TECHNICAL MEMORANDUM

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EVALUATION OF THE GEOCHEMICAL PROPERTIES OF WASTE ROCK FROM THE UNDERGROUND RAMP, WHALE TAIL UNDERGROUND DEPOSIT, AMARUQ MINING PROJECT

This document provides a summary of results from the preliminary evaluation of waste rock associated with the access to underground development, the underground ramp and portal at the Whale Tail deposit for exploration drilling.

1.0 INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) mandated Golder Associates (Golder) to carry out a preliminary evaluation of the geochemical properties of waste rock from the portal area, the access ramp, and the ore access development at the Whale Tail deposit. Specifically, Golder is tasked with evaluating the potential of waste rock to generate acidic rock drainage (ARD) and to leach metals to the receiving environment from lithologies that will comprise the waste rock from these developments. Accordingly, the results and conclusions presented herein are indicative of the future behaviour of the waste rock from the exploration access ramp and portal areas. The results from this study will be used in support of Agnico Eagle's application for a Type B Water License.

This technical memorandum presents the results of the preliminary geochemical assessment and provides recommendations on management of the waste rock from these areas.

1.1 Information Reviewed

Background information on the geology, mineralogy, and chemistry of rock types at the portal and access ramp was extracted from the following documentation provided by Agnico Eagle:

- Amaruq Exploration Ramp Project Description, Whale Tail Deposit, Nunavut (Agnico Eagle 2015); and,
- Geological cross-sections, borehole logs and maps.

1.2 Regional and Site Geology

The following summary is adapted from documentation provide by Agnico Eagle.

Lithological units associated with the ramp and portal development include the mafic volcanic and intermediate intrusive rocks, while the underground development will also cross ultramafic, clastic sedimentary and iron formation waste rock. A description of each unit is provided below:

Mafic Volcanic (V3; 1b) – This basalt unit has a very similar colour and texture to greywacke. The contact between the two units is diffuse and gradational; whole rock analyses are needed to properly distinguish these two units.

Intermediate Intrusive (I2; 8b) – This unit is located in the southern and eastern part of the development. It is mostly a diorite unit which is commonly porphyritic with medium sized grains of plagioclase that are commonly sheared and flattened. It is non-altered and non-mineralized.

In addition to the mafic volcanic and intermediate intrusive lithologies described above, the other lithological units associated with underground development include:

Ultramafic (V4a) – Komatiite – There are two main units that are grouped into this lithology: komatiite (geological code 0a), and a transitional komatiite (0b); for the basis of this report they are referred to as ultramafic rocks. The 0a unit is commonly on the northern part of the underground development, while the 0b unit is south. Both units are commonly altered with a talc-chlorite-carbonate package and are often deformed. The transitional ultramafic rock is distinguished based on whole rock chemistry, which is intermediate between the calc-alkaline and tholeiite units.

Clastic Sedimentary (3b) – Greywacke (S3) and Chert (S10) – This unit is dominantly comprised of greywacke (S3) and chert (S10). The greywacke lithology is present on the south and north sides of the deposit (S3S and S3N respectively) and between the two ultramafic units mentioned above (S3C), while the chert unit is predominantly located within or in close proximity to the ore zones. The S3C unit has varying amounts of silica, which was noted during sample collection by Golder but is not defined in the geological model.

Iron Formation (S9) - This unit is a hard, dense and banded unit and has two sub units; a sulfide facies Iron Formation (S9E) and a silicate facies Iron Formation (S9D), which cannot be distinguished chemically. The formation of this rock is interpreted as the subaqueous deposition of sediments associated with the V4_0a unit. The iron formation commonly contains many alteration-related minerals (calcite, amphiboles, and chlorite) and can sometimes be harder than the 0a unit due to silicification. This unit can also be weakly to strongly magnetic closer to the mineralized zones because of the sulphide minerals present as part of the alteration package. Carbonate veins and veinlets, which sometimes can contain pyrrhotite, are often present within this unit.

1.3 Waste Rock Management

Waste rock generated from the development of the ramp and portal will be piled adjacent to the portal and would be used for exploration camp construction purposes, such as the building of pads, roads, and lining drainage channels (Pers. Comm. Agnico Eagle, January, 2016). Only the non-PAG and non-leachable waste rock from the underground will be used for construction, with the remaining to be managed on site.

Figure 1 shows the locations of the ramp, portal and underground developments. The portal and ramp are located east and south-east of the open pit. The quantity of waste rock expected to be generated during the development of the ramp and portal are provided in Table 1. Quantities provided below exclude any waste rock generated from underground operations.

Table 1: Preliminary Estimate of the Quantity of Waste Rock to be Extracted from the Underground Development of the Whale Tail deposit

Material Type	Development Year	Location	Length of Ramp (m)	Waste Rock Removed (tonnes)
Waste Rock	2017	Portal and Ramp	500	74,700
	2018	Ramp and Vent Raise	1500	137,200
	2019	Ramp, Vent Raise and Access*	3000	268,900
	2020	Ramp and Access*	1500	131,600
		Total	6500	**612,400**

Source: Pers. Comm, Agnico Eagle, 28 January 2016;

* - Access refers to the Bulk Sample Access and Drilling Access

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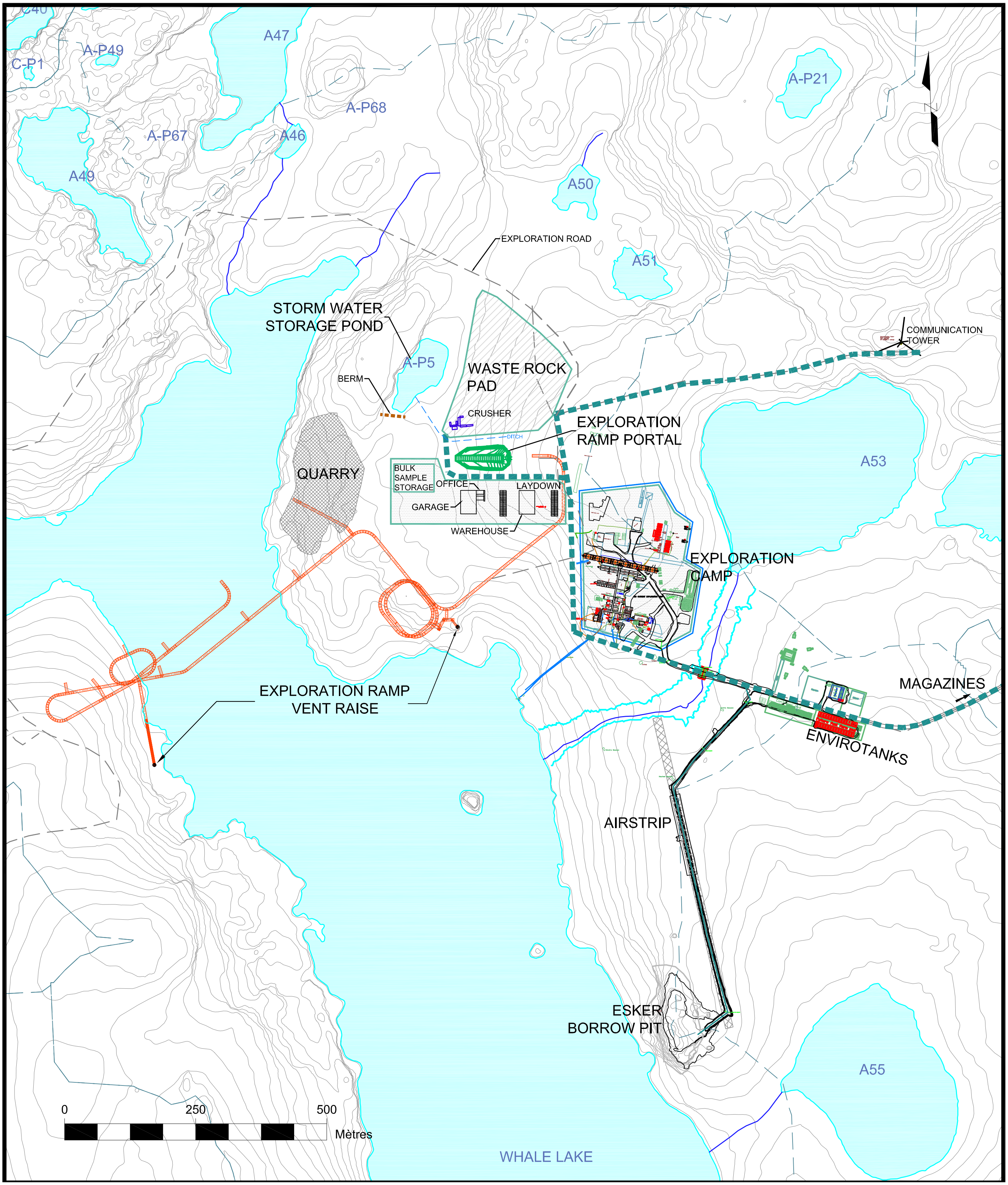

Figure 1: Plan view of future mining infrastructure including the Portal, Ramp and Underground Workings

2.0 SAMPLE COLLECTION AND TEST METHODS

The aim of the sampling program was to define the geo-environmental characteristics of each of the major lithologies that would be removed during development of the ramp, portal and underground. The sampling plan for both the Ramp and the underground was developed by Golder with guidance from Agnico Eagle. Agnico Eagle staff collected representative samples in August and September of 2015 from existing exploration boreholes and newly drilled geotechnical boreholes which specifically targeted the Ramp and Portal development areas. The Golder personnel who developed the sampling plan and who collected the samples that represent the underground are registered professional geologists of Nunavut. Samples targeted intervals within each lithology that are expected to be removed during development.

A summary of the samples collected is presented in Table 2.

Table 2: Summary of Samples Collected from the Ramp and Underground Development

Location	Rock Name	Rock Code	# of Samples Collected by Agnico Eagle	# of Samples Collected by Golder	Total # of Samples Collected
Ramp	Intermediate Intrusive	I2 - 8b	9	1	10
	Mafic Volcanic	V3 - 1b	2	0	2
				Total	**12**
Underground	Ultramafic	V4a - 0a	0	6	6
		V4a - 0b	0	1	1
	Greywacke	S3C – 3b	0	6	6
	Chert	S10 – 3b	0	3	3
	Iron Formation	S9E – 3b	0	1	1
	Mafic Volcanics	V3 - 1b	0	3	3
	Intermediate Intrusive	I2 - 8b	0	2	2
				Total	**22**

All waste rock samples were shipped by Agnico Eagle staff from Whale Tail to SGS Canada Inc. (SGS), located in Ontario, Canada for the following analyses:

- Chemical composition by whole rock analysis and trace element chemistry by ICP-MS:
- ARD potential by acid-base accounting (ABA) using the modified Sobek method (MEND 2009) including paste pH and sulphur, carbon and carbonate content by Leco Furnace as well as sulphur speciation analysis;
- Short-term leaching tests by a modified version of the shake flask extraction (SFE; Modified ASTM D3987); and,
- One 1-kg humidity cell test (HCTs; ASTM method D5744) on an intermediate intrusive sample representing both the ramp/portal and underground developments.

A description of these methods is presented in Appendix A.

2.1 Comparative Criteria

2.1.1 ARD Screening Criteria

ABA results were compared to Canadian guidelines outlined in the Mine Environment Neutral Drainage Program (MEND) document: *Prediction Manual for Drainage Chemistry from Sulphidic Geologic Materials* (MEND 2009).

The suggested screening criteria for inferring ARD potential based on the net potential ratio (NPR) are summarized in Table 3.

The NPR is the ratio of NP to AP. For this study the carbonate mineral NPR (CaNPR or CaNP/AP) was also used and compared to the screening criteria to bracket the effect of the type of buffering minerals. Acid potential (AP) was calculated from total sulphur content.

Table 3: Acid-Base Accounting Screening Criteria for Waste Rock (MEND, 2009)

Potential for ARD	Initial Screening Criteria	Description
Likely	NPR < 1	Likely to generate acidity, unless sulphide minerals are non-reactive
Uncertain	1≤ NPR <2	Neither clearly acid-generating nor acid consuming
None	NPR ≥ 2	Acid consuming

According to MEND (2009), any waste rock samples with NPR values between 1 and 2 are considered "possibly acid-generating" if buffering capacity is insufficiently reactive or is depleted at a rate faster than the sulphide oxidation rate. Samples with NPR values greater than 2 are considered to have no potential to generate acid.

Leaching test water quality results are compared to effluent limits of the Type B water license 2BE-MEA1318 for the Meadowbank Exploration Project (NWB, April 2013).

3.0 RESULTS OF GEOCHEMICAL CHARACTERISATION – EXPLORATION RAMP AND PORTAL

Tabulated results and figures are presented in Appendix B for the ramp and portal samples. Laboratory analytical certificates are included in Appendix E.

3.1 Chemical Composition

The chemical composition is shown on Tables B.1 for major and trace element content for both the Ramp and Portal samples.

Major constituents in both rock types from the Ramp and Portal include silica, aluminum and iron, plus magnesium in the mafic volcanic rocks. Minor constituents include calcium, potassium, and sodium. Silica and iron show variation within the intermediate intrusive rocks, while all other constituents demonstrate low variability as demonstrated by low standard deviation values.

Trace element concentrations that are greater than five times the typical crustal abundance (Price, 1997) are considered to be significantly enriched. As summarized in Table 4, enrichment is observed for arsenic and bismuth in at least one sample from both lithologies, and for molybdenum in the intermediate intrusive. Arsenic has been identified as a parameter of environmental interest because of its association with gold mineralization as part of the Whale Tail deposit exploration program.

Table 4: Compositional Enrichment in Waste Rock from the Ramp and Portal

Rock Type	Number of Samples Collected	Parameter Concentrations Greater than Five Times Typical Crustal Abundance (Price 1997)
Intermediate Intrusive	10	As(6), Bi(1), Mo(1)
Mafic Volcanic	2	n.e.

Note: Number in parenthesis represents the number of samples that are enriched relative to the typical crustal abundance.
n.e. = no exceedances

3.2 Acid Rock Drainage Potential

The results of ABA testing are presented as tables and figures in Appendix B.2. The results provide information on the ARD potential of each sample as determined based on sulphur content, the net potential ratio (NPR = NP/AP), and CaNPR (CaNP/AP). Presented with the data, are results of statistical analyses and the calculated bulk characteristics for each lithological group using the sum of sulphur content and sum of NP from all samples collected from that lithology.

A summary of the ARD potential of all samples and the designated ARD potential for each sample group is presented in Table 5 and is illustrated in Figure 2.

Table 5: Summary of ABA Results for Waste Rock from the Ramp/Portal

Rock Type	Number of Samples Collected	Sample Count[1]			Bulk Potential by Rock Type		
		non PAG	uncertain	PAG	Average Sulphur (wt.%)	Bulk CaNPR	Bulk ARD Designation[1]
Intermediate Intrusive	10	9	0	1	0.12	3.3	non PAG
Mafic Volcanic	2	1	0	1	0.27	0.66	PAG

Note: [1] Based on CaNP values

Total sulphur concentrations are below 0.1% for 10 of the 12 samples. One intermediate intrusive sample (0.85%S) and one mafic volcanic sample (0.51%S) have higher sulphur contents; both of these samples are PAG. The dominant sulphur species in most samples is sulphide sulphur (Figure B-1). No sulphate minerals are expected to occur in these lithologies; the sulphate content likely results from oxidation of sulphide minerals after coring and rock exposure. Thus, the total sulphur content is used to evaluate ARD potential.

Buffering capacity is generally high in both lithologies. The bulk NP is higher than the Carbonate NP (CaNP) (Figure B-2), suggesting that low reactivity silicate minerals contribute to bulk NP but may not be available under ambient conditions at circum-neutral pH where carbonate minerals provide more effective buffering capacity than silicate minerals. Consequently, results suggest CaNP is a more appropriate measure of available buffering capacity than bulk NP for these rocks. Paste pH values range from 8.8 to 10.0, corroborating the presence of readily-available buffering capacity in all samples.

The majority of samples collected from the intermediate intrusive unit are non-PAG as they contain an excess of available buffering capacity (CaNP) to neutralize any acid that may be generated (Figure 2). One mafic volcanic sample is considered PAG based on its CaNPR value of 0.55. Results from the characterization of mafic volcanic samples (n=8) collected from within the Whale Tail open pit deposit (Golder, in progress) have an average total sulphur content of 0.04 wt.%, an average CaNP value of 44 t $CaCO_3$/1000 t, and an average CaNPR of 32. Visual observation and chemical content suggest this unit is relatively homogeneous in the areas tested. Given the low sulphur content and elevated carbonate buffering capacity of the other samples in this lithology, the unit is considered non PAG.

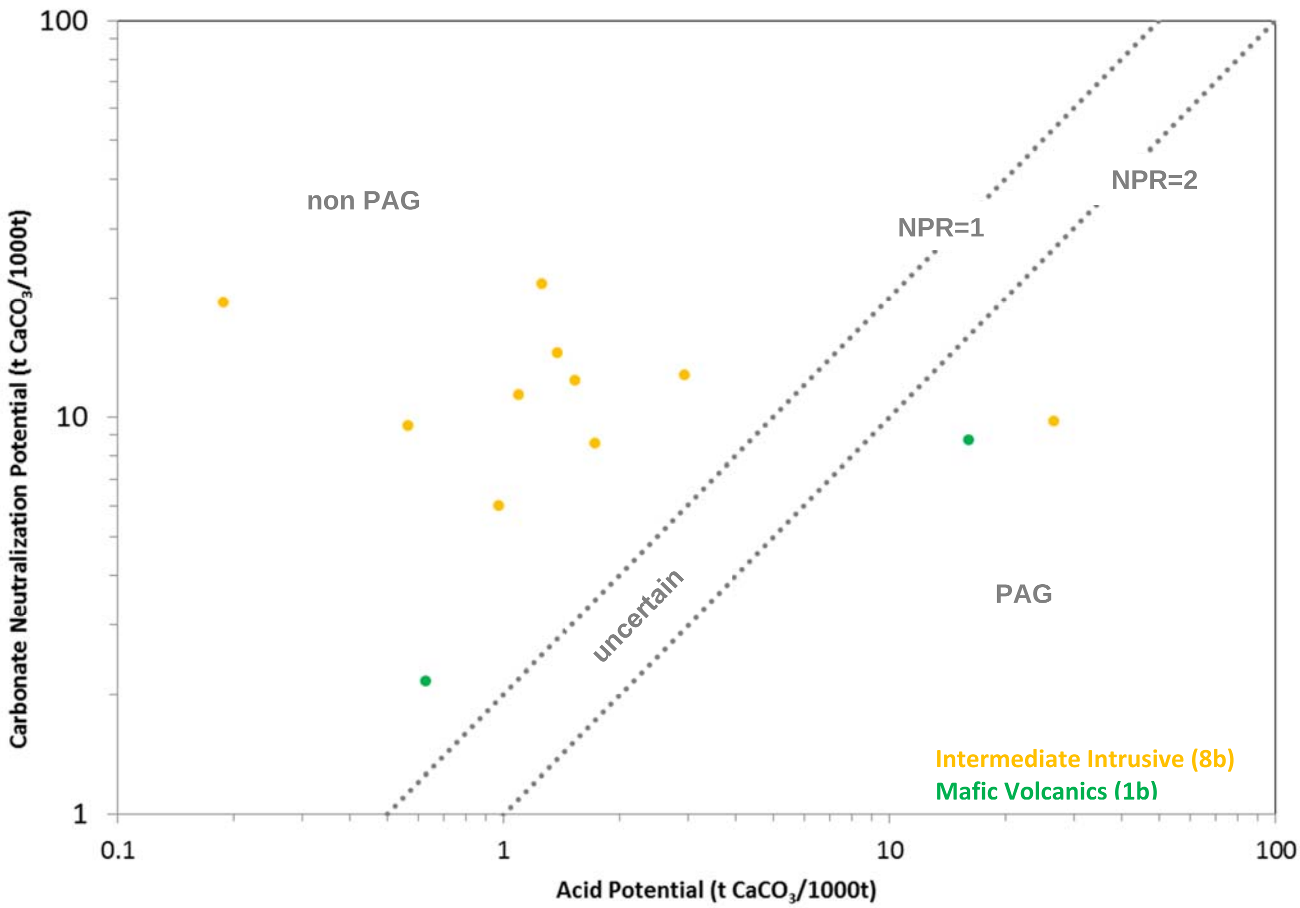

Figure 2: Carbonate Neutralization Potential vs. Acid Potential – Ramp and Portal Samples

3.3 Metal Leaching Potential

Results of the SFE leaching tests are presented in Appendix B.3. Results are compared to Water License Type B Effluent Limits as outlined in Type B 2BE- MEA1318 (NWB, April 2013).

The final pH values of the SFE leachates are alkaline for both lithologies, indicating the presence of some available buffering capacity to neutralize acid in all samples.

For both rock types investigated, the concentrations of all leachate parameters in all samples are well below Water License Type B Effluent Limits.

Arsenic is known to be enriched in waste rock based on results collected to date from samples representing material within the Whale Tail open pit deposit (Golder, in preparation). Although results of static testing of the ramp and portal samples show that arsenic is slightly enriched in the rock, leachate arsenic content is well below Water License Type B Effluent Limits and therefore arsenic release to levels above applicable criteria is not of concern in these rock units.

4.0 RESULTS OF GEOCHEMICAL CHARACTERISATION – UNDERGROUND AND BULK SAMPLE DEVELOPMENT

Tabulated results and figures are presented in Appendix C for the samples collected within or proximal to the underground development. Laboratory analytical certificates are included in Appendix E.

4.1.1 Chemical Composition

The chemical composition of samples is shown on Tables C.1 of Appendix C for major and trace element content.

Major constituents in all underground rock types include silica, aluminum and iron, in addition to magnesium in the ultramafic and mafic volcanic rocks. Minor constituents include calcium, potassium, and sodium. Major constituents show little variation within each lithological group as demonstrated by low standard deviation values.

Table 6 shows the elements that are enriched in the samples. Arsenic is enriched in at least one sample from all lithologies. Antimony, bismuth, chromium, nickel, and silver are also enriched in one or more sample and lithology.

Table 6: Compositional Enrichment in Waste Rock from the Underground

Rock Type	Rock Code	Number of Samples Collected	Parameter Concentrations Greater than Five Times Typical Crustal Abundance (Price 1997)
Ultramafic	V4a - 0a	6	As(6), Cr(4), Ni(1), Sb(2)
	V4a - 0b	1	As, Cr
Greywacke	S3C – 3b	6	Ag(1), As(6), Bi(4), Cr(2)
Chert	S10– 3b	3	Ag(1), As(3), Bi(3), Se(1)
Iron Formation	S9E – 3b	1	As, Cr, Ni
Mafic Volcanic	V3 - 1b	3	As(2), Cr(3)
Intermediate Intrusive	I2 - 8b	2	As(2)

Note: Number in parenthesis represents the number of samples that are enriched relative to the typical crustal abundance.

Arsenic was found at concentrations exceeding five times typical crustal abundance (of 9 mg/kg) in samples from all rock types, and the median concentration also exceeded this value for all rock groups. Figure C-11 of Appendix C illustrates that samples from within 20 meters of the ore zone are enriched in arsenic by 1 to 2 orders of magnitude, but at a distance greater than 20 to 25 meters, the arsenic content decreases substantially in the greywacke and mafic volcanic lithologies. All samples farther than 20 to 25 meters from the ore zone showed a leachable arsenic content that was below Type B Water License levels for all rock types.

4.1.2 Acid Rock Drainage Potential

The results of ABA testing are presented as tables and figures in Appendix C.2. Presented with the data, are results of statistical analyses and the calculated bulk characteristics for each lithological group using the sum of sulphur content and sum of NP from all samples collected from that lithology.

A summary of the ARD potential of all samples and the designated ARD potential for each sample group is presented in Table 7 and is illustrated in Figure 4.

Table 7: Summary of ABA Results for Waste Rock from the Underground Development

Rock Type	Rock Code	Number of Samples	Sample Count[1]			Bulk Potential by Rock Type		
			non PAG	un-certain	PAG	Average Sulphur (wt.%)	Bulk CaNPR	Bulk ARD Designation
Ultramafic	V4a - 0a	6	3	3	0	0.046	79	non PAG
	V4a - 0b	1	1	0	0	0.031	51[2]	non PAG
Greywacke	S3C – 3b	6	2	0	4	0.27	6.9	**variable**
Chert	S10– 3b	**3**	**0**	**0**	**3**	**2.4**	**0.73**	**PAG**
Iron Formation	S9E – 3b	1	1	0	0	0.22	12[2]	non PAG
Mafic Volcanic	V3 - 1b	3	3	0	0	<0.005	77	non PAG
Intermediate Intrusive	I2 - 8b	2	2	0	0	0.10	4.5	non PAG

Note: [1] Based on CaNP values; [2] – Only one sample; classification applies to the sample tested rather than the bulk rock type.

Samples collected from the chert lithology are PAG while the greywacke lithology has a variable ARD potential where the two non PAG samples have a higher CaNPR combined with a lower sulphur content than the PAG samples. There is no correlation between the distance a sample is from the ore zone and sulphur content (Figure 3).

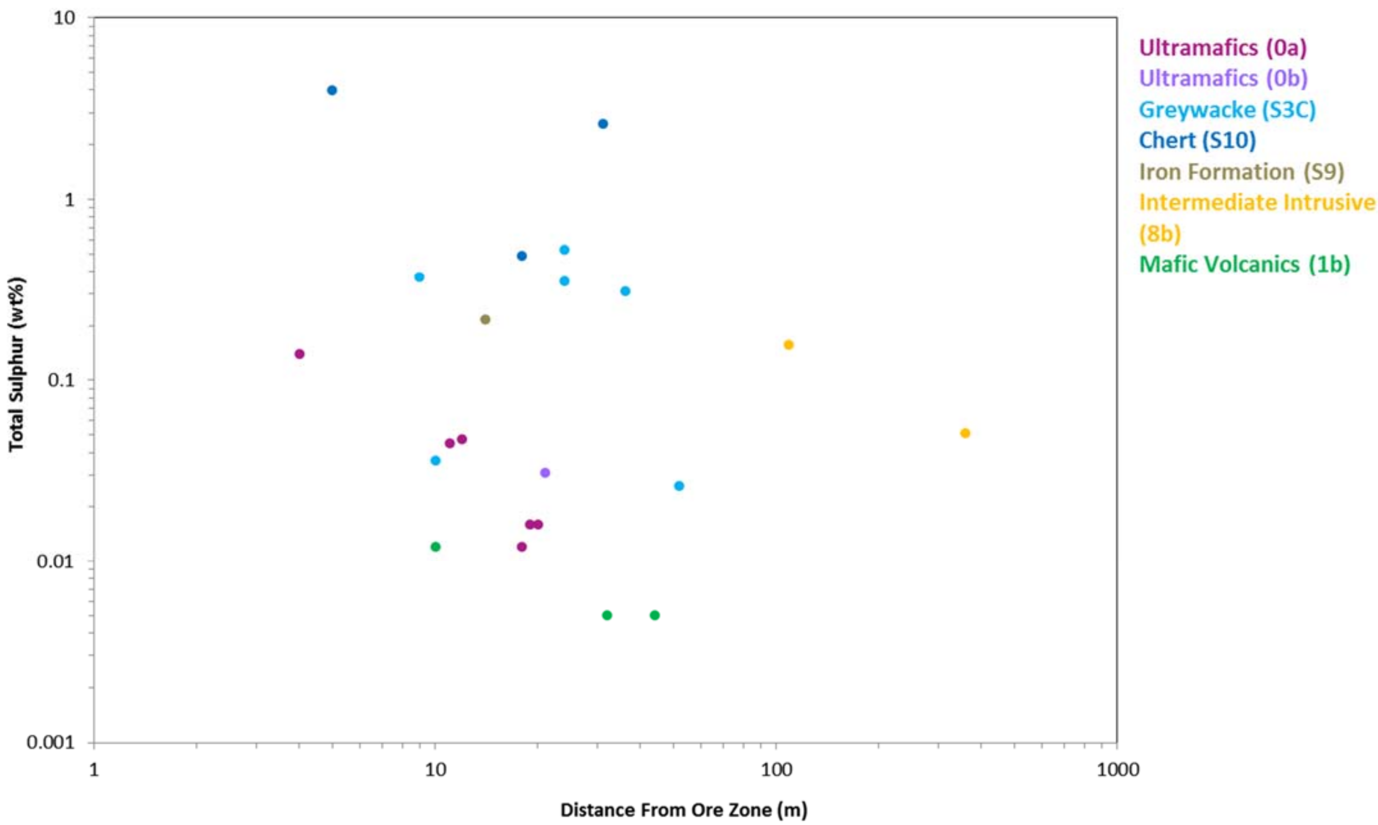

Figure 3: Total Sulphur (wt%) versus Distance From the Ore Zone.

All other lithologies are non-PAG as they contain an excess of available buffering capacity to neutralize any acid that may be generated (Figure 4).

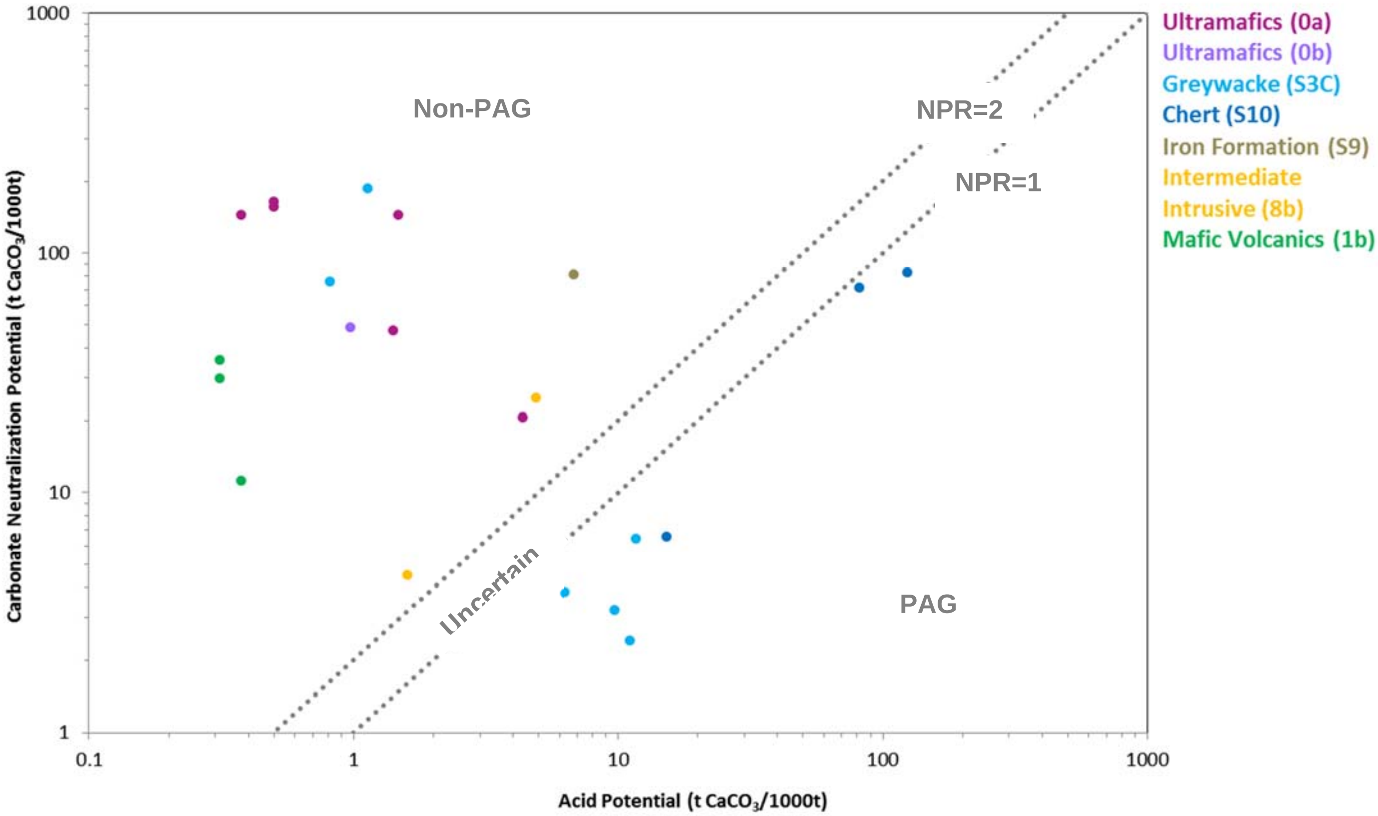

Figure 4: Carbonate Neutralisation Potential vs. Acid Potential – Underground Development Samples

Waste rock total sulphur concentrations range from <0.005 to 4.0 wt%. The dominant sulphur species in most samples is sulphide (Figure C-1). Sulphur is highest in chert samples and lowest in the ultramafic and mafic volcanic lithologies, as shown in Table 7. There is no correlation between the sample location with respect to the ore zone and total sulphur content.

Buffering capacity is typically highest in ultramafic rock while greywacke exhibits a variable buffering capacity compared to the other lithologies. CaNP values for both the ultramafic and mafic volcanic lithologies increase the further they are from the ore zone, however this correlation does not exist for the other lithologies (Figure 5). Paste pH values range from 9.0 to 10.2 indicating there is some readily available buffering capacity in all samples. The bulk NP is similar to the Carbonate NP (Figure C-2) in the ultramafic lithology, but not in samples of the other lithologies where much of the buffering capacity is provided by non-carbonate minerals. Thus, the use of CaNP and CaNPR is more suitable to define the actual ARD potential in all lithologies.

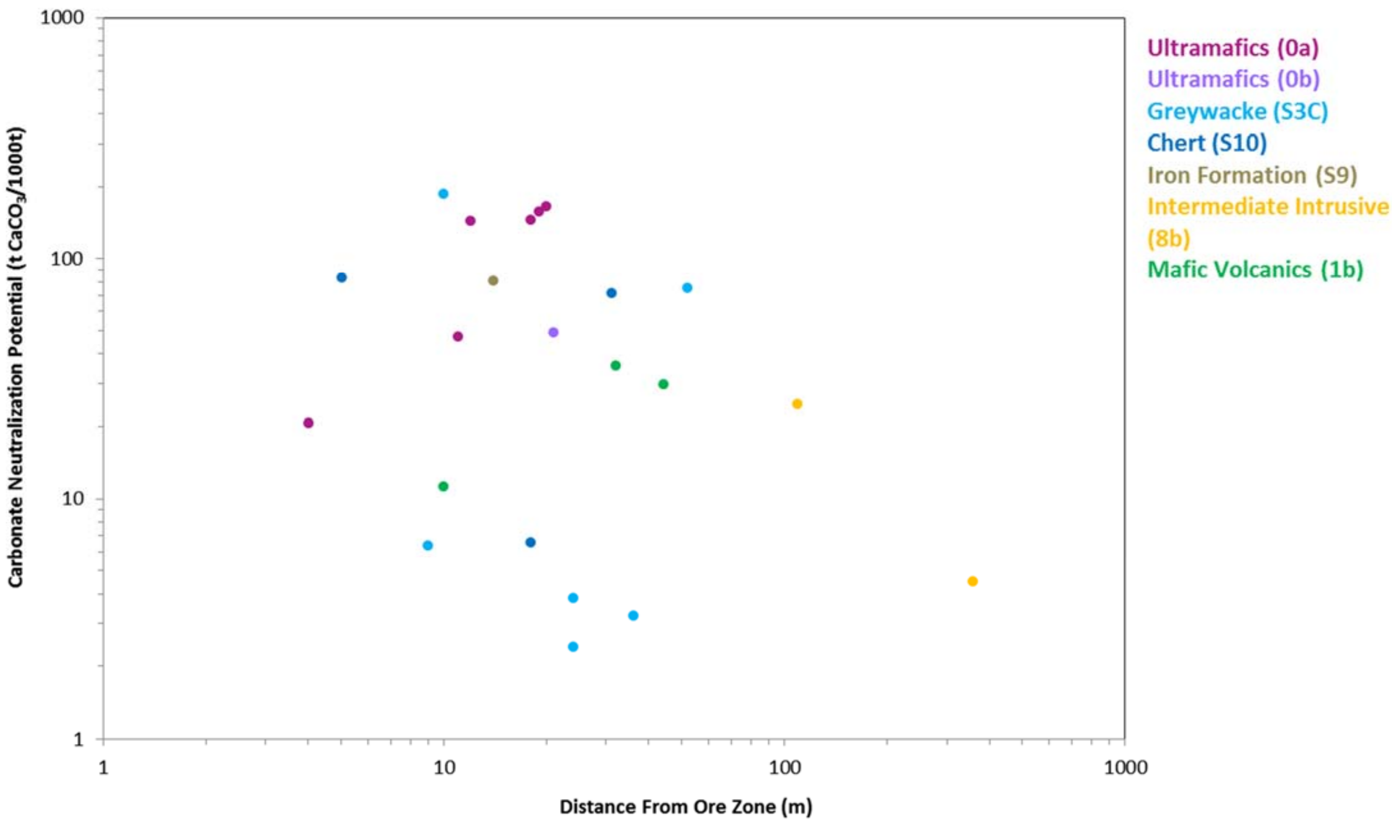

Figure 5: Carbonate Neutralization Potential versus Distance From Ore Zone

Based on results to date, a possible sulphur cut-off value 0.2 % could potentially be used to differentiate between PAG and non PAG material (Figure 6) for all rock types; this cut off may be as low as 0.04% S for greywacke and chert but more data would be needed to verify this. A potential cut-off value of 0.2% is consistent with the results from the Whale Tail open pit deposit study (Golder, in preparation).

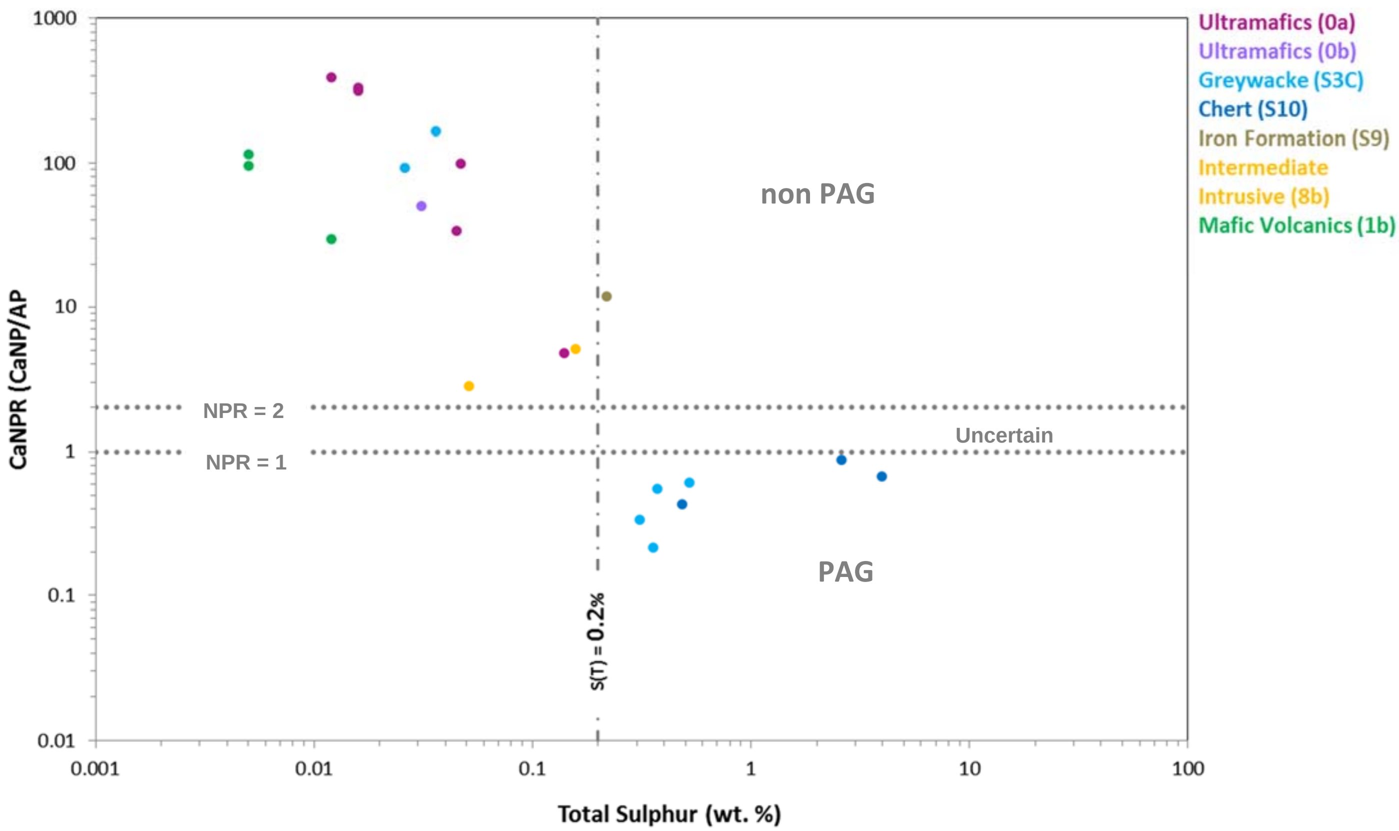

Figure 6: Total Sulphur versus Carbonate NPR - Underground Development Samples

4.1.3 Short Term Metal Leaching Potential

Results of the SFE leaching tests are presented in Appendix C.3. Results are compared to Water License Type B Effluent Limits (NWB, April 2013). Table 8 below, summarizes parameters that exceed these screening criteria.

Table 8: Summary of SFE Leachate Exceedances to Water License Type B Effluent Limits for Waste Rock from the Underground

Rock Type	Rock Code	Number of Samples Collected	Range of test pH	Average As (mg/L)	Parameters in Exceedance of Water License Type B Effluent Limits
Ultramafic	V4a - 0a	6	9.4-9.8	1.2	As(4)
	V4a - 0b	1	10.1	2.1	As
Greywacke	S3C – 3b	6	9.2-10.1	0.34	As(1)
Chert	S10– 3b	3	9.0-9.7	0.01	n.e.
Iron Formation	S9E – 3b	1	10.0	0.52	As
Mafic Volcanic	V3 - 1b	3	10.1-10.2	0.49	As(1)
Intermediate Intrusive	I2 - 8b	2	9.5-9.7	0.02	n.e.

Note: [1] The number in parenthesis represents the number of samples that exceed the effluent limit
n.e. = no exceedances

The final pH values of the SFE leachates are alkaline, corroborating the presence of available buffering capacity to neutralize acid that could be generated in the short term in PAG samples.

For all rock types investigated, the concentrations of almost all leachate parameters are below Water License Type B Effluent Limits, with the exception of arsenic in at least one sample from most rock types except chert and intermediate intrusive samples.

Arsenic is leached at concentrations that are within one order of magnitude or above of the Water License Type B Effluent Limit (0.5 mg/L) in most ultramafic samples and in one or more of the mafic volcanic, ultramafic and iron formation samples (Figure 7). The average arsenic concentration in leachates from chert and intermediate intrusive samples are below the effluent limit. For the all lithologies, samples which report a total arsenic content of less than 130 mg/kg have arsenic leachate concentrations that meet the Type B Water License criterion.

There is no correlation between the distances of the sample from the ore zone to its leachable arsenic concentration (*Figure 8*). However, there is a correlation between a specific lithology and its leachable arsenic concentrations as samples from the ultramafic lithologies (0a and 0b) consistently report higher leachable arsenic concentrations than those from the other lithologies.

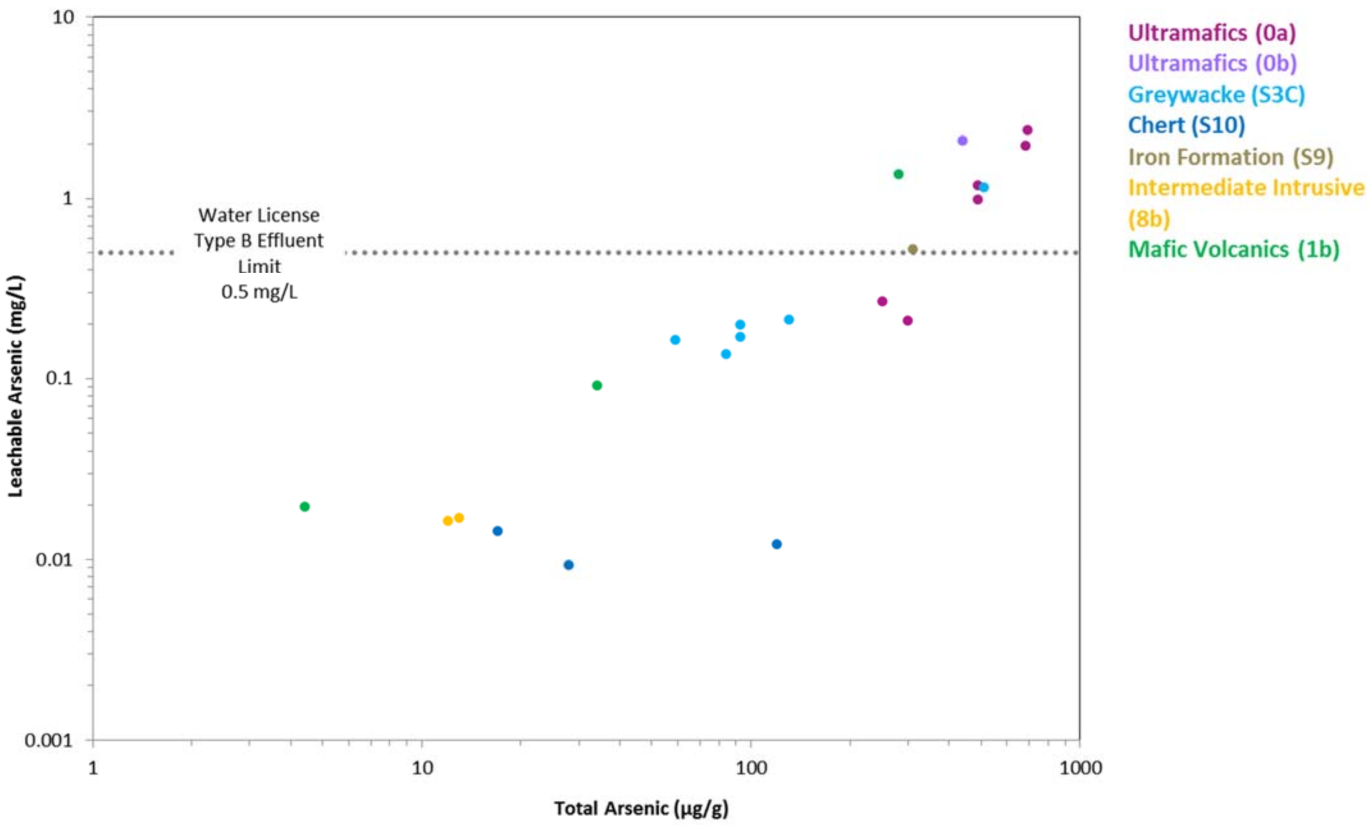

Figure 7: Leachable Arsenic versus Total Arsenic - Underground Development Samples

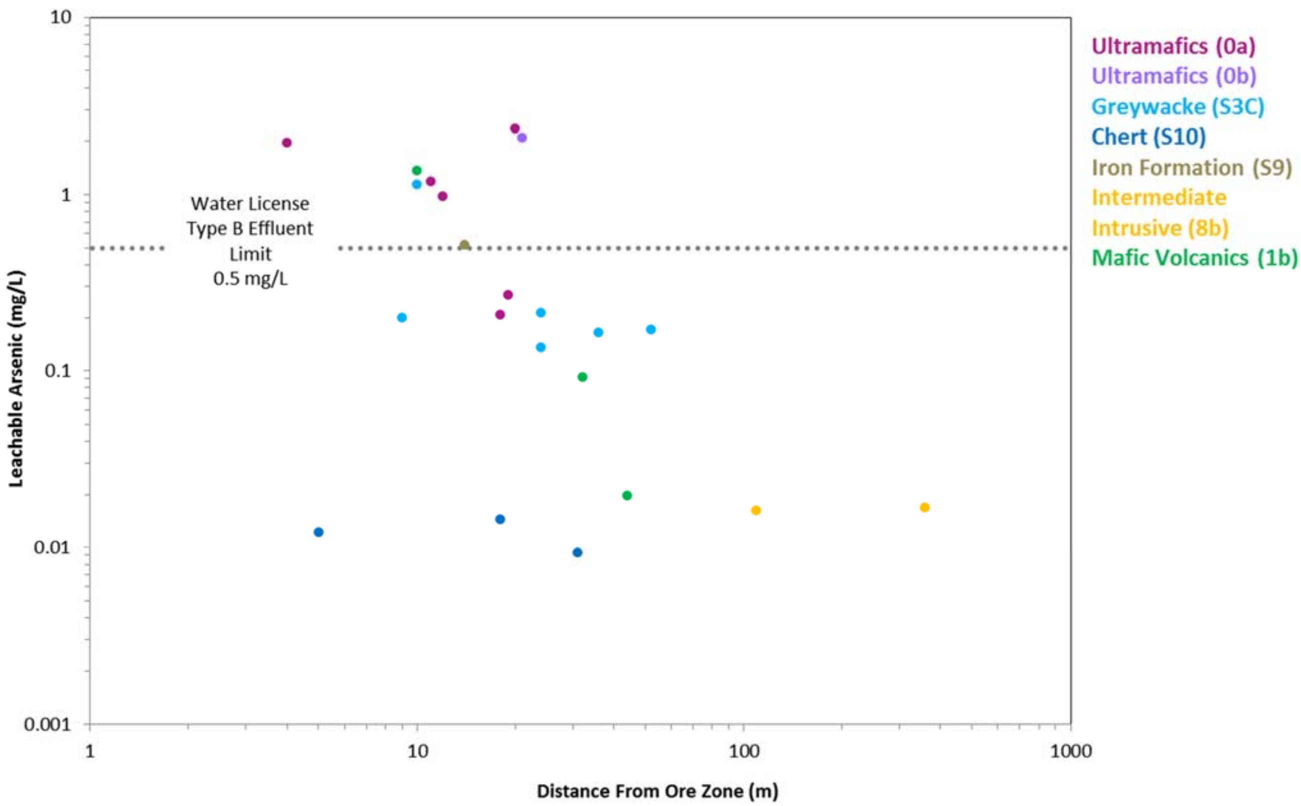

Figure 8: Leachable Arsenic vs. Distance to the Ore Zone – Underground Development Samples

4.1.4 Kinetic Leaching Test

A long-term kinetic leaching test is on-going on a 1-kg sample of waste rock representing the intermediate intrusive lithology. Leachate concentrations are presented in time-series graphs and tables in Appendix D. The results available to date are reported herein (up to cycle 25), and are compared to the Water License Type B Effluent Limits.

Kinetic test leachate is circum-neutral with values ranging from 6.8 to 7.4, corroborating the available buffering capacity observed in static testing (Section 4.1.2) for the material tested. All leachate concentrations are below Water License Type B Effluent Limits.

Overall, sulphate concentrations are generally stable suggesting that sulphides are not yet significantly oxidizing under accelerated weathering conditions, nor is this expected to occur in the long-term based on the static test results for this sample. Alkalinity and conductivity concentrations are low and stable, which corroborate with minimal oxidation of the sulphides. Calcium, magnesium and potassium also show a stable trend.

5.0 GEOCHEMICAL TRENDS AND CONCLUSIONS

The following presents a summary of the results obtained to date for this waste rock geochemistry characterization program.

5.1 Ramp and Portal Waste Rock

The two lithologies to be encountered in the ramp and portal development (intermediate intrusive and mafic volcanic) are non PAG and report no leachate parameters above Water License Type B Effluent Limits. Kinetic results to date on one sample of intermediate intrusive rock also report no parameters above Water License Type B Effluent Limits.

5.2 Underground Development Waste Rock

The following provides a summary of the ARD/ML potential of the underground development waste rock:

- The ultramafic, iron formation, intermediate intrusive and mafic volcanic lithologies are non-acid generating (non PAG) based on the low sulphur content and presence of excess carbonate buffering capacity.
- The chert lithology is PAG, while the greywacke lithology has a variable ARD potential. Samples that are PAG have a higher sulphur and lower CaNP values than the non PAG samples. The four PAG samples of greywacke have a sulphur content >0.3%, while non PAG samples have a sulphur content of <0.04 %. There is no correlation between CaNP or total sulphur contents and the samples distance from the ore zone.
- There is no correlation between the total sulphur content (Figure 3) or the amount of carbonate neutralization content (Figure 4) of a sample nor its' distance to the ore zone.
- Arsenic is the principal element of environmental interest in the Whale Tail open pit deposit (Golder, in progress) but this element, although still slightly enriched in the rock, does not leach above water quality criterion (levels are well below the criterion) and thus, is not of concern in the portal and ramp waste rock.
- Some lithologies in the underground development rock do leach arsenic at concentrations that exceed the Water License Type B Effluent Limit, namely, ultramafic rock (0a and 0b units). Water quality limits are also exceeded in one or more samples of greywacke, mafic volcanic and iron formation waste rock from underground development. There is no correlation between the distance a sample is from the ore zone and its leachable arsenic concentration for underground development rock. The chert and intermediate intrusive lithologies report average arsenic concentrations that meet Water License Type B Effluent Limits in short term tests and in long-term kinetic tests for the intermediate intrusive rock.
- Because of the very conservative nature of the static leaching test, exceedances in these tests do not necessarily indicate that arsenic concentrations will exceed criteria in waste rock contact water at site.

6.0 RECOMMENDATIONS FOR MATERIAL MANAGEMENT

6.1 Ramp and Portal Waste Rock

- Waste rock from the intermediate intrusive (8b) lithology in the ramp and portal area is suitable for use as construction material as it is non-PAG and reports no Water License Type B Effluent Limit exceedances in kinetic testing.
- Similarly, waste rock from the mafic volcanic lithology waste rock is also suitable for use as construction.

6.2 Underground Development Waste Rock

- The chert lithology is PAG and will require means to prevent oxidation of sulphides to control ARD in the long-term. This material is not suitable for construction use; it should be managed in such a way to prevent acidification in the long-term.
- As development proceeds towards the ore body, greywacke rock should be tested for total sulphur and carbon content for AP, CaNP and CaNPR determination. Material with a CaNPR value of less than 2 should be managed in a way to prevent acidification in the long-term.
- The ultramafic lithologies from the underground development exhibit leachable arsenic concentrations that are above Water License Type B Effluent Limit for this parameter and may not be suitable for use as construction material where the waste rock would contact open water. However, site specific conditions may

be such that arsenic does not leach out of rock at concentrations that exceed the applicable guideline. This rock type could be disposed of in the WRSF of the open pit deposit or could possibly be used in construction where exposure and release to contact water is minimized.

- Some samples of mafic volcanic, greywacke and the one sample of iron formation waste rock from the underground portion of the mine leach arsenic at concentrations that are above Water License Type B Effluent Limits in static leaching tests. However, these static leaching tests are more conservative than kinetic tests and site conditions. As development of the ramp proceeds closer to the deposit, samples of these lithologies should be analyzed for their total arsenic content to assist in determining whether the material is suitable for construction or should be deposited in the WRSF or other engineered facility where leachate can be captured and controlled. A preliminary cut off arsenic content of 130 mg/kg may be indicative of low leachability of arsenic (below the Type B Water License criterion). More samples would need to be collected and analyzed for total and leachable arsenic to confirm this apparent trend.

7.0 LIMITATIONS

This technical memorandum was prepared for the exclusive use of Agnico-Eagle Mines Ltd. (Agnico Eagle). The report, which specifically includes all tables, figures and attachments, is based on samples, data and information collected by Golder Associates and Agnico Eagle staff, and is based solely on the conditions of the properties at the time of sampling, our present understanding of the site conditions, and our professional judgement in light of such information at the time of this report. It is supplemented by information and planned operational data provided by Agnico Eagle at the time of this report. Many of the design parameters and management plans are being developed concurrently and may change in the future. If new information is discovered in future work, including excavations, borings, or other studies, Golder Associates Ltd. should be requested to re-evaluate the conclusions of this report, and to provide amendments as or if required.

This report provides a professional opinion and therefore no warranty is expressed, implied, or made as to the conclusions, advice and recommendations offered in this report. This report does not provide a legal opinion regarding compliance with applicable laws.

The assessment of geochemical characteristics for the ramp, portal and underground development waste rock has been made using the results of chemical analysis of discrete samples from a limited number of locations, collected by the client and by Golder. Sample locations and borehole intervals collected by others were not observed or visited by Golder. Subsurface conditions may vary from these sample locations. Additional study, including further surface and subsurface investigation, can reduce the inherent uncertainties associated with this type of study. However, it is never possible even with exhaustive sampling and testing to dismiss the possibility that part of a site may have considerably different characteristics than the average properties identified by the sampling and analyses completed as part of this study.

The services performed as described in this report were conducted in a manner consistent with that level of care and skill normally exercised by other members of the geoscience profession currently practising under similar conditions, subject to the time limits and financial and physical constraints applicable to the services.

8.0 CLOSURE

We trust this report meets your needs at this time. Should you have any questions, please do not hesitate to contact the undersigned.

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Attachments: Appendix A – Test Methods
Appendix B – Ramp / Portal Samples: Tables and Figures
Appendix C – Underground Samples: Tables and Figures
Appendix D – Kinetic Test Results

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APPENDIX A

Test Methods

Chemical Composition of Solids

The chemical composition of all solid materials was determined through whole rock and trace element analysis to determine the content of major rock forming elements and trace metals, respectively. This information is used to assess the variation in chemical composition by lithology and to identify parameters of potential environmental concern. Results for waste rock are compared to typical crustal abundances (Price 1997) for similar lithologies. The following components were included in the chemical analyses:

- Metals (including arsenic and selenium) by ICP-MS, with samples extracted using a concentrated strong acid solution of perchloric, nitric, hydrochloric and hydrofluoric acids. The digestion of the solids is not complete but does provide a better insight into the parameters that may be environmentally available within each sample;
- Mercury by cold vapour atomic absorption spectroscopy (CVAAS), (USEPA, 2005), EPA245.1 method; and,
- Whole rock analysis for major metals by borate fusion / x-ray fluorescence (XRF).

Potential for Acid Rock Drainage

The potential of geologic material to oxidize and generate acidic drainage was evaluated through acid-base accounting (ABA). This test was conducted following the Modified Sobek method (MEND 2009) and included determination of the following parameters:

- Paste pH;
- Total sulphur by LECO furnace (ASTM E 1915 method);
- Sulphate sulphur by acid digestion and sulphide sulphur by difference from the total sulphur content;
- Total carbon (TC as %C), and carbonate (as %C) by LECO furnace; and,
- Bulk neutralization potential (NP; by the 1996 Modified NP procedure (MEND 2009)).

Neutralization Potential (NP)

The NP is a bulk measurement of the acid-buffering capacity of a sample provided by various minerals of different reactivities and effective neutralization capacity. Neutralization potential was evaluated using two different analytical techniques:

1996 Modified NP Procedure**:** Represents the bulk NP of the sample, including contributions from some reactive aluminosilicate minerals, where present. It is calculated from the amount of base consumed to neutralize to pH 8.3 the acid remaining from the acid-digested sample at room temperature.

Carbonate NP (CaNP)**:** Represents the NP available from carbonate minerals only, including siderite, ankerite and any other divalent metal carbonates that may provide less net neutralization than the molar amount of their carbonate content. It was calculated based the carbonate content of the sample (as %C), assuming all the inorganic carbon is in the form of carbonate minerals. Carbonate NP was calculated using the detection limit value for carbonate and total inorganic carbon when these were measured as less than detection limit (<0.005 or 0.0025).

Acid Potential (AP)

The AP is a measure of the total potential acidity of a sample, and assumes that all sulphur is in the form of available oxydizable pyrite. AP is calculated from the total sulphur content of the sample on the basis that there are no sulphate minerals present in any lithologies based on the geology of the deposit.

Values of AP, NP and CaNP are reported as kg equivalent calcium carbonate per tonne of rock.

Short-Term Leaching Tests (Shake Flask Extraction – SFE)

Samples were subjected to short-term leach tests using a modified version of the shake flask extraction (SFE, Modified ASTM D3987). Crushed samples (<9.5 mm) of waste rock were mixed with distilled water (4:1 solution to solid ratio) and the material was placed in a flask and shaken for 24 hours using a variable speed shaker table. Leachate was collected from a pump through a 0.45-μm filter and analyzed for pH, sulphate, chloride and dissolved metals.

Short-term leach tests are an initial screening tool in the identification of potential constituents of concern at neutral pH (outside of the potential for acid generation), in view of mine site water management and potential water treatment requirements. However, these tests methods have limitations in their ability to represent field leaching conditions.

Kinetic (Long term) Leaching Tests

One kinetic weathering test was initiated on an intermediate intrusive sample to provide a more representative assessment of likely chemical release rates under site conditions. Kinetic leaching tests are a repetitive leach test meant to simulate accelerated weathering conditions on a specific charge material (waste rock, tailing, etc.) by promoting sulphide mineral oxidation and dissolution of acid-buffering minerals.

Humidity Cell Test Method (HCTs)

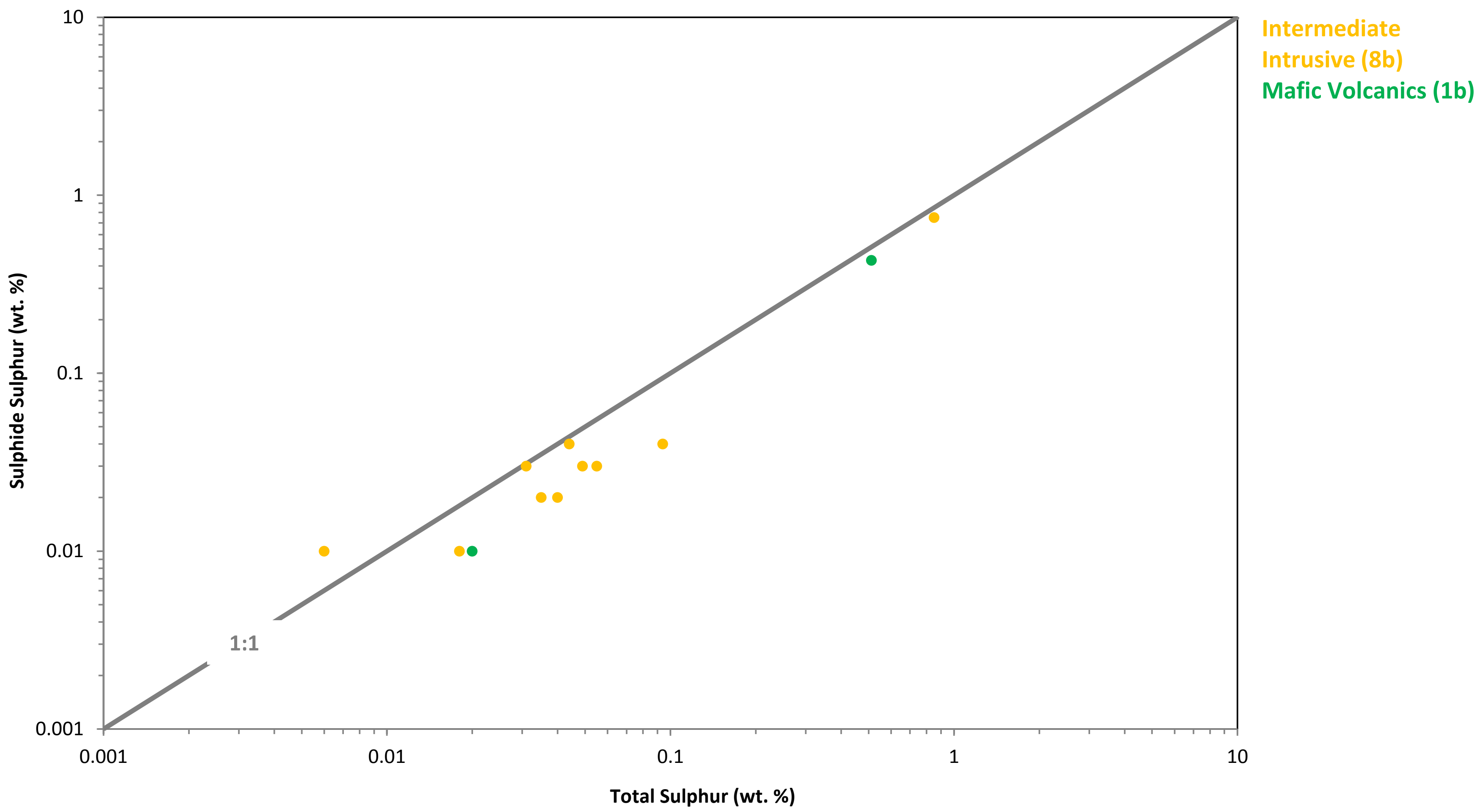
The HCT method is based on the standard method ASTM D5744 where a 1-kg sub sample of crushed (<9.5 mm) waste rock, ore or tailings (as-is) is placed in a cylindrical vessel and subjected to a seven-day cycle of leaching, which includes three days of dry air circulation followed by three days of humid air and subsequent flushing with 1 litre (L) of distilled water (1:1 liquid to solid ratio by weight) on the seventh day. Leachate was collected for analysis of short- and long-suite groups of parameters as follows:

- Short suite parameter group with weekly analysis from Cycle 0, including:
  - Volume recovered, pH, conductivity, alkalinity, acidity, sulphate, and calcium.
- Long suite group of parameters analyzed at Cycle 0-5, 10, 15, 20 and 25, including:
  - Chloride and fluoride.
  - Dissolved aluminum, antimony, arsenic, barium, beryllium, bismuth, boron, cadmium, chromium, cobalt, copper, iron, lead, lithium, magnesium, manganese, molybdenum, nickel, potassium, selenium, silver, sodium, strontium, thallium, tin, titanium, uranium, vanadium, and zinc.

Results from the humidity cell is used to assess the release rates of chemicals from mine wastes upon exposure to water. However, these leachates may not be direct analogues of expected water quality because the testing does not consider the scale (size, shape) of the mine waste infrastructure, nor the effect of climate (climate: moisture content, temperature) on drainage quality, such as freshet conditions and frozen winter conditions.

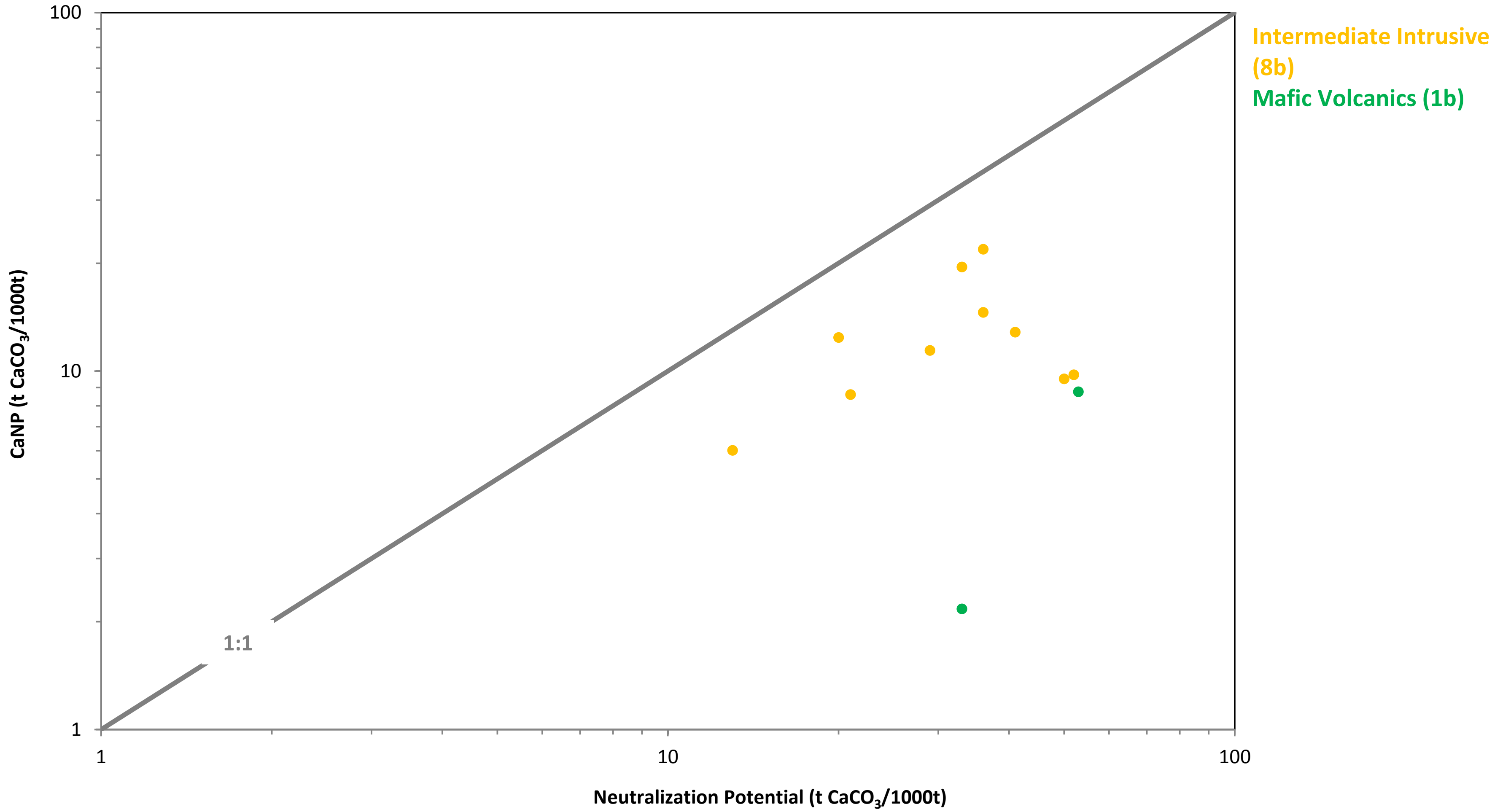
APPENDIX B

Tables and Figures – Portal and Ramp



Notes:	Sulphide Sulphur versus Total Sulphur				Static Testing (Ramp and Portal Samples) Whale Tail Deposit	
					Agnico Eagle Mines Ltd. Meadowbank Division	Golder Associates
	PREPARED	CWT	DATE	Mar-16		
	CHECKED	AJS	JOB NO	1520817		
Values < MDL are plotted as MDL value	REVIEWED	VJB	PHASE/TASK	4000	FIGURE	B-1

N:\Active\2015\3 Proj\1520817 Amaruq Geochemistry Baseline\geochem\Static\Phase 3\waste rock\Underground-Ramp\Copy of Amaruq_Static_Ramp_ABA_SFE_Figures_14Mar16.xlsx



Notes:

Values < MDL are plotted as MDL value

Carbonate Neutralization Potential versus Neutralization Potential

PREPARED	CWT	DATE	Mar-16
CHECKED	AJS	JOB NO	1520817
REVIEWED	VJB	PHASE/TASK	4000

Static Testing (Ramp and Portal Samples) Whale Tail Deposit

Agnico Eagle Mines Ltd. Meadowbank Division

Golder Associates

FIGURE B-2

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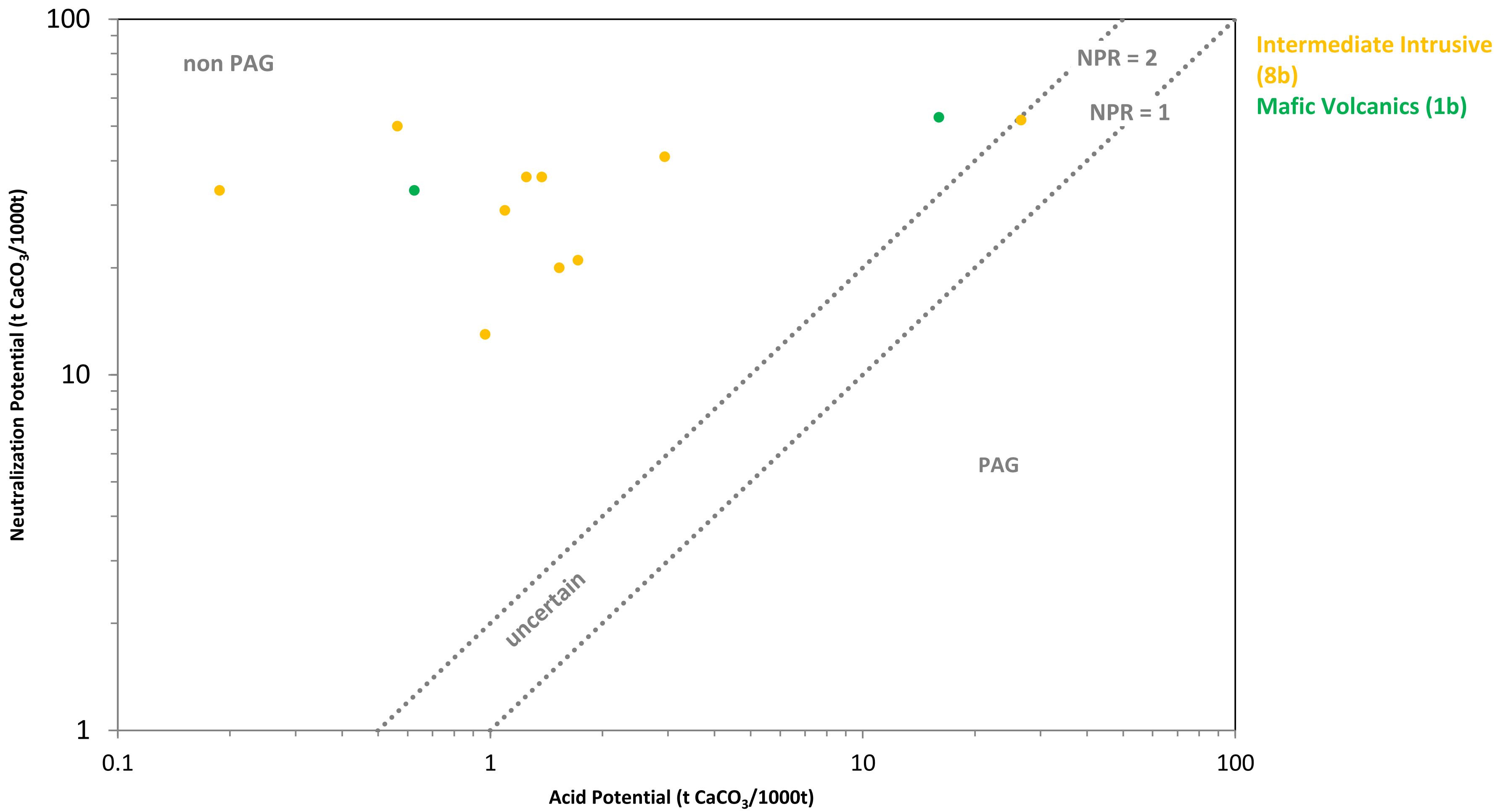
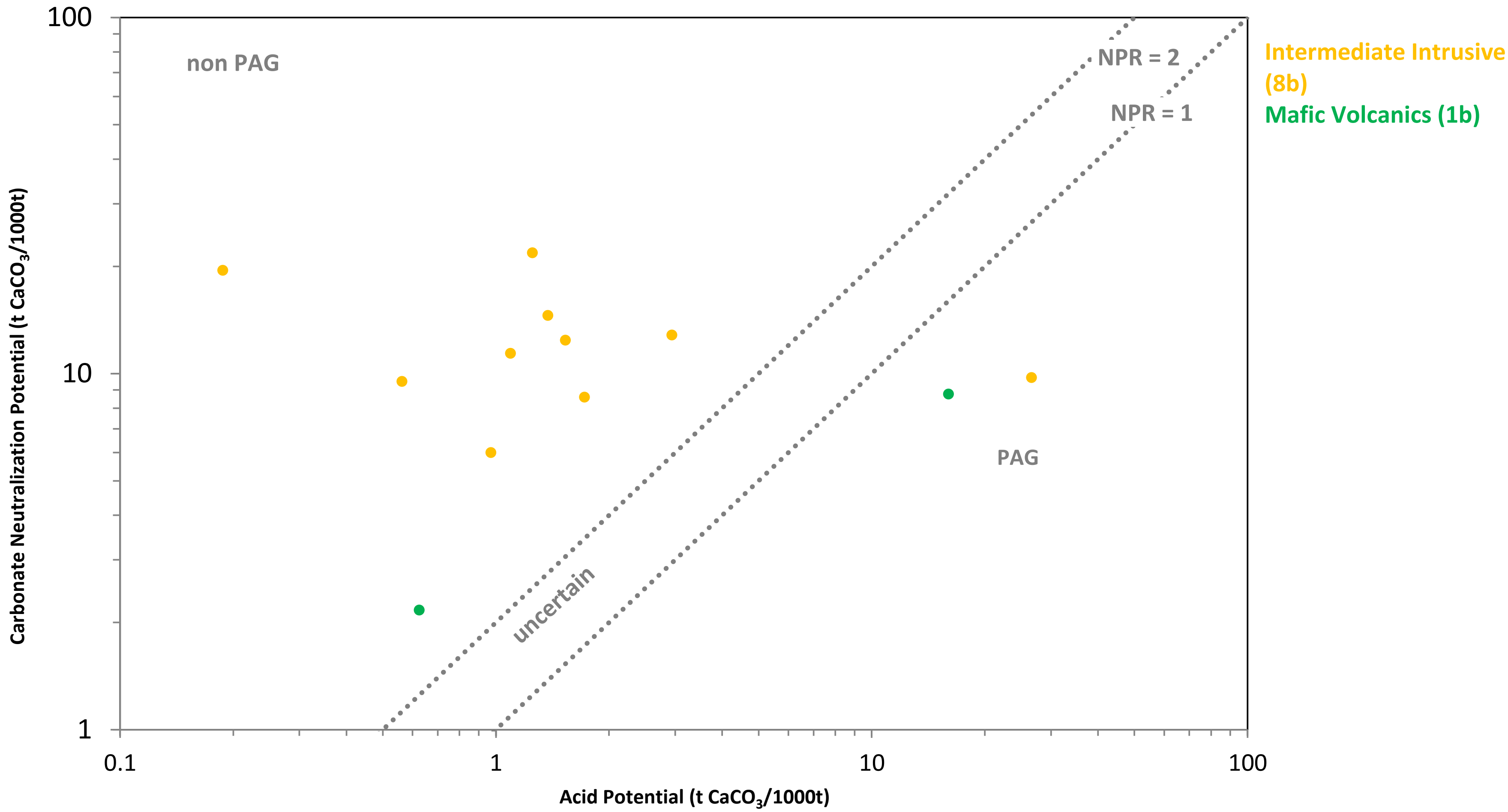


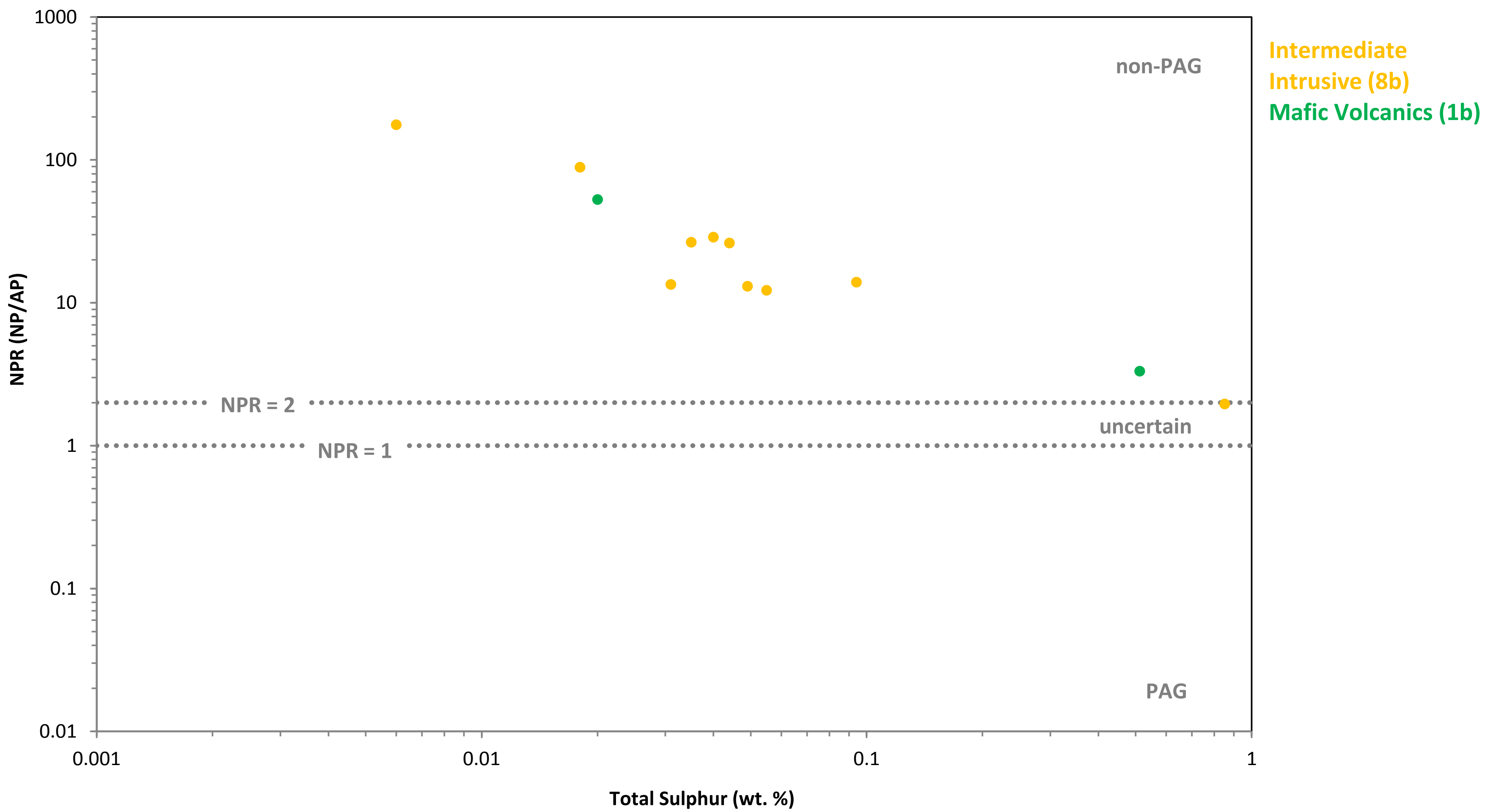
Notes:	Neutralization Potential versus Acid Potential				Static Testing (Ramp and Portal Samples) Whale Tail Deposit	
	PREPARED	CWT	DATE	Mar-16	Agnico Eagle Mines Ltd. Meadowbank Division	Golder Associates
	CHECKED	AJS	JOB NO	1520817		
Values < MDL are plotted as MDL value	REVIEWED	VJB	PHASE/TASK	4000	FIGURE	B-3

N:\Active\2015\3 Proj\1520817 Amaruq Geochemistry Baseline\geochem\Static\Phase 3\waste rock\Underground-Ramp\Copy of Amaruq_Static_Ramp_ABA_SFE_Figures_14Mar16.xlsx



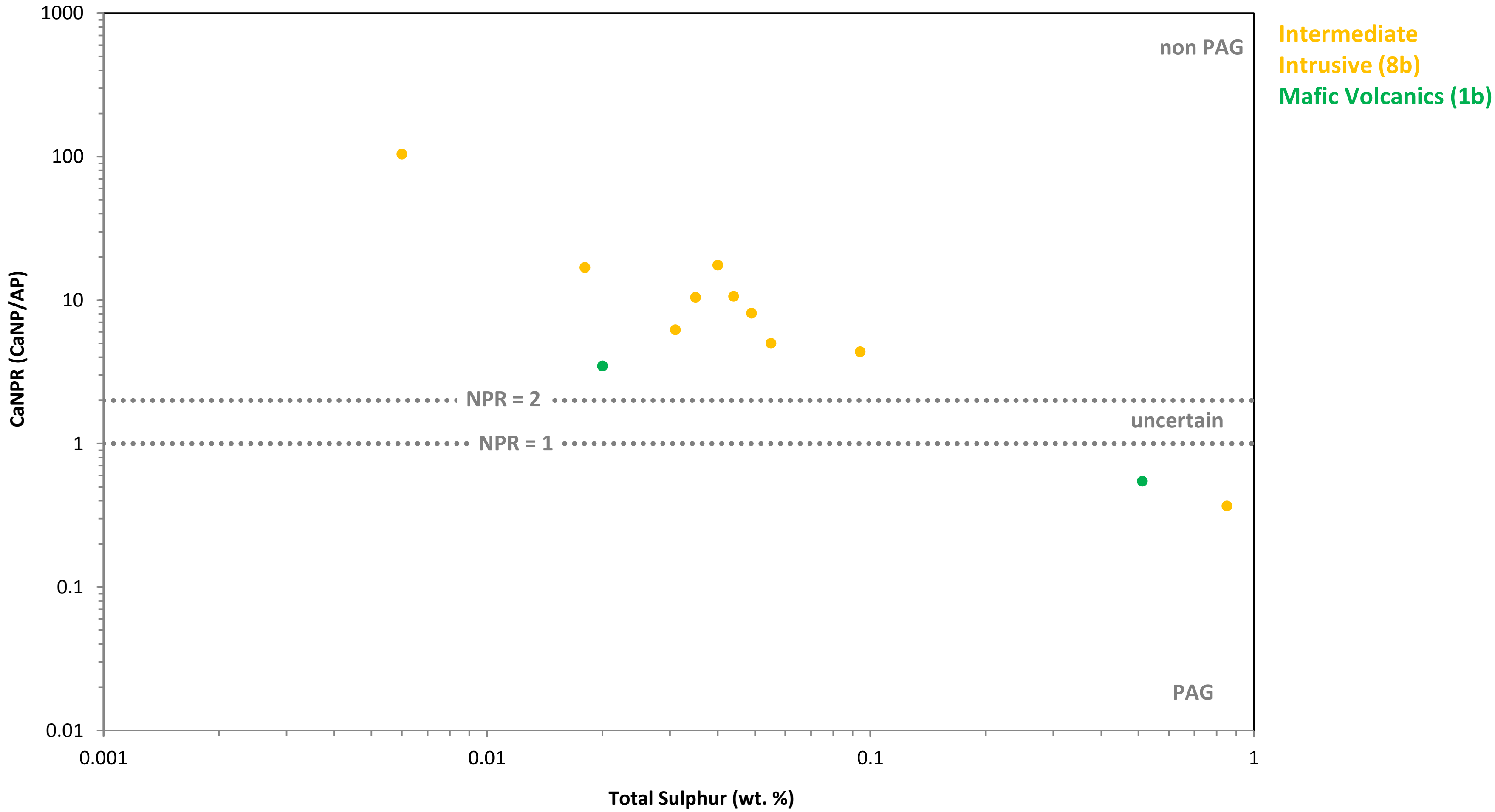
Notes:	Neutralization Potential versus Acid Potential				Static Testing (Ramp and Portal Samples) Whale Tail Deposit	
					Agnico Eagle Mines Ltd. Meadowbank Division	Golder Associates
	PREPARED	CWT	DATE	Mar-16		
	CHECKED	AJS	JOB NO	1520817		
Values < MDL are plotted as MDL value	REVIEWED	VJB	PHASE/TASK	4000	FIGURE	B-4

N:\Active\2015\3 Proj\1520817 Amaruq Geochemistry Baseline\geochem\Static\Phase 3\waste rock\Underground-Ramp\Copy of Amaruq_Static_Ramp_ABA_SFE_Figures_14Mar16.xlsx



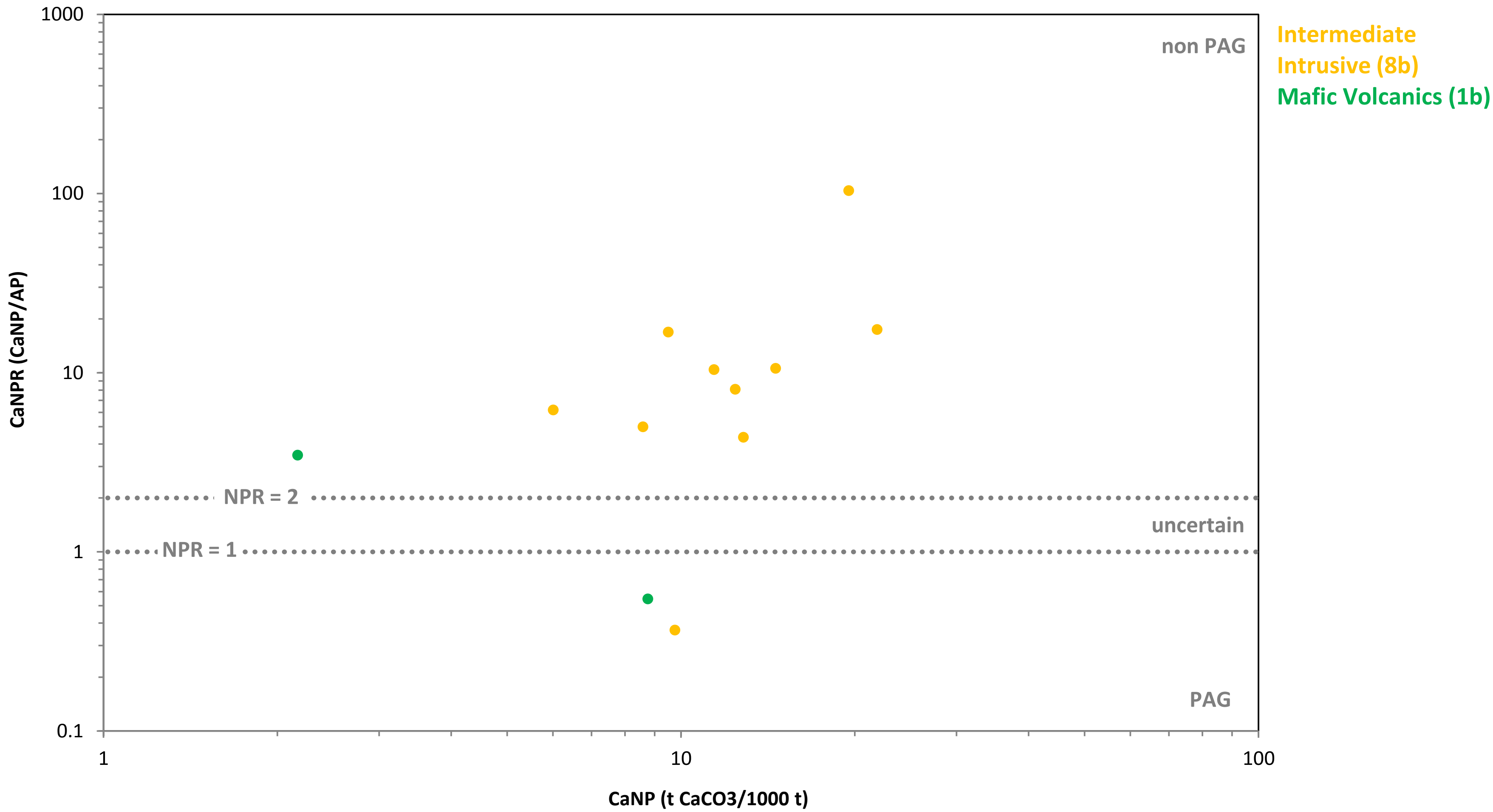
Notes:	NP Ratio versus Total Sulphur				Static Testing (Ramp and Portal Samples) Whale Tail Deposit
	PREPARED	CWT	DATE	Mar-16	Agnico Eagle Mines Ltd. Meadowbank Division
	CHECKED	AJS	JOB NO	1520817	Golder Associates
Values < MDL are plotted as MDL value	REVIEWED	VJB	PHASE/TASK	4000	FIGURE B-5

N:\Active\2015\3 Proj\1520817 Amaruq Geochemistry Baseline\geochem\Static\Phase 3\waste rock\Underground-Ramp\Copy of Amaruq_Static_Ramp_ABA_SFE_Figures_14Mar16.xlsx



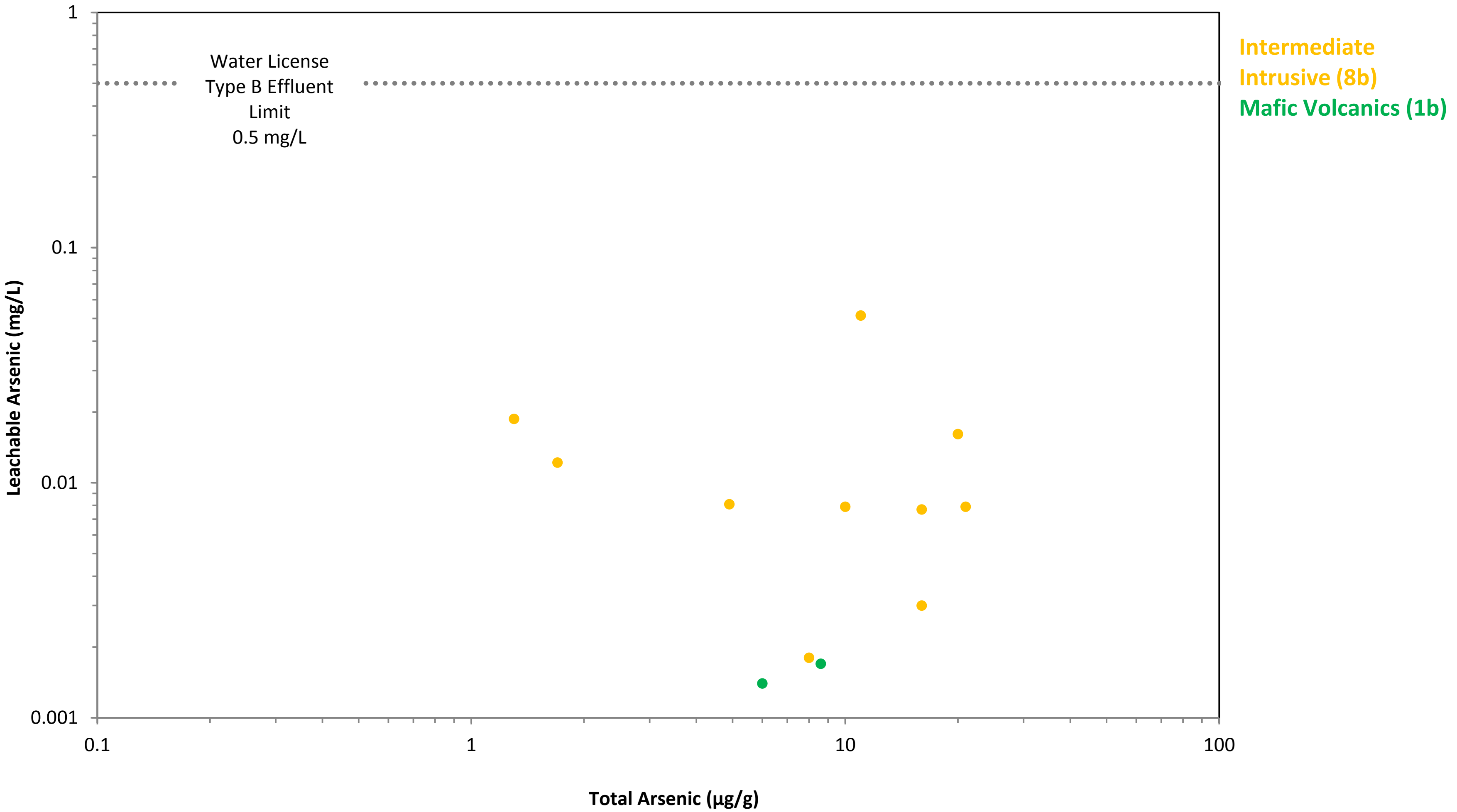
Notes:	CaNP Ratio versus Total Sulphur				Static Testing (Ramp and Portal Samples) Whale Tail Deposit
					Agnico Eagle Mines Ltd. Meadowbank Division — Golder Associates
	PREPARED	CWT	DATE	Mar-16	
	CHECKED	AJS	JOB NO	1520817	
Values < MDL are plotted as MDL value	REVIEWED	VJB	PHASE/TASK	4000	FIGURE B-6

N:\Active\2015\3 Proj\1520817 Amaruq Geochemistry Baseline\geochem\Static\Phase 3\waste rock\Underground-Ramp\Copy of Amaruq_Static_Ramp_ABA_SFE_Figures_14Mar16.xlsx



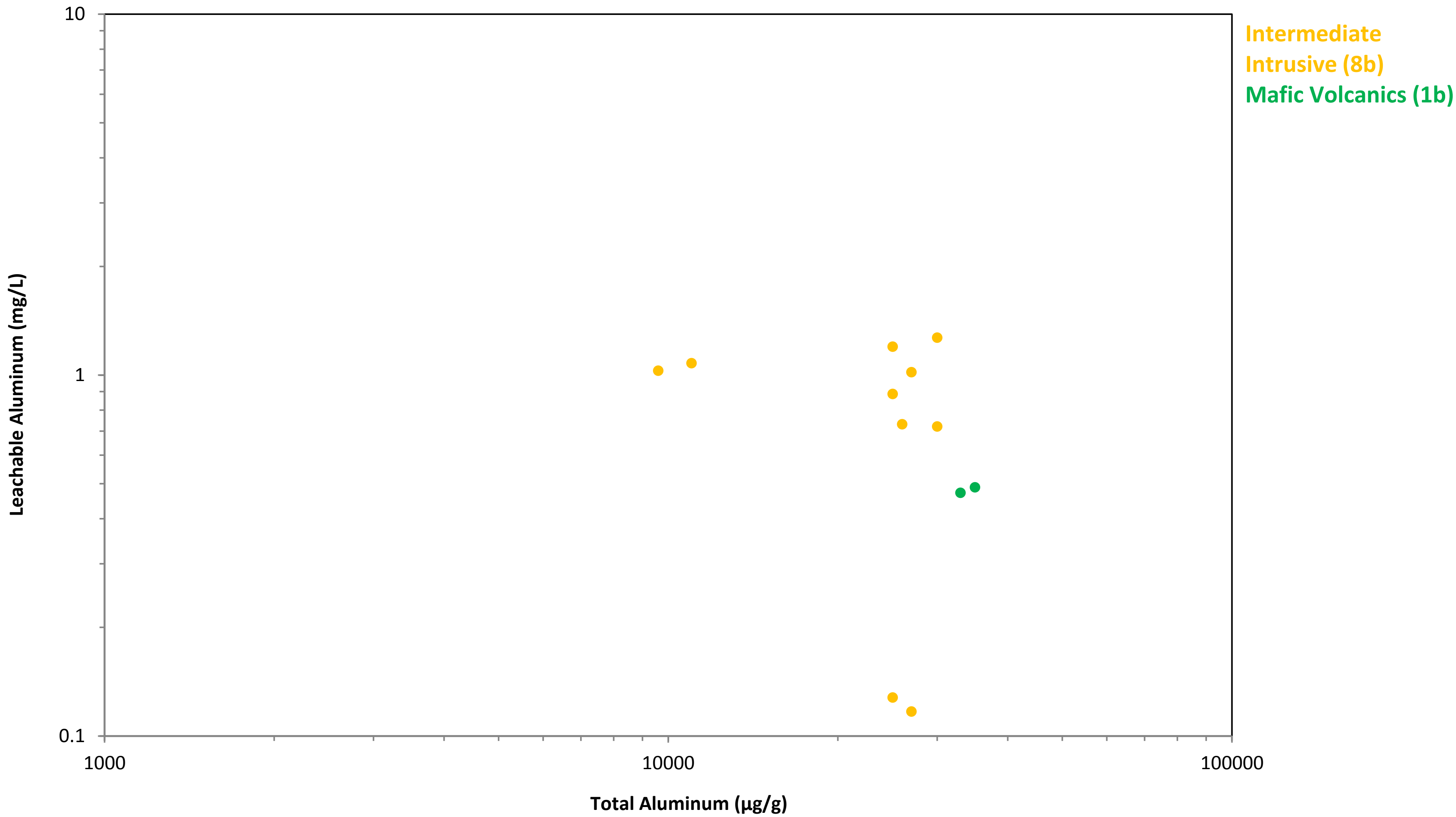
Notes:	CaNP Ratio versus Carbonate Neutralization Potential				Static Testing (Ramp and Portal Samples) Whale Tail Deposit
	PREPARED	CWT	DATE	Mar-16	Agnico Eagle Mines Ltd. Meadowbank Division
	CHECKED	AJS	JOB NO	1520817	Golder Associates
Values < MDL are plotted as MDL value	REVIEWED	VJB	PHASE/TASK	4000	FIGURE B-7

N:\Active\2015\3 Proj\1520817 Amaruq Geochemistry Baseline\geochem\Static\Phase 3\waste rock\Underground-Ramp\Copy of Amaruq_Static_Ramp_ABA_SFE_Figures_14Mar16.xlsx



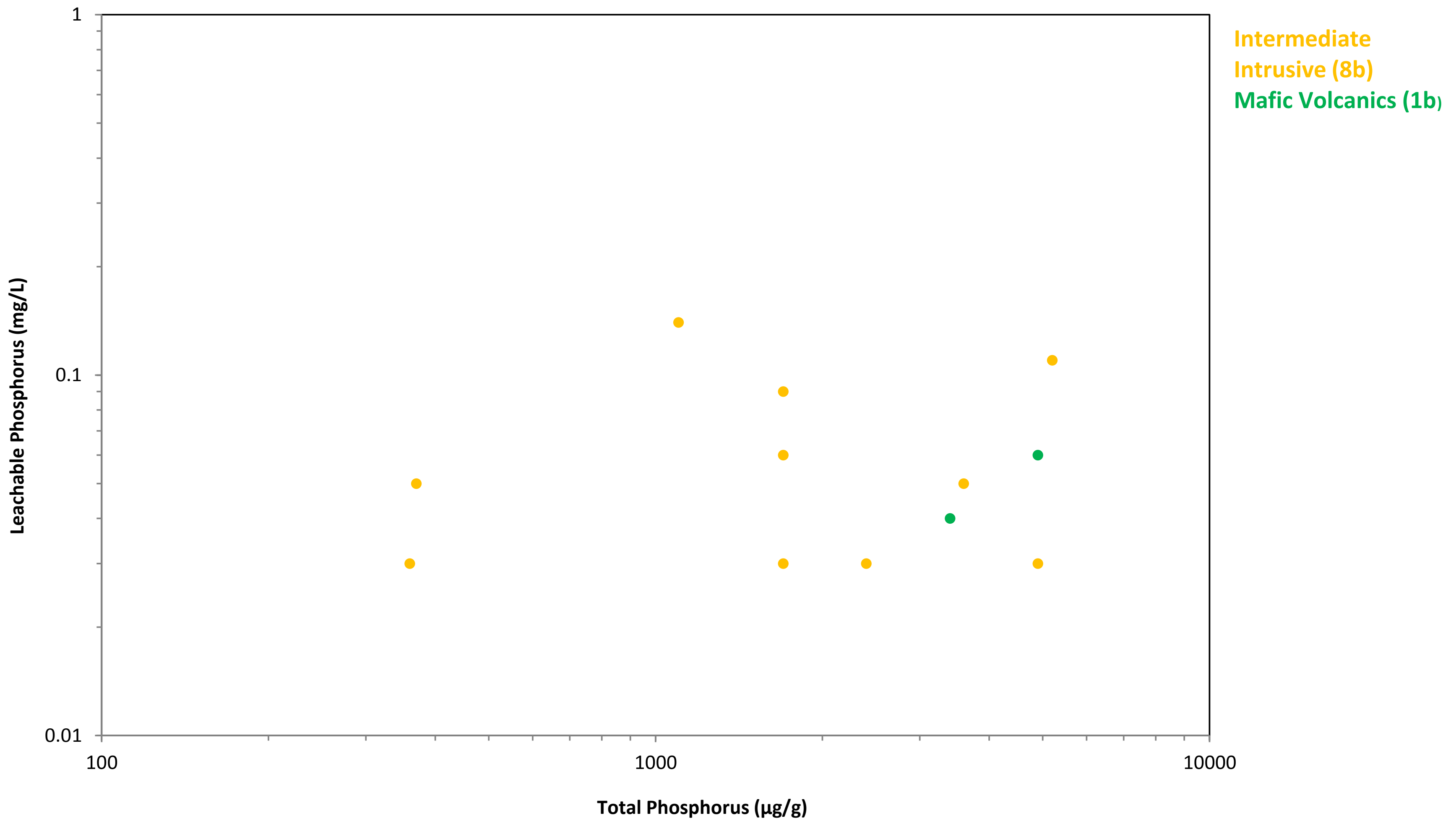
Notes:		Leachable Arsenic versus Total Arsenic			Static Testing (Ramp and Portal Samples) Whale Tail Deposit
Criteria:					Agnico Eagle Mines Ltd. Meadowbank Division
Water License Type B Effluent Limit	0.5 mg/L	PREPARED CWT	DATE Mar-16		
Type B 2BE-MEA1318 Part D		CHECKED AJS	JOB NO 1520817		
Values < MDL are plotted as MDL value		REVIEWED VJB	PHASE/TASK 4000		FIGURE B-8

N:\Active\2015\3 Proj\1520817 Amaruq Geochemistry Baseline\geochem\Static\Phase 3\waste rock\Underground-Ramp\Copy of Amaruq_Static_Ramp_ABA_SFE_Figures_14Mar16.xlsx



Notes:	Leachable Aluminum versus Total Aluminum				Static Testing (Ramp and Portal Samples) Whale Tail Deposit	
Criteria:	PREPARED	CWT	DATE	Mar-16	Agnico Eagle Mines Ltd. Meadowbank Division	Golder Associates
	CHECKED	AJS	JOB NO	1520817		
Values < MDL are plotted as MDL value	REVIEWED	VJB	PHASE/TASK	4000	FIGURE	B-9

N:\Active\2015\3 Proj\1520817 Amaruq Geochemistry Baseline\geochem\Static\Phase 3\waste rock\Underground-Ramp\Copy of Amaruq_Static_Ramp_ABA_SFE_Figures_14Mar16.xlsx



Notes:	Leachable Phosphorus versus Total Phosphorus			Static Testing (Ramp and Portal Samples) Whale Tail Deposit
Criteria:	PREPARED CWT	DATE Mar-16		Agnico Eagle Mines Ltd. Meadowbank Division
	CHECKED AJS	JOB NO 1520817		
Values < MDL are plotted as MDL value	REVIEWED VJB	PHASE/TASK 4000		FIGURE B-10