW-21-619	164	165	1239	1100	-11.23	15876	15000	-5.52	175	190	8.85	3776	3700	-2.01	140	250	78.52
A00488534	SW-22-574	93	94	387	510	31.71	20846	22000	5.54	480	810	68.74	2337	3700	58.30	28	110	292.75
A00488531	SW-22-575	254	255	2014	2000	-0.67	8531	8000	-6.23	393	360	-8.34	6533	7900	20.93	112	280	149.93
A00488551	SW-22-585	200	201	774	800	3.30	6083	6200	1.92	349	320	-8.34	2697	3000	11.23	84	130	54.72
A00488553	SW-22-587	231	232	852	860	0.95	30342	28000	-7.72	611	500	-18.16	3536	3500	-1.02	56	110	96.37
A00488550	SW-22-603	34	35	542	480	-11.46	35386	34000	-3.92	742	600	-19.12	3716	3500	-5.81	28	130	364.16
A00488540	SW-22-603	143	144	929	820	-11.77	26484	25000	-5.60	742	690	-6.99	3716	3800	2.26	84	130	54.72
A00488554	SW-22-605	63	64	232	300	29.12	15505	16000	3.19	698	560	-19.79	2997	2800	-6.56	28	74	164.21
A00488538	SW-22-607	267	268	852	830	-2.57	28116	26000	-7.53	1091	940	-13.84	4435	4700	5.97	112	170	51.74
A00488546	SW-22-629	166	167	1162	1100	-5.31	14985	13000	-13.25	218	180	-17.50	4075	3900	-4.31	112	240	114.23
A00488533	SW-22-647	200	201	620	430	-30.60	23813	19000	-20.21	873	470	-46.15	3596	2400	-33.26	56	38	-32.16
A00488557	TLG-ZSW19-179	245	246	232	240	3.30	30416	28000	-7.94	175	130	-25.52	899	1400	55.73	14	8	-46.44
A00488556	TLG-ZSW20-183	41	42	697	600	-13.92	47775	46000	-3.72	960	620	-35.42	13305	12000	-9.81	252	550	118.19
A00488558	TLG-ZSW20-185	67	67.6	852	790	-7.27	32641	31000	-5.03	1178	1000	-15.13	7252	7100	-2.10	112	220	96.37
A00488541	TLG-ZSW20-198	198	199	310	290	-6.39	45253	41000	-9.40	436	270	-38.13	2757	2700	-2.07	56	83	48.17
A00488539	TLG-ZSW20-201	55	56	155	170	9.75	36722	33000	-10.13	480	410	-14.59	2397	2500	4.28	28	38	35.68
A00488537	TLG-ZSW20-210	76	77	1162	1100	-5.31	13798	11000	-20.28	1004	880	-12.32	5454	4800	-11.99	84	180	114.23
A00488555	TLG-ZSW21-283	141	142	155	160	3.30	38651	35000	-9.44	349	300	-14.07	1738	1700	-2.19	14	15	7.11
All Data																		
Maximum						184			5.54			68.7			58.3			364
Minimum						-30.6			-20.3			-46.1			-33.3			-70
Mean						7.7			-7.39			-12.4			2.72			102
Standard Deviation						37			5.61			19.1			19.5			97.1
10 Percentile						-11.5			-13.5			-27.5			-12			-0.74
25 Percentile						-6.39			-9.41			-18.2			-6.56			54.7
Median						-0.67			-7.53			-14.1			-2.1			96.4
75 Percentile						6.53			-5.03			-8.34			4.28			132
90 Percentile						29.6			-2.59			-3.95			24.5			190
Interquartile Range (IQR) [1]						12.9			4.38			9.82			10.8			77.4
Variance						1369			31.5			364			382			9438
Skewness						4.12			-0.13			2.61			1.54			1.04
Coefficient of Variation (CoV) [2]						4.8			-0.76			-1.54			7.2			0.96
Count						29			29			29			29			29

[3] Difference (%) = (ICP - Whole Rock) * 100 / Whole Rock

* Element calculated from Whole Rock XRF analysis

Mn (Whole Rock) = $(MnO*10000*54.94)/(54.94+16)$

Na (Whole Rock) = $(Na_2O*2*10000*22.99)/(22.99*2+16)$

P (Whole Rock) = $(P_2O5*2*10000*30.97)/(2*30.97+5*16)$

Ti (Whole Rock) = $(TiO_2*10000*47.867)/(47.867+2*16)$

V (Whole Rock) = $(V_2O_5*10000*50.9415)/(50.9415*2+5*16)$

APPENDIX D. ML-ARD Analyses for Subsamples of Rock Placed into the 13 On-Site ML-ARD Columns

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **Notes for Data and Calculations**
On-site ML-ARD Columns

All Data

[1] Interquartile Range (IQR) = 75th percentile minus 25th percentile

[2] Coefficient of Variation (CoV) = standard deviation divided by mean

Data shown in blue represents calculated data.

If data was reported as <detection limit half the detection limit is shown in italics and was used in subsequent calculations.

If data was reported as > detection limit the detection limit is shown in bold and was used in subsequent calculations.

ABA Calculations

% S (Sulphide) Calculated = % S (Total) - % S (Sulphate) Carb Leach
%S($BaSO_4$) = Ba (ppm) * 0.0001 * 32.06 / 137.37
Ba (ppm) data by ICP was used for calculation
% S (del actual) = %S(Total) Leco - %S(Sulphide) Leco - %S(Sulphate) Carb Leach - %S($BaSO_4$)
If %S(Sulphide) Leco is unavailable, % S (del actual) = 0
% S (del) = % S (del actual) unless <0, then 0
TAP = % S (Total) * 31.25
SAP = % S (Sulphide + del) * 31.25

Unavailable NP = 10
Available NP = NP - Unavailable NP
Total CaNP = % C * 10 * 100.09 / 12.01
Inorganic CaNP = % CO_2 * 10 * 100.09 / 44.01 or or Inorganic CaNP = % CO_3 * 10 * 100.09 / 60.01
(Ca) CaNP = (Ca(ppm) * 100.09 / 40.08) / 1000
(Ca+Mg) CaNP = ((Ca(ppm) * 100.09 / 40.08) + (Mg(ppm) * 100.09 / 24.31)) / 1000

TNNP = NP - TAP
Adjusted TNNP = (NP - Unavailable NP) - TAP
SNNP = NP - SAP
Adjusted SNNP = (NP - Unavailable NP) - SAP
Unavailable NP = 10
TNPR = NP / TAP
Note: If % S(Total) <0.01 then TNPR = 200
Note: If % S(Total) > 0.01 and NP <= 0 then TNPR = 0.001
Adjusted TNPR = (NP - Unavailable NP) / TAP
Note: If % S(Total) <0.01 then Adjusted TNPR = 200
Note: If % S(Total) > 0.01 and (NP - Unavailable NP) <= 0 then Adjusted TNPR = 0.001
SNPR = NP / SAP
Note: If % S(Sulphide + del) <0.01 then SNPR = 200
Note: If % S(Sulphide + del) > 0.01 and NP <= 0 then SNPR = 0.001
Adjusted SNPR = (NP - Unavailable NP) / SAP
Note: If % S(Sulphide + del) <0.01 then Adjusted SNPR = 200
Note: If % S(Sulphide + del) > 0.01 and (NP - Unavailable NP) <= 0 then Adjusted SNPR = 0.001

Solid-Phase Elements

Crustal Abundance Data: Curated data provided by Mathematica's ElementData function from Wolfram Research, Inc.:
https://periodictable.com/Properties/A/CrustAbundance.al.html

$\boxed{2}$ NOTE: if data is boxed, then data is 3 times the maximum crustal abundance.

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **Sample Information**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample Id.	Description	Field Column	Total Column Weight (kg)	Pail Weight (kg)	Grain Size	Column Size	Column Type	Material	Rock Unit	Material Source
E12-01	Oxyded rock-E12-01-6.3mm	12	260.7	21	6.3 mm	3 m	Recirculating	Oxidized waste rock	J4	Test Pit M4
E12-02	Oxyded rock-E12-02-6.3mm	12	260.7	24.7	6.3 mm	3 m	Recirculating	Oxidized waste rock	J4	Test Pit M4
E12-03	Oxyded rock-E12-03-6.3mm	12	260.7	21.2	6.3 mm	3 m	Recirculating	Oxidized waste rock	J4	Test Pit M4
E12-04	Oxyded rock-E12-04-6.3mm	12	260.7	23.8	6.3 mm	3 m	Recirculating	Oxidized waste rock (heavily oxidized)	J4	Test Pit M4
E12-05	Oxyded rock-E12-05-6.3mm	12	260.7	18	6.3 mm	3 m	Recirculating	Oxidized waste rock (heavily oxidized)	J4	Test Pit M4
E12-06	Oxyded rock-E12-06-6.3mm	12	260.7	23.3	6.3 mm	3 m	Recirculating	Oxidized waste rock (heavily oxidized)	J4	Test Pit M4
E12-07	Oxyded rock-E12-07-6.3mm	12	260.7	22.3	6.3 mm	3 m	Recirculating	Oxidized waste rock (heavily oxidized)	J4	Test Pit M4
E12-08	Oxyded rock-E12-08-6.3mm	12	260.7	25.2	6.3 mm	3 m	Recirculating	Oxidized waste rock (heavily oxidized)	J4	Test Pit M4
E12-09	Oxyded rock-E12-09-6.3mm	12	260.7	12	6.3 mm	3 m	Recirculating	Oxidized waste rock (heavily oxidized)	J4	Test Pit M4
E12-10	Oxyded rock-E12-10-6.3mm	12	260.7	13.2	6.3 mm	3 m	Recirculating	Oxidized waste rock (heavily oxidized)	J4	Test Pit M4
E13-01	Non-oxyded rock-E13-01-6.3mm	13	317.52	11.7	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-02	Non-oxyded rock-E13-02-6.3mm	13	317.52	20.1	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-03	Non-oxyded rock-E13-03-6.3mm	13	317.52	18.6	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-04	Non-oxyded rock-E13-04-6.3mm	13	317.52	16.3	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-05	Non-oxyded rock-E13-05-6.3mm	13	317.52	21.5	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-06	Non-oxyded rock-E13-06-6.3mm	13	317.52	20.02	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-07	Non-oxyded rock-E13-07-6.3mm	13	317.52	24.6	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-08	Non-oxyded rock-E13-08-6.3mm	13	317.52	25	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-09	Non-oxyded rock-E13-09-6.3mm	13	317.52	25.3	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E13-10	Non-oxyded rock-E13-10-6.3mm	13	317.52	9.7	6.3 mm	3 m	Recirculating	Unoxidized waste rock (relatively unoxidized)	J4	Test Pit SE6
E1 - Cylinder sac #1 - #1	cylinder sac #1-#1-6.3mm	1	92.97		6.3 mm	1 m	Single-pass	Low-sulphur non-brecciated diorite	I2J	Core
E2 - Cylinder sac #1 - #2	cylinder sac #1-#2-6.3mm	2	70.79		6.3 mm	1 m	Single-pass	Mean-sulphur non-brecciated diorite	I2J	Core
E3 - Cylinder sac #1 - #3	cylinder sac #1-#3-6.3mm	3	98.33		6.3 mm	1 m	Single-pass	High-sulphur non-brecciated diorite	I2J	Core
E4 - Cylinder sac #2 - #4	cylinder sac #2-#4-6.3mm	4	98.52		6.3 mm	1 m	Single-pass	Low-sulphur brecciated diorite	I2J;BR	Core
E5 - Cylinder sac #2 - #5	cylinder sac #2-#5-6.3mm	5	64.48		6.3 mm	1 m	Single-pass	Mean-sulphur brecciated diorite	I2J;BR	Core
E6 - Cylinder sac #2 - #6	cylinder sac #2-#6-6.3mm	6	98.92		6.3 mm	1 m	Single-pass	High-sulphur brecciated diorite	I2J;BR	Core
E7 - Cylinder sac #3 - #7	cylinder sac #3-#7-6.3mm	7	76.93		6.3 mm	1 m	Single-pass	Mean-sulphur undifferentiated volcanics	V	Core
E8 - Cylinder sac #3 - #8	cylinder sac #3-#8-6.3mm	8	97.5		6.3 mm	1 m	Single-pass	Mean-sulphur felsic intrusives	I1	Core
E9 - Cylinder sac #3 - #9	cylinder sac #3-#9-6.3mm	9	106.58		6.3 mm	1 m	Single-pass	Composite ore	J4	Core
E10 - Cylinder sac #4 - #10	cylinder sac #4-#10-6.3mm	10	72.24		6.3 mm	1 m	Recirculating	Mean-sulphur non-brecciated diorite	I2J	Core
E11 - Cylinder sac #4 - #11	cylinder sac #4-#11-6.3mm	11	65.48		6.3 mm	1 m	Recirculating	Mean-sulphur brecciated diorite	I2J;BR	Core
Sample d1	Duplicate of E12-01	12			6.3 mm	3 m	Recirculating	Oxidized J4 waste rock	J4	Test Pit M4
Sample d2	Duplicate of E13-01	13			6.3 mm	3 m	Recirculating	Unoxidized J4 waste rock	J4	Test Pit SE6
Sample d3	Duplicate of TLG (Cylinder)-#1-#1	1			6.3 mm	1 m	Single-pass	Low-sulphur non-brecciated diorite	I2J	

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample Id.	Sample Weight	Paste pH	S (Total)	% Total Sulphur	S (Sulphide)	S (Sulphide)	Carbonate Leach S (Sulphate)	HCl Leachable S (Sulphate)	$S(BaSO_4)$	$S(del_{actual})$	S(del)	Without $BaSO_4$ $S(del_{actual})$	Without $BaSO_4$ S(del)	TAP	SAP	Sobek NP	Available NP	Total C	Inorganic C
	(kg)	Unity	(% Leco)	Leco/ICP	(% Leco)	(% Calc)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(% Leco)	(%)
Method		OA-ELE07	S-IR08	Calculated	S-IR07	Calculated			Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	OA-VOL08	Calculated		C-GAS05
MDL		0.1	0.01		0.01	0.01	0.01	0.01								1		0.01	0.05
E12-01	4	8.3	1.65	1.65	1.28	1.64	0.01	0.02	0.005	0.355	0.355	0.360	0.360	51.6	51.1	15	5		*0.025*
E12-02	3.7	8.4	1.68	1.68	1.58	1.67	0.01	0.01	0.005	0.085	0.085	0.090	0.090	52.5	52.0	19	9		*0.025*
E12-03	3.7	8.2	1.11	1.11	1.06	1.1	0.01	0.04	0.006	0.034	0.034	0.040	0.040	34.7	34.2	17	7		*0.025*
E12-04	3.9	8.3	1.13	1.13	1.01	1.11	0.02	0.01	0.007	0.093	0.093	0.100	0.100	35.3	34.5	20	10		*0.025*
E12-05	3.9	7.6	2.04	2.04	1.81	2.03	0.01	0.01	0.007	0.213	0.213	0.220	0.220	63.8	63.2	21	11		*0.025*
E12-06	3.8	10.5	1.69	1.69	1.58	1.68	0.01	*0.005*	0.006	0.094	0.094	0.100	0.100	52.8	52.3	21	11		0.05
E12-07	3.8	10.6	1.41	1.41	1.26	1.4	0.01	0.01	0.006	0.134	0.134	0.140	0.140	44.1	43.6	19	9		*0.025*
E12-08	4.5	10.4	1.92	1.92	1.79	1.91	0.01	*0.005*	0.007	0.113	0.113	0.120	0.120	60.0	59.5	15	5		*0.025*
E12-09	4.3	10.2	1.73	1.73	1.66	1.72	0.01	*0.005*	0.007	0.053	0.053	0.060	0.060	54.1	53.5	17	7		*0.025*
E12-10	4.6	9.8	1.45	1.45	1.35	1.44	0.01	0.02	0.006	0.084	0.084	0.090	0.090	45.3	44.8	16	6		*0.025*
E13-01	4	10	0.53	0.53	0.52	0.525	*0.005*	0.01	0.007	-0.002	0.000	0.005	0.005	16.6	16.3	17	7		0.05
E13-02	3.9	10	0.23	0.23	0.19	0.225	*0.005*	*0.005*	0.007	0.028	0.028	0.035	0.035	7.2	6.8	16	6		*0.025*
E13-03	3.8	9.7	0.34	0.34	0.32	0.335	*0.005*	*0.005*	0.008	0.007	0.007	0.015	0.015	10.6	10.2	16	6		*0.025*
E13-04	4.3	9.9	0.4	0.4	0.33	0.39	0.01	*0.005*	0.007	0.053	0.053	0.060	0.060	12.5	12.0	19	9		0.06
E13-05	4	10	0.34	0.34	0.33	0.33	0.01	0.01	0.007	-0.007	0.000	0.000	0.000	10.6	10.3	16	6		*0.025*
E13-06	4.4	10	0.24	0.24	0.23	0.23	0.01	*0.005*	0.006	-0.006	0.000	0.000	0.000	7.5	7.2	24	14		0.14
E13-07	4	10	0.37	0.37	0.37	0.36	0.01	*0.005*	0.006	-0.016	0.000	-0.010	0.000	11.6	11.6	16	6		*0.025*
E13-08	3.8	10	0.39	0.39	0.31	0.38	0.01	0.01	0.006	0.064	0.064	0.070	0.070	12.2	11.7	14	4		*0.025*
E13-09	4.4	10	1.65	1.65	0.25	1.64	0.01	*0.005*	0.006	1.384	1.384	1.390	1.390	51.6	51.1	17	7		0.07
E13-10	4.5	10.1	0.2	0.2	0.16	0.19	0.01	*0.005*	0.008	0.022	0.022	0.030	0.030	6.3	5.7	14	4		*0.025*
E1 - Cylinder sac #1 - #1		10.9	0.12	0.12	0.12	0.115	*0.005*	0.02	0.005	-0.010	0.000	-0.005	0.000	3.8	3.8	15	5		0.06
E2 - Cylinder sac #1 - #2		10.8	0.29	0.29	0.29	0.285	*0.005*	*0.005*	0.005	-0.010	0.000	-0.005	0.000	9.1	9.1	16	6		0.07
E3 - Cylinder sac #1 - #3		10.9	0.7	0.7	0.72	0.69	0.01	*0.005*	0.006	-0.036	0.000	-0.030	0.000	21.9	22.5	16	6		0.06
E4 - Cylinder sac #2 - #4		10.8	0.11	0.11	0.11	0.1	0.01	*0.005*	0.005	-0.015	0.000	-0.010	0.000	3.4	3.4	16	6		0.08
E5 - Cylinder sac #2 - #5		11	0.25	0.25	0.23	0.24	0.01	*0.005*	0.006	0.004	0.004	0.010	0.010	7.8	7.3	18	8		0.08
E6 - Cylinder sac #2 - #6		10.1	0.72	0.72	0.69	0.71	0.01	*0.005*	0.004	0.016	0.016	0.020	0.020	22.5	22.1	19	9		0.06
E7 - Cylinder sac #3 - #7		9.9	1.01	1.01	0.9	1	0.01	0.01	0.005	0.095	0.095	0.100	0.100	31.6	31.1	18	8		0.08
E8 - Cylinder sac #3 - #8		10	0.46	0.46	0.44	0.44	0.02	*0.005*	0.009	-0.009	0.000	0.000	0.000	14.4	13.8	16	6		0.08
E9 - Cylinder sac #3 - #9		9.7	1.55	1.55	1.4	1.53	0.02	0.01	0.004	0.126	0.126	0.130	0.130	48.4	47.7	14	4		0.05
E10 - Cylinder sac #4 - #10		10.2	0.31	0.31	0.25	0.29	0.02	0.01	0.007	0.033	0.033	0.040	0.040	9.7	8.9	16	6		0.05
E11 - Cylinder sac #4 - #11		10.3	0.24	0.24	0.21	0.23	0.01	0.01	0.005	0.015	0.015	0.020	0.020	7.5	7.0	16	6		0.05
Sample d1		8.3	1.29	1.29	1.11	1.28	0.01	0.01	0.005	0.165	0.165	0.170	0.170	40.3	39.9	12	2		*0.025*
Sample d2		10.2	0.05	0.05	0.06	0.04	0.01	0.02	0.006	-0.026	0.000	-0.020	0.000	1.6	1.9	12	2		*0.025*
Sample d3		9.9	0.46	0.46	0.4	0.45	0.01	0.02	0.006	0.044	0.044	0.050	0.050	14.4	13.9	15	5		0.05
All Data																			
Maximum		11	2.04	2.04	1.81	2.03	0.02	0.04	0.0095	1.38	1.38	1.39	1.39	63.8	63.2	24	14	NA	0.14
Minimum		7.6	0.05	0.05	0.06	0.04	0.005	0.005	0.0035	-0.036	0	-0.03	0	1.56	1.88	12	2	NA	0.025
Mean		9.85	0.83	0.83	0.72	0.81	0.01	0.01	0.006	0.094	0.098	0.1	0.1	25.8	25.4	16.7	6.71	NA	0.046
Standard Deviation		0.86	0.64	0.64	0.57	0.64	0.004	0.0074	0.0012	0.24	0.24	0.24	0.24	19.9	19.8	2.52	2.52	NA	0.026
10 Percentile		8.3	0.21	0.21	0.17	0.2	0.005	0.005	0.0046	-0.013	0	-0.0085	0	6.53	6.02	14	4	NA	0.025
25 Percentile		9.83	0.3	0.3	0.25	0.29	0.01	0.005	0.0055	-0.005	0	0.0013	0.0013	9.22	8.91	15.2	5.25	NA	0.025
Median		10	0.5	0.5	0.42	0.49	0.01	0.01	0.0059	0.034	0.034	0.04	0.04	15.5	15.1	16	6	NA	0.038
75 Percentile		10.3	1.44	1.44	1.22	1.43	0.01	0.01	0.0067	0.094	0.094	0.1	0.1	45	44.5	18	8	NA	0.06
90 Percentile		10.8	1.69	1.69	1.58	1.68	0.017	0.02	0.0072	0.16	0.16	0.16	0.16	52.7	52.2	19.7	9.7	NA	0.08
Interquartile Range (IQR) [1]		0.45	1.14	1.14	0.97	1.14	0	0.005	0.0013	0.099	0.094	0.099	0.099	35.8	35.6	2.75	2.75	NA	0.035
Variance		0.75	0.41	0.41	0.32	0.4	0.000016	0.000055	1.3E-06	0.058	0.057	0.058	0.058	396	391	6.34	6.34	NA	0.0007
Skewness		-1.18	0.51	0.51	0.66	0.51	1.39	2.4	0.61	4.93	5	4.93	4.98	0.51	0.52	0.69	0.69	NA	1.52
Coefficient of Variation (CoV) [2]		0.088	0.77	0.77	0.79	0.78	0.38	0.74	0.19	2.58	2.46	2.42	2.36	0.77	0.78	0.15	0.38	NA	0.57
Count		34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	0	34

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample Id.	Inorganic CO_2	Excess C	Total CaNP	Inorganic CaNP	(Ca) CaNP	(Ca+Mg) CaNP	TNNP	Adjusted TNNP	SNNP	Adjusted SNNP	Inorganic CaNP-TAP NNP	(Ca+Mg) CaNP-TAP NNP	TNPR	Adjusted TNPR	SNPR	Adjusted SNPR	Inorganic CaNP/TAP NPR	(Ca+Mg) CaNP/TAP NPR	Fizz Rating	Comparison of Fizz Rating & NP
	(%)	(%)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)							Unity	
Method	C-GAS05	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	OA-VOL08	
MDL	0.05																			
E12-01	*0.1*			2.3	85.6	202.0	-36.6	-46.6	-36.1	-46.1	-49.3	150.4	0.291	0.097	0.294	0.0979	0.0441	3.92	1	Agree
E12-02	*0.1*			2.3	78.6	168.0	-33.5	-43.5	-33.0	-43.0	-50.2	115.5	0.362	0.171	0.365	0.173	0.0433	3.2	1	Agree
E12-03	*0.1*			2.3	77.6	192.4	-17.7	-27.7	-17.2	-27.2	-32.4	157.7	0.49	0.202	0.497	0.205	0.0656	5.55	1	Agree
E12-04	*0.1*			2.3	79.8	183.1	-15.3	-25.3	-14.5	-24.5	-33.0	147.8	0.566	0.283	0.58	0.29	0.0644	5.19	1	Agree
E12-05	*0.1*			2.3	73.4	174.0	-42.8	-52.8	-42.2	-52.2	-61.5	110.3	0.329	0.173	0.332	0.174	0.0357	2.73	1	Agree
E12-06	0.2			4.5	82.3	174.7	-31.8	-41.8	-31.3	-41.3	-48.3	121.9	0.398	0.208	0.401	0.21	0.0861	3.31	1	Agree
E12-07	*0.1*			2.3	72.7	152.4	-25.1	-35.1	-24.6	-34.6	-41.8	108.3	0.431	0.204	0.436	0.207	0.0516	3.46	1	Agree
E12-08	*0.1*			2.3	75.0	184.7	-45.0	-55.0	-44.5	-54.5	-57.7	124.7	0.25	0.0833	0.252	0.0841	0.0379	3.08	1	Agree
E12-09	*0.1*			2.3	63.3	138.3	-37.1	-47.1	-36.5	-46.5	-51.8	84.3	0.314	0.129	0.318	0.131	0.0421	2.56	1	Agree
E12-10	*0.1*			2.3	66.2	149.0	-29.3	-39.3	-28.8	-38.8	-43.0	103.7	0.353	0.132	0.357	0.134	0.0502	3.29	1	Agree
E13-01	0.2			4.5	90.8	172.1	0.4	-9.6	0.8	-9.3	-12.0	155.6	1.03	0.423	1.05	0.431	0.275	10.4	1	Agree
E13-02	0.2			4.5	100.4	178.8	8.8	-1.2	9.2	-0.8	-2.6	171.6	2.23	0.835	2.35	0.88	0.633	24.9	1	Agree
E13-03	0.2			4.5	80.5	156.9	5.4	-4.6	5.8	-4.2	-6.1	146.2	1.51	0.565	1.56	0.586	0.428	14.8	1	Agree
E13-04	0.2			4.5	105.0	192.5	6.5	-3.5	7.0	-3.0	-8.0	180.0	1.52	0.72	1.59	0.752	0.364	15.4	1	Agree
E13-05	*0.1*			2.3	95.2	174.4	5.4	-4.6	5.7	-4.3	-8.4	163.8	1.51	0.565	1.55	0.582	0.214	16.4	1	Agree
E13-06	0.5			11.4	93.2	173.2	16.5	6.5	16.8	6.8	3.9	165.7	3.2	1.87	3.34	1.95	1.52	23.1	1	Agree
E13-07	*0.1*			2.3	92.8	160.1	4.4	-5.6	4.4	-5.6	-9.3	148.6	1.38	0.519	1.38	0.519	0.197	13.8	1	Agree
E13-08	0.2			4.5	94.9	165.9	1.8	-8.2	2.3	-7.7	-7.6	153.7	1.15	0.328	1.2	0.342	0.373	13.6	1	Agree
E13-09	0.2			4.5	95.9	170.2	-34.6	-44.6	-34.1	-44.1	-47.0	118.6	0.33	0.136	0.333	0.137	0.0882	3.3	1	Agree
E13-10	*0.1*			2.3	96.8	191.7	7.8	-2.3	8.3	-1.7	-4.0	185.5	2.24	0.64	2.46	0.704	0.364	30.7	1	Agree
E1 - Cylinder sac #1 - #1	0.2			4.5	73.2	156.6	11.3	1.3	11.3	1.3	0.8	152.9	4	1.33	4	1.33	1.21	41.8	1	Agree
E2 - Cylinder sac #1 - #2	0.3			6.8	82.5	160.7	6.9	-3.1	6.9	-3.1	-2.2	151.6	1.77	0.662	1.77	0.662	0.753	17.7	1	Agree
E3 - Cylinder sac #1 - #3	0.2			4.5	61.4	138.5	-5.9	-15.9	-6.5	-16.5	-17.3	116.6	0.731	0.274	0.711	0.267	0.208	6.33	1	Agree
E4 - Cylinder sac #2 - #4	0.3			6.8	70.8	134.1	12.6	2.6	12.6	2.6	3.4	130.7	4.65	1.75	4.65	1.75	1.99	39	1	Agree
E5 - Cylinder sac #2 - #5	0.3			6.8	89.0	169.4	10.2	0.2	10.7	0.7	-1.0	161.6	2.3	1.02	2.46	1.09	0.874	21.7	1	Agree
E6 - Cylinder sac #2 - #6	0.2			4.5	81.4	153.8	-3.5	-13.5	-3.1	-13.1	-18.0	131.3	0.844	0.4	0.861	0.408	0.202	6.84	1	Agree
E7 - Cylinder sac #3 - #7	0.3			6.8	74.7	164.2	-13.6	-23.6	-13.1	-23.1	-24.7	132.6	0.57	0.253	0.579	0.257	0.216	5.2	1	Agree
E8 - Cylinder sac #3 - #8	0.3			6.8	36.8	65.7	1.6	-8.4	2.3	-7.8	-7.6	51.4	1.11	0.417	1.16	0.436	0.475	4.57	1	Agree
E9 - Cylinder sac #3 - #9	0.2			4.5	65.7	145.4	-34.4	-44.4	-33.7	-43.7	-43.9	97.0	0.289	0.0826	0.294	0.0839	0.0939	3	1	Agree
E10 - Cylinder sac #4 - #10	0.2			4.5	69.2	152.6	6.3	-3.7	7.1	-2.9	-5.1	143.0	1.65	0.619	1.81	0.677	0.47	15.8	1	Agree
E11 - Cylinder sac #4 - #11	0.2			4.5	66.9	133.9	8.5	-1.5	9.0	-1.0	-3.0	126.4	2.13	0.8	2.28	0.853	0.607	17.8	1	Agree
Sample d1	*0.1*			2.3	87.2	188.9	-28.3	-38.3	-27.9	-37.9	-38.0	148.6	0.298	0.0496	0.301	0.0502	0.0564	4.69	1	Agree
Sample d2	0.2			4.5	75.5	153.6	10.4	0.4	10.1	0.1	3.0	152.0	7.68	1.28	6.4	1.07	2.91	98.3	1	Agree
Sample d3	0.2			4.5	98.9	176.3	0.6	-9.4	1.1	-8.9	-9.8	161.9	1.04	0.348	1.08	0.36	0.316	12.3	1	Agree
All Data																				
Maximum	0.5	NA	NA	11.4	105	202	16.5	6.5	16.8	6.81	3.87	185	7.68	1.87	6.4	1.95	2.91	98.3		
Minimum	0.1	NA	NA	2.27	36.8	65.7	-45	-55	-44.5	-54.5	-61.5	51.4	0.25	0.05	0.25	0.05	0.036	2.56		
Mean	0.19	NA	NA	4.22	80.4	163	-9.08	-19.1	-8.7	-18.7	-21.6	137	1.44	0.52	1.44	0.53	0.45	14.6		
Standard Deviation	0.089	NA	NA	2.03	14	24.7	19.5	19.5	19.4	19.4	21	28.5	1.55	0.47	1.42	0.47	0.62	18.1		
10 Percentile	0.1	NA	NA	2.27	65.8	138	-36	-46	-35.5	-45.5	-49.9	105	0.3	0.11	0.31	0.11	0.044	3.12		
25 Percentile	0.1	NA	NA	2.27	72.8	153	-29.1	-39.1	-28.6	-38.6	-42.7	119	0.37	0.18	0.37	0.18	0.065	3.58		
Median	0.2	NA	NA	4.55	80.1	167	0.53	-9.47	0.93	-9.07	-10.9	147	1.04	0.37	1.06	0.38	0.22	8.62		
75 Percentile	0.2	NA	NA	4.55	92.3	176	6.83	-3.17	7.11	-2.89	-4.27	155	1.74	0.66	1.8	0.7	0.47	17.4		
90 Percentile	0.3	NA	NA	6.82	96.6	191	10.4	0.36	10.5	0.52	0.26	165	2.93	1.2	3.08	1.08	1.11	29		
Interquartile Range (IQR) [1]	0.1	NA	NA	2.27	19.4	23	35.9	35.9	35.7	35.7	38.5	35.7	1.37	0.48	1.43	0.52	0.41	13.8		
Variance	0.008	NA	NA	4.12	197	609	380	380	376	376	440	811	2.39	0.22	2	0.22	0.39	326		
Skewness	1.39	NA	NA	1.39	-0.66	-1.8	-0.51	-0.51	-0.51	-0.51	-0.49	-0.89	2.46	1.53	1.87	1.53	2.57	3.31		
Coefficient of Variation (CoV) [2]	0.48	NA	NA	0.48	0.17	0.15	-2.15	-1.02	-2.23	-1.04	-0.97	0.21	1.07	0.9	0.98	0.89	1.38	1.23		
Count	34	0	0	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34		

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **ABA Data**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample Id.	Inorganic CO_2	Excess C	Total CaNP	Inorganic CaNP	(Ca) CaNP	(Ca+Mg) CaNP	TNNP	Adjusted TNNP	SNNP	Adjusted SNNP	Inorganic CaNP-TAP NNP	(Ca+Mg) CaNP-TAP NNP	TNPR	Adjusted TNPR	SNPR	Adjusted SNPR	Inorganic CaNP/TAP NPR	(Ca+Mg) CaNP/TAP NPR	Fizz Rating	Comparison of Fizz Rating & NP
	(%)	(%)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)	(kg $CaCO_3$/t)							Unity	
Method	C-GAS05	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	Calculated	OA-VOL08	
MDL	0.05																			
NPR <1.0 or NPR = 1.0													16	29	16	29	30	0		
1.0 <NPR <2.0													10	5	10	5	3	0		
NPR > 2.0 or NPR =2.0													8	0	8	0	1	34		
% NPR <1.0 or NPR = 1.0 of Total													47.06	85.29	47.06	85.29	88.24	0.00		
% 1.0 <NPR <2.0 of Total													29.41	14.71	29.41	14.71	8.82	0.00		
% NPR > 2.0 or NPR =2.0 of Total													23.53	0.00	23.53	0.00	2.94	100.00		

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample	Silver	Aluminum	Arsenic	Barium	Beryllium	Bismuth	Calcium	Cadmium	Cobalt	Chromium	Copper	Iron	Mercury	Potassium	Lithium	Magnesium
Id.	Ag	Al	As	Ba	Be	Bi	Ca	Cd	Co	Cr	Cu	Fe	Hg	K	Li	Mg
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Method																
MDL	0.01	100	0.2	10	0.05	0.01	100	0.02	0.1	1	0.2	100	0.005	0	0.2	100
Crustal Abundance: To	0.079	81000	2.1	340	1.9	0.025	50000	0.15	30	140	68	63000	0.067	15000	17	29000
E12-01	0.5	225231	0.9	220	1.1	3.2	34269	0.2	38.4	179	190	192059	0.31	15558	42.5	28272
E12-02	5.40	122002	1.05	234	0.70	2.56	31476	0.17	16.0	167	176	102776	0.07	14798	39.0	21708
E12-03	0.5	79526	0.9	244	0.8	1.0	31075	0.2	33.3	223	239	70673	0.18	21832	50.6	27886
E12-04	1.7	127184	3.8	310	0.9	1.7	31967	0.7	32.7	203	238	102880	0.54	21032	48.0	25095
E12-05	1.0	109291	2.0	279	1.0	2.4	29376	0.2	80.3	181	347	103239	0.24	19599	50.3	24452
E12-06	0.85	72585	0.86	238	0.54	3.66	32953	0.11	12.3	160	174	63620	0.30	14375	49.4	22445
E12-07	0.37	70154	0.74	265	0.66	2.28	29110	0.13	12.3	183	112	55007	0.19	15443	45.0	19351
E12-08	1.0	113557	1.3	297	0.8	1.7	30023	0.2	39.3	194	233	112868	0.45	22367	49.0	26654
E12-09	0.46	121086	1.25	286	0.93	2.45	25332	0.18	17.1	149	146	97785	0.38	14917	45.2	18234
E12-10	0.47	86528	0.60	240	0.46	1.23	26496	0.09	10.9	197	186	75204	0.32	18128	40.3	20128
E13-01	0.4	97563	1.4	302	1.1	0.5	36377	0.2	28.1	111	125	64991	0.28	15467	33.9	19745
E13-02	0.17	78991	0.53	292	0.56	0.36	40187	0.08	12.4	117	38	50698	0.12	12405	27.9	19044
E13-03	0.3	77197	1.3	327	0.9	0.5	32220	0.1	23.4	106	52.5	47955	0.32	16574	41.5	18557
E13-04	0.3	76949	1.5	295	0.7	1.2	42052	12.7	25.8	98.4	73.6	55175	0.17	13487	31.1	21261
E13-05	0.32	87232	1.03	289	0.63	0.38	38104	0.11	16.6	128	77	64031	nd	14756	32.6	19243
E13-06	0.22	74420	0.55	255	0.53	0.35	37321	0.07	31.9	110	45	51217	0.15	12740	32.7	19436
E13-07	0.22	74332	0.77	248	0.49	0.43	37141	0.09	13.0	65.9	41	48125	nd	14341	21.6	16367
E13-08	0.21	78807	0.78	257	0.46	0.41	37984	0.08	19.0	81.6	57	49099	0.23	13837	26.0	17246
E13-09	0.56	78098	4.67	248	0.56	2.73	38400	2.45	32.2	110	308	49672	0.07	13938	35.0	18043
E13-10	0.3	81781	1.1	353	0.8	0.3	38781	0.2	25.6	154	69.3	53364	0.45	15873	42.4	23048
E1 - Cylinder sac #1 - #1	0.4	79316	1.4	235	0.9	0.3	29322	0.1	19.8	112	241	40363	0.58	15830	38.3	20251
E2 - Cylinder sac #1 - #2	0.28	72350	0.85	195	0.74	0.32	33018	0.08	36.0	92.2	172	44264	0.07	13044	29.3	19002
E3 - Cylinder sac #1 - #3	0.4	100486	1.1	258	0.9	0.4	24571	0.1	27.1	107	281	63752	0.13	15735	40.2	18729
E4 - Cylinder sac #2 - #4	1.1	77695	1.4	193	0.8	0.2	28358	0.1	19.0	116	186	38036	0.35	10929	35.3	15372
E5 - Cylinder sac #2 - #5	0.3	76446	1.6	261	0.7	0.3	35627	0.2	19.8	98.5	155	41108	0.52	15975	37.9	19529
E6 - Cylinder sac #2 - #6	0.33	77105	0.98	151	0.60	0.69	32602	0.06	28.3	96.9	152	48026	0.16	14164	26.7	17578
E7 - Cylinder sac #3 - #7	0.73	77252	1.89	225	0.66	3.57	29893	0.31	20.4	123	146	47026	0.60	9262	30.6	21748
E8 - Cylinder sac #3 - #8	0.45	69297	1.52	406	1.71	0.38	14750	0.18	9.1	37.1	185	21007	0.17	16042	29.4	7022
E9 - Cylinder sac #3 - #9	0.94	75315	2.15	186	0.87	1.09	26307	0.21	28.3	116	603	57177	0.91	15065	39.6	19359
E10 - Cylinder sac #4 - #10	0.70	77144	1.50	280	0.92	1.08	27693	0.27	21.9	115	275	46552	0.33	14685	139.7	20278
E11 - Cylinder sac #4 - #11	0.32	78505	1.22	216	0.82	0.24	26802	0.16	16.7	91.1	147	43260	0.32	13964	53.1	16254
Sample d1	0.43	136967	0.84	202	0.63	3.31	34904	0.14	28.6	187	162	115415	0.07	13942	40.8	24714
Sample d2	0.42	80160	0.73	245	0.79	0.16	30250	0.12	15.5	102	91	44441	0.09	12724	28.3	18960
Sample d3	0.99	97499	0.94	244	0.74	0.48	39591	0.21	19.3	106	105	64530	0.33	13625	32.2	18806
All Data																
Maximum	5.4	225231	4.67	406	1.71	3.66	42052	12.7	80.3	223	603	192059	0.91	22367	140	28272
Minimum	0.17	69297	0.53	151	0.46	0.16	14750	0.063	9.14	37.1	38.4	21007	0.065	9262	21.6	7022
Mean	0.68	91413	1.33	258	0.77	1.23	32186	0.6	24.4	130	172	65453	0.29	15190	40.7	20112
Standard Deviation	0.9	29737	0.84	49.7	0.24	1.13	5617	2.18	12.9	43.6	111	32323	0.19	2781	19.3	3943
10 Percentile	0.24	73109	0.73	198	0.53	0.25	26364	0.08	12.3	91.4	53.9	41753	0.073	12729	28	16631
25 Percentile	0.32	76988	0.85	234	0.63	0.37	29163	0.11	16.6	103	94.6	47258	0.15	13862	31.4	18600
Median	0.44	78899	1.11	252	0.76	0.6	32093	0.15	21.2	116	158	54185	0.29	14777	38.7	19398
75 Percentile	0.72	97547	1.48	288	0.88	2.13	36950	0.19	28.5	165	223	69252	0.35	15862	44.4	21738
90 Percentile	1.01	121727	1.96	308	0.97	3.05	38667	0.3	35.2	192	280	103132	0.54	19157	50	24980
Interquartile Range (IQR) [1]	0.4	20559	0.63	53.7	0.25	1.77	7787	0.077	11.9	62.8	128	21994	0.2	2001	13	3138
Variance	0.81	884299480	0.71	2475	0.055	1.27	31551247	4.73	166	1899	12233	1044780129	0.037	7733425	372	15546393
Skewness	4.68	3	2.7	0.61	1.84	0.94	-1	5.54	2.54	0.37	1.86	2	1.23	1	4.27	0
Coefficient of Variation (CoV) [2]	1.32	0	0.64	0.19	0.3	0.92	0	3.62	0.53	0.34	0.64	0	0.65	0	0.47	0
Count	34	34	34	34	34	34	34	34	34	34	34	34	32	34	34	34

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **ICP Metals Data**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample	Manganese	Molybdenum	Sodium	Nickel	Lead	Antimony	Scandium	Selenium	Silicon	Tin	Strontium	Titanium	Thallium	Uranium	Vanadium	Zinc
Id.	Mn	Mo	Na	Ni	Pb	Sb	Sc	Se	Si	Sn	Sr	Ti	Tl	U	V	Zn
	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)	(ppm)
Method																
MDL	5	0.05	0	0.2	0.5	0.05	0.1	1		0.2	0.2	50	0.02	0.1	1	2
Crustal Abundance: To	1100	1.1	23000	90	10	0.2	26	0.05	270000	2.2	360	6600	0.54	1.8	190	78
E12-01	476	2.41	23510	93.8	4.6	0.08	19.3	0.99	111791	2.4	207	3188	0.68	0.41	126	42.2
E12-02	384	1.66	23076	68.7	6.12	0.22	18.1	1.00	215272	1.97	212	2728	0.58	0.52	104	26.1
E12-03	445	1.68	20997	99.5	5.8	0.03	24.4	1.23	132049	2.2	179	3720	1.14	0.39	150	57.3
E12-04	510	1.79	19414	85.7	18.5	0.14	23.4	1.00	203176	1.8	201	3717	0.94	0.38	146	81.6
E12-05	516	2.06	22106	105	5.7	0.08	22.7	1.46	183187	1.5	202	3519	0.89	0.49	133	55.2
E12-06	552	1.14	20696	65.7	5.48	0.17	17.2	1.05	33600	1.50	178	2451	0.54	0.59	93	33.8
E12-07	475	1.69	19915	62.5	17.0	0.08	18.0	0.80	120243	1.50	167	2435	0.63	0.59	94	32.8
E12-08	487	1.15	18053	100	6.4	0.08	22.2	0.99	189582	2.0	155	3107	1.02	0.55	131	50.5
E12-09	380	1.72	21699	62.7	87.6	0.15	16.1	0.84	214986	1.50	206	2568	0.53	0.66	92	32.9
E12-10	336	1.76	17305	70.8	6.84	0.09	20.5	1.01	51535	2.33	142	2657	0.92	0.54	104	26.3
E13-01	860	6.79	23442	61.6	5.8	0.08	18.8	0.31	140623	1.2	287	3557	0.39	0.49	122	75.5
E13-02	804	1.59	18857	49.3	3.91	0.10	14.4	0.11	18943	1.00	167	2368	0.32	0.56	83	41.1
E13-03	824	2.04	22881	65.4	6.0	0.09	19.1	0.28	113815	1.1	263	3393	0.37	0.48	131	93.0
E13-04	905	1.58	22034	62.6	11.5	0.10	20.6	0.25	119299	1.9	348	3622	0.36	0.52	138	81.2
E13-05	730	1.69	20775	61.4	3.30	0.10	19.3	0.16	150002	1.24	215	2939	0.45	0.55	105	67.2
E13-06	589	1.53	18884	42.9	5.66	0.10	12.9	0.08	126167	1.60	176	2125	0.32	0.52	74	35.4
E13-07	511	2.84	20041	32.4	2.97	0.10	11.9	0.08	127551	1.20	173	1869	0.30	0.66	70	29.6
E13-08	605	1.27	21519	34.2	3.63	0.09	12.7	0.10	31484	1.04	177	2082	0.32	0.55	73	35.1
E13-09	635	1.72	21681	56.8	73.0	0.37	12.1	0.14	133348	2.20	161	2010	0.31	0.92	75	142.4
E13-10	1036	1.76	21159	85.0	10.6	0.09	21.5	0.20	50001	1.2	250	3897	0.33	0.38	135	89.5
E1 - Cylinder sac #1 - #1	452	6.63	24558	64.6	8.8	0.16	17.0	0.39	15661	2.9	286	3230	0.54	0.55	119	144
E2 - Cylinder sac #1 - #2	339	5.65	24493	41.5	6.62	0.13	14.3	0.19	122512	4.41	224	2133	0.48	0.77	73	72.2
E3 - Cylinder sac #1 - #3	381	8.05	22450	64.0	5.3	0.11	16.1	0.51	154064	1.8	257	3132	0.69	0.66	110	260
E4 - Cylinder sac #2 - #4	468	3.70	22513	56.2	6.9	0.18	16.6	0.25	124761	1.6	296	3226	0.30	0.67	107	96.2
E5 - Cylinder sac #2 - #5	487	6.44	26438	51.0	9.5	0.17	15.5	0.26	118909	1.6	294	3205	0.39	0.60	109	201
E6 - Cylinder sac #2 - #6	284	3.10	23206	44.9	4.54	0.12	13.4	0.36	115200	2.84	232	2221	0.44	0.72	79	40.3
E7 - Cylinder sac #3 - #7	882	3.44	21342	110.7	15.8	0.18	15.9	0.41	122218	1.42	254	2932	0.30	0.46	102	204
E8 - Cylinder sac #3 - #8	306	5.09	25409	20.6	14.3	0.08	7.35	0.34	116765	1.36	229	1573	0.53	2.04	44	120
E9 - Cylinder sac #3 - #9	342	3.36	22524	72.1	7.95	0.16	16.3	1.18	123992	1.97	231	3233	0.65	0.57	117	80.4
E10 - Cylinder sac #4 - #10	420	8.43	23758	66.4	8.11	0.11	16.2	0.31	122378	2.53	272	3214	0.57	0.68	111	67.0
E11 - Cylinder sac #4 - #11	374	3.37	23069	52.5	16.7	0.13	15.3	0.18	116548	1.57	298	3247	0.47	0.56	109	167
Sample d1	431	1.59	21715	74.6	3.66	0.10	19.6	0.89	256583	1.78	193	2710	0.67	0.51	107	30.1
Sample d2	365	2.28	26160	49.7	4.19	0.11	14.1	0.10	82046	1.58	244	2335	0.45	0.81	79	31.0
Sample d3	702	4.23	22027	48.3	3.79	0.11	16.3	0.17	118289	1.33	242	2668	0.38	0.64	91	56.6
All Data																
Maximum	1036	8.43	26438	111	87.6	0.37	24.4	1.46	256583	4.41	348	3897	1.14	2.04	150	260
Minimum	284	1.14	17305	20.6	2.97	0.028	7.35	0.076	15661	1	142	1573	0.3	0.38	43.9	26.1
Mean	538	3.1	21991	64.2	12	0.12	17	0.52	122841	1.8	224	2853	0.54	0.62	104	79.4
Standard Deviation	196	2.08	2147	21.1	17.9	0.058	3.71	0.41	55807	0.67	49.9	601	0.23	0.28	24.8	58.1
10 Percentile	340	1.55	19043	41.9	3.7	0.081	12.8	0.11	38520	1.19	167	2095	0.31	0.43	73.1	30.3
25 Percentile	382	1.68	20831	50	4.76	0.088	14.6	0.18	114161	1.38	178	2385	0.36	0.51	85	35.2
Median	482	2.05	22031	62.7	6.24	0.11	16.4	0.33	122298	1.59	220	2935	0.47	0.56	106	62.2
75 Percentile	628	3.64	23174	71.8	10.3	0.15	19.3	0.97	138804	1.99	256	3233	0.65	0.66	121	92.1
90 Percentile	849	6.57	24539	97.8	16.9	0.18	22	1.04	199097	2.49	292	3603	0.91	0.75	134	160
Interquartile Range (IQR) [1]	246	1.95	2343	21.8	5.54	0.062	4.69	0.79	24643	0.61	78.1	848	0.29	0.15	36.2	56.9
Variance	38361	4.34	4607722	443	322	0.0034	13.7	0.17	3114380610	0.45	2491	360664	0.051	0.077	614	3376
Skewness	0.96	1.32	0	0.41	3.64	2.34	-0.14	0.71	0	1.98	0.43	0	1.13	4.27	-0.19	1.57
Coefficient of Variation (CoV) [2]	0.36	0.67	0	0.33	1.5	0.47	0.22	0.8	0	0.37	0.22	0	0.42	0.45	0.24	0.73
Count	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34	34

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **Whole Rock by XRF**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample Id.	Al_2O_3	CaO	Fe_2O_3	K_2O	MgO	MnO	Na_2O	P_2O_5	SiO_2	SO_3	TiO_2	LOI	Total
	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)	(%)
Method	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06	ME-XRF06
MDL	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01	0.01		
E12-01	14.7	5.31	8.72	1.79	4.93	0.07	3.55	0.13	60.47	0.04	0.607	1.37	101.69
E12-02	15.1	4.78	8.72	1.86	4.53	0.07	3.79	0.14	60.51	0.01	0.616	1.54	101.67
E12-03	14.96	4.69	9.18	2.52	4.84	0.06	3.11	0.12	60.4	0.05	0.614	1.17	101.71
E12-04	14.86	5	8.42	2.46	4.38	0.07	2.79	0.12	61.37	*0.005*	0.635	1.16	101.27
E12-05	14.86	4.5	9.76	2.35	4.33	0.07	3.17	0.12	59.83	0.05	0.611	1.73	101.38
E12-06	14.69	4.99	9.19	1.97	4.61	0.09	3.23	0.13	60.39	0.2	0.596	1.5	101.59
E12-07	14.47	4.55	7.97	2.24	4.23	0.08	3.31	0.11	62.58	0.09	0.576	1.39	101.60
E12-08	14.38	4.71	9.82	2.67	4.78	0.07	2.58	0.11	0.02	60.29	0.531	1.75	101.71
E12-09	14.5	3.83	8.04	2.05	3.79	0.06	3.36	0.13	63.28	0.03	0.569	1.79	101.43
E12-10	14.78	4.14	9.08	2.61	4.29	0.06	2.87	0.12	61.3	0.05	0.641	1.42	101.36
E13-01	15.85	5.75	7.44	1.65	3.6	0.12	3.36	0.15	61.59	0.11	0.614	0.95	101.18
E13-02	15.57	6.16	7.14	1.7	3.91	0.14	2.87	0.13	62.45	0.06	0.593	0.74	101.46
E13-03	15.43	5.3	6.77	1.8	3.47	0.11	3.31	0.13	63.44	0.07	0.594	0.75	101.17
E13-04	15.54	6.97	7.92	1.5	3.98	0.12	3.29	0.18	61.75	0.14	0.579	0.83	102.80
E13-05	15.65	5.87	8.01	1.79	3.96	0.11	3.21	0.12	60.94	0.05	0.602	0.96	101.27
E13-06	15.1	5.94	7.31	1.82	4.17	0.13	3.15	0.15	61.87	0.19	0.602	1.16	101.59
E13-07	15.06	5.64	6.91	1.74	3.45	0.11	3.17	0.15	63.84	0.03	0.54	0.94	101.58
E13-08	15.24	5.51	6.99	1.83	3.47	0.13	3.22	0.16	63.03	0.07	0.613	0.85	101.11
E13-09	15.43	5.57	6.84	1.84	3.61	0.13	3.28	0.14	62.79	0.12	0.578	0.85	101.18
E13-10	15.67	6.12	7.36	1.71	4.15	0.14	3.1	0.15	61.39	0.01	0.656	0.7	101.16
E1 - Cylinder sac #1 - #1	15.37	4.27	5.65	1.66	3.3	0.06	4.04	0.12	65.75	0.08	0.492	0.64	101.43
E2 - Cylinder sac #1 - #2	15.19	4.8	6.65	1.76	3.86	0.07	3.63	0.13	63.62	0.17	0.564	0.82	101.26
E3 - Cylinder sac #1 - #3	15.57	4.37	6.93	2.12	3.79	0.06	3.54	0.13	63.59	0.16	0.537	1.07	101.87
E4 - Cylinder sac #2 - #4	15.72	5.26	5.4	1.34	3.35	0.07	3.78	0.12	65.28	0.09	0.536	0.79	101.74
E5 - Cylinder sac #2 - #5	15.48	5.08	6.14	1.75	3.28	0.07	3.49	0.14	64.66	0.17	0.536	0.76	101.56
E6 - Cylinder sac #2 - #6	15.59	4.99	6.82	1.72	3.86	0.06	3.64	0.14	63.83	0.13	0.567	1.03	102.38
E7 - Cylinder sac #3 - #7	15.34	5.1	6.61	1.06	4.21	0.13	3.38	0.12	63.48	0.2	0.52	1.59	101.74
E8 - Cylinder sac #3 - #8	14.21	2.52	3.06	2.11	1.44	0.05	4.1	0.08	72.73	0.18	0.251	0.85	101.58
E9 - Cylinder sac #3 - #9	15.17	4.39	8.05	1.89	3.68	0.05	3.32	0.13	62.58	0.09	0.557	1.6	101.51
E10 - Cylinder sac #4 - #10	15.36	4.58	6.61	1.88	3.83	0.06	3.5	0.13	64.23	0.05	0.535	0.9	101.67
E11 - Cylinder sac #4 - #11	15.64	4.73	6.17	1.64	3.3	0.06	3.67	0.14	64.89	0.06	0.554	0.73	101.58
Sample d1	15.08	5.25	8.86	1.96	5.2	0.07	3.39	0.13	59.64	0.02	0.631	1.2	101.43
Sample d2	15.64	4.44	6.21	1.73	3.8	0.06	3.93	0.13	63.97	0.04	0.552	0.7	101.20
Sample d3	15.96	5.76	7.41	1.74	3.79	0.12	3.36	0.16	61.88	0.1	0.601	1.02	101.90
													0.00
All Data													
Maximum	16	6.97	9.82	2.67	5.2	0.14	4.1	0.18	72.7	60.3	0.66	1.79	
Minimum	14.2	2.52	3.06	1.06	1.44	0.05	2.58	0.08	0.02	0.005	0.25	0.64	
Mean	15.2	5.03	7.42	1.89	3.92	0.086	3.37	0.13	61	1.86	0.57	1.1	
Standard Deviation	0.45	0.81	1.38	0.34	0.66	0.03	0.34	0.018	11	10.3	0.068	0.35	
10 Percentile	14.6	4.3	6.15	1.64	3.32	0.06	2.94	0.12	60.4	0.023	0.53	0.73	
25 Percentile	14.9	4.56	6.68	1.72	3.6	0.06	3.18	0.12	61.3	0.05	0.54	0.82	
Median	15.3	5	7.34	1.81	3.86	0.07	3.34	0.13	62.6	0.075	0.58	0.99	
75 Percentile	15.6	5.56	8.33	2.03	4.28	0.12	3.55	0.14	63.8	0.14	0.61	1.38	
90 Percentile	15.7	5.92	9.15	2.43	4.73	0.13	3.79	0.15	64.8	0.19	0.63	1.6	
Interquartile Range (IQR) [1]	0.69	1	1.65	0.31	0.67	0.057	0.37	0.02	2.46	0.088	0.067	0.56	
Variance	0.2	0.65	1.91	0.12	0.44	0.0009	0.11	0.00031	122	107	0.0047	0.12	
Skewness	-0.51	-0.43	-0.64	0.46	-1.21	0.61	0.086	0.016	-5.39	5.83	-3.17	0.63	
Coefficient of Variation (CoV) [2]	0.029	0.16	0.19	0.18	0.17	0.35	0.1	0.13	0.18	5.55	0.12	0.32	
Count	34	34	34	34	34	34	34	34	34	34	34	34	

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **QA/QC Data - Comparison on ICP Metals and Whole Rock Analyses**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample Id.	Whole Rock Al * (ppm)	ICP Al (ppm)	Difference (%) [3]	Whole Rock Ca * (ppm)	ICP Ca (ppm)	Difference (%) [3]	Whole Rock Fe * (ppm)	ICP Fe (ppm)	Difference (%) [3]	Whole Rock K * (ppm)	ICP K (ppm)	Difference (%) [3]	Whole Rock Mg * (ppm)	ICP Mg (ppm)	Difference (%) [3]	Whole Rock Mn * (ppm)	ICP Mn (ppm)	Difference (%) [3]
E12-01	77796	225231.44	189.51	37950	34269	-9.70	60991	192059	214.90	14859	15558	4.70	29732	28272	-4.91	542	476	-12.18
E12-02	79913	122002.18	52.67	34162	31476	-7.86	60991	102776	68.51	15440	14798	-4.16	27319	21708	-20.54	542	384	-29.18
E12-03	79172	79526.292	0.45	33519	31075	-7.29	64208	70673	10.07	20919	21832	4.37	29189	27886	-4.46	465	445	-4.32
E12-04	78643	127183.76	61.72	35735	31967	-10.54	58893	102880	74.69	20421	21032	2.99	26415	25095	-5.00	542	510	-5.98
E12-05	78643	109290.65	38.97	32161	29376	-8.66	68265	103239	51.23	19508	19599	0.47	26113	24452	-6.36	542	516	-4.81
E12-06	77743	72584.719	-6.64	35663	32953	-7.60	64278	63620	-1.02	16353	14375	-12.09	27802	22445	-19.27	697	552	-20.87
E12-07	76579	70154.149	-8.39	32519	29110	-10.48	55745	55007	-1.32	18595	15443	-16.95	25510	19351	-24.14	620	475	-23.37
E12-08	76103	113557.31	49.22	33662	30023	-10.81	68685	112868	64.33	22164	22367	0.91	28827	26654	-7.54	542	487	-10.13
E12-09	76738	121085.66	57.79	27373	25332	-7.45	56235	97785	73.89	17017	14917	-12.35	22857	18234	-20.23	465	380	-18.26
E12-10	78220	86528.472	10.62	29588	26496	-10.45	63509	75204	18.42	21666	18128	-16.33	25872	20128	-22.20	465	336	-27.60
E13-01	83883	97563.385	16.31	41095	36377	-11.48	52038	64991	24.89	13697	15467	12.92	21711	19745	-9.05	929	860	-7.43
E13-02	82401	78990.745	-4.14	44025	40187	-8.72	49940	50698	1.52	14112	12405	-12.10	23580	19044	-19.24	1084	804	-25.86
E13-03	81660	77197.115	-5.46	37879	32220	-14.94	47352	47955	1.27	14942	16574	10.92	20927	18557	-11.32	852	824	-3.25
E13-04	82242	76948.909	-6.44	49814	42052	-15.58	55395	55175	-0.40	12452	13487	8.32	24002	21261	-11.42	929	905	-2.62
E13-05	82824	87232.305	5.32	41952	38104	-9.17	56025	64031	14.29	14859	14756	-0.69	23882	19243	-19.42	852	730	-14.28
E13-06	79913	74420.277	-6.87	42453	37321	-12.09	51129	51217	0.17	15108	12740	-15.68	25148	19436	-22.71	1007	589	-41.46
E13-07	79702	74331.71	-6.74	40309	37141	-7.86	48331	48125	-0.43	14444	14341	-0.71	20806	16367	-21.33	852	511	-39.98
E13-08	80654	78807.408	-2.29	39380	37984	-3.55	48891	49099	0.43	15191	13837	-8.92	20927	17246	-17.59	1007	605	-39.94
E13-09	81660	78097.853	-4.36	39808	38400	-3.54	47841	49672	3.83	15274	13938	-8.75	21771	18043	-17.13	1007	635	-36.91
E13-10	82930	81780.73	-1.39	43739	38781	-11.34	51479	53364	3.66	14195	15873	11.82	25028	23048	-7.91	1084	1036	-4.45
E1 - Cylinder sac #1 - #1	81342	79316.08	-2.49	30517	29322	-3.92	39518	40363	2.14	13780	15830	14.88	19902	20251	1.76	465	452	-2.66
E2 - Cylinder sac #1 - #2	80390	72350.467	-10.00	34305	33018	-3.75	46513	44264	-4.83	14610	13044	-10.72	23279	19002	-18.37	542	339	-37.41
E3 - Cylinder sac #1 - #3	82401	100485.82	21.95	31232	24571	-21.33	48471	63752	31.53	17598	15735	-10.59	22857	18729	-18.06	465	381	-18.00
E4 - Cylinder sac #2 - #4	83195	77695.492	-6.61	37593	28358	-24.56	37770	38036	0.70	11124	10929	-1.75	20203	15372	-23.91	542	468	-13.60
E5 - Cylinder sac #2 - #5	81924	76445.764	-6.69	36306	35627	-1.87	42945	41108	-4.28	14527	15975	9.97	19781	19529	-1.27	542	487	-10.17
E6 - Cylinder sac #2 - #6	82507	77105.28	-6.55	35663	32602	-8.58	47702	48026	0.68	14278	14164	-0.80	23279	17578	-24.49	465	284	-38.87
E7 - Cylinder sac #3 - #7	81183	77252.029	-4.84	36449	29893	-17.99	46233	47026	1.72	8799	9262	5.26	25390	21748	-14.34	1007	882	-12.42
E8 - Cylinder sac #3 - #8	75203	69297.399	-7.85	18010	14750	-18.10	21403	21007	-1.85	17515	16042	-8.41	8684	7022	-19.14	387	306	-20.85
E9 - Cylinder sac #3 - #9	80284	75314.973	-6.19	31375	26307	-16.15	56305	57177	1.55	15689	15065	-3.98	22193	19359	-12.77	387	342	-11.69
E10 - Cylinder sac #4 - #10	81289	77144.115	-5.10	32733	27693	-15.40	46233	46552	0.69	15606	14685	-5.90	23098	20278	-12.21	465	420	-9.55
E11 - Cylinder sac #4 - #11	82771	78504.641	-5.15	33805	26802	-20.72	43155	43260	0.24	13614	13964	2.57	19902	16254	-18.33	465	374	-19.52
Sample d1	79807	136967.35	71.62	37521	34904	-6.97	61970	115415	86.24	16270	13942	-14.31	31360	24714	-21.19	542	431	-20.50
Sample d2	82771	80160.193	-3.15	31732	30250	-4.67	43435	44441	2.32	14361	12724	-11.40	22917	18960	-17.26	465	365	-21.38
Sample d3	84465	97499.26	15.43	41166	39591	-3.83	51828	64530	24.51	14444	13625	-5.67	22857	18806	-17.72	929	702	-24.44
All Data																		
Maximum			190			-1.87			215			14.9			1.76			-2.62
Minimum			-10			-24.6			-4.83			-16.9			-24.5			-41.5
Mean			13.9			-10.5			22.5			-2.71			-15			-18.6
Standard Deviation			39			5.63			43.3			9.19			7.11			12.2
10 Percentile			-6.83			-18.1			-1.23			-13.7			-22.6			-38.4
25 Percentile			-6.52			-14.2			0.29			-10.7			-20			-25.5
Median			-3.65			-9.44			1.93			-2.86			-17.7			-18.1
75 Percentile			16.1			-7.33			24.8			4.02			-9.62			-9.7
90 Percentile			56.3			-3.77			72.3			10.6			-4.94			-4.36
Interquartile Range (IQR) [1]			22.6			6.89			24.5			14.7			10.4			15.8
Variance			1520			31.7			1875			84.5			50.5			148
Skewness			3.12			-0.71			3.02			0.24			0.69			-0.5
Coefficient of Variation (CoV) [2]			2.8			-0.54			1.93			-3.39			-0.47			-0.65
Count			34			34			34			34			34			34

[3] Difference (%) = (ICP - Whole Rock) * 100 / Whole Rock

* Element calculated from Whole Rock XRF analysis

Al (Whole Rock) = $(Al_2O_3*2*10000*26.98)/(2*26.98+3*16)$

Ca (Whole Rock) = (CaO*10000*40.08)/(40.08+16)

Fe (Whole Rock) = $(Fe_2O_3*2*10000*55.85)/(2*55.85+3*16)$

K (Whole Rock) = $(K_2O*2*10000*39.09)/(39.09*2+16)$

Mg (Whole Rock) = (MgO*10000*24.31)/(24.31+16)

Mn (Whole Rock) = (MnO*10000*54.94)/(54.94+16)

Project: **Troilus Gold**
Client: Troilus Gold Corp
Data: **QA/QC Data - Comparison on ICP Metals and Whole Rock Analyses**
Comments: **On-site ML-ARD Columns**
Collected by Troilus Gold

Sample Id.	Whole Rock Na * (ppm)	ICP Na (ppm)	Difference (%) [3]	Whole Rock Ti * (ppm)	ICP Ti (ppm)	Difference (%) [3]	Leco S (Total)** (ppm)	Whole Rock S * (ppm)	Difference (%) [3]
E12-01	26336	23510	-10.73	3638	3188	-12.37	16500	160	-99.03
E12-02	28116	23076	-17.93	3692	2728	-26.11	16800	40	-99.76
E12-03	23072	20997	-8.99	3680	3720	1.09	11100	200	-98.20
E12-04	20698	19414	-6.20	3806	3717	-2.34	11300	20	-99.82
E12-05	23517	22106	-6.00	3662	3519	-3.91	20400	200	-99.02
E12-06	23962	20696	-13.63	3572	2451	-31.37	16900	801	-95.26
E12-07	24555	19915	-18.90	3452	2435	-29.45	14100	360	-97.44
E12-08	19140	18053	-5.68	3182	3107	-2.38	19200	241451	1157.56
E12-09	24926	21699	-12.95	3410	2568	-24.71	17300	120	-99.31
E12-10	21291	17305	-18.72	3842	2657	-30.85	14500	200	-98.62
E13-01	24926	23442	-5.95	3680	3557	-3.33	5300	441	-91.69
E13-02	21291	18857	-11.43	3554	2368	-33.37	2300	240	-89.55
E13-03	24555	22881	-6.82	3560	3393	-4.70	3400	280	-91.75
E13-04	24407	22034	-9.72	3470	3622	4.38	4000	561	-85.98
E13-05	23813	20775	-12.76	3608	2939	-18.54	3400	200	-94.11
E13-06	23368	18884	-19.19	3608	2125	-41.11	2400	761	-68.30
E13-07	23517	20041	-14.78	3236	1869	-42.24	3700	120	-96.75
E13-08	23888	21519	-9.91	3674	2082	-43.34	3900	280	-92.81
E13-09	24333	21681	-10.90	3464	2010	-41.98	16500	481	-97.09
E13-10	22997	21159	-8.00	3932	3897	-0.89	2000	40	-98.00
E1 - Cylinder sac #1 - #1	29971	24558	-18.06	2949	3230	9.55	1200	320	-73.30
E2 - Cylinder sac #1 - #2	26929	24493	-9.05	3380	2133	-36.90	2900	681	-76.52
E3 - Cylinder sac #1 - #3	26262	22450	-14.51	3218	3132	-2.68	7000	641	-90.85
E4 - Cylinder sac #2 - #4	28042	22513	-19.72	3212	3226	0.43	1100	360	-67.23
E5 - Cylinder sac #2 - #5	25891	26438	2.12	3212	3205	-0.24	2500	681	-72.77
E6 - Cylinder sac #2 - #6	27003	23206	-14.06	3398	2221	-34.63	7200	521	-92.77
E7 - Cylinder sac #3 - #7	25075	21342	-14.89	3117	2932	-5.93	10100	801	-92.07
E8 - Cylinder sac #3 - #8	30416	25409	-16.46	1504	1573	4.56	4600	721	-84.33
E9 - Cylinder sac #3 - #9	24629	22524	-8.55	3338	3233	-3.14	15500	360	-97.67
E10 - Cylinder sac #4 - #10	25965	23758	-8.50	3206	3214	0.23	3100	200	-93.54
E11 - Cylinder sac #4 - #11	27226	23069	-15.27	3320	3247	-2.22	2400	240	-89.99
Sample d1	25149	21715	-13.65	3782	2710	-28.35	12900	80	-99.38
Sample d2	29155	26160	-10.27	3308	2335	-29.43	500	160	-67.96
Sample d3	24926	22027	-11.63	3602	2668	-25.92	4600	400	-91.29
All Data									
Maximum			2.12			9.55			1158
Minimum			-19.7			-43.3			-99.8
Mean			-11.8			-15.9			-53.7
Standard Deviation			4.88			16.8			214
10 Percentile			-18.5			-39.8			-99.2
25 Percentile			-14.9			-30.5			-97.9
Median			-11.5			-9.15			-92.8
75 Percentile			-8.66			-2.25			-86.9
90 Percentile			-6.06			0.89			-69.6
Interquartile Range (IQR) [1]			6.2			28.2			11
Variance			23.8			283			45904
Skewness			0.43			-0.25			5.81
Coefficient of Variation (CoV) [2]			-0.41			-1.05			-3.99
Count			34			34			34

[3] Difference (%) = (ICP - Whole Rock) * 100 / Whole Rock
* Element calculated from Whole Rock XRF analysis
Na (Whole Rock) = (Na_2O*2*10000*22.99)/(22.99*2+16)
Ti (Whole Rock) = (TiO_2*10000*47.867)/(47.867+2*16)