

CERTIFICATE OF ASSESSMENT

Client : Big Mining Company

Project : Open Pit

Location :

Client Order No.: MBC-WO-0001

Client Contact : Joe Citizen

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Pages : 50

Project Code : Code1234

Report No.: MMC-WO5678

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Data received :

No. of samples received : 200

Date assessed :

No. samples classified : 200

Notes

This report was partly generated by a software tool developed in-house by Earth Systems. The tool is called AMDact, which stands for Acid and Metalliferous Drainage Assessment and Classification. This software tool assesses one or more static geochemical parameters for geological materials and assigns a geochemical risk classification to each sample. Materials can be simply classified as Potentially Acid Forming (PAF) or Non-Acid Forming (NAF), or can be subdivided into a more detailed classification system. The detailed risk classification identifies the potential for a sample to generate acid and metalliferous drainage (AMD), neutral metalliferous drainage (NMD) and saline drainage (SD).

This document summarises the input data, tabulates the classification for each sample, documents the statistics for the static geochemical data, provides plots of key static parameters including sulfur speciation and offers advice on apparent data inconsistencies and laboratory data discrepancies.

When appropriate, reports also provide recommendations for samples to be subjected to kinetic testwork.

Report Approval

This report has been approved for distribution by:

Name : Dr. Jeff Taylor

Position : Senior Principal Environmental Geochemist

Date released:

Client : Big Mining Company

Project : Open Pit

DATA SUMMARY

	Units	Data	Source	Notes**
Net Acid Producing Potential				
Net Acid Producing Potential (NAPP) :	kg H ₂ SO ₄ / tonne	✓	XYZ Labs	Incomplete Data
Acid Neutralising Capacity				
ANC as H ₂ SO ₄ :	kg H ₂ SO ₄ / tonne	✓	XYZ Labs	Incomplete Data
ANC as CaCO ₃ :	% CaCO ₃	✗	not provided	
ANC - Excess (ANC-E) :	% CaCO ₃			
Net Acid Generation				
NAG pH :	pH units	✓	XYZ Labs	Incomplete Data
NAG 4.5 :	kg H ₂ SO ₄ / tonne	✓	XYZ Labs	Incomplete Data
NAG 7.0 :	kg H ₂ SO ₄ / tonne	✓	XYZ Labs	Incomplete Data
NAG 9.5 :	kg H ₂ SO ₄ / tonne	✗	not provided	
Acidity				
Potassium Chloride pH (pH-KCl) :	pH units	✓	XYZ Labs	Limited Data
Titratable Actual Acidity (TAA) :	mol H ⁺ / tonne	✓	XYZ Labs	Limited Data
Peroxide oxidised pH (pH-ox) :	pH units	✗	not provided	
Titratable Peroxide Acidity (TPA) :	mol H ⁺ / tonne	✗	not provided	
Sulfur Speciation				
Total Sulfur (S-TOT):	% S	✓	XYZ Labs	
Cr-reducible Sulfur (S-Cr):	% S	✓	XYZ Labs	Incomplete Data
Peroxide Sulfur (Sp) :	% S	✗	not provided	
1M KCl extractable sulfur (S-KCl) :	% S	✓	XYZ Labs	Limited Data
4M HCl extractable sulfur (S-HCl) :	% S	✓	XYZ Labs	Limited Data
Residual Acid soluble Sulfur (S-RAS) :	% S	✗	not provided	
Carbon Speciation				
Total Carbon (C-TOT) :	% C	✓	XYZ Labs	Limited Data
Organic Carbon (C-Org) :	% C	✓	XYZ Labs	Limited Data
Inorganic Carbon (C-In) :	% C	✓	XYZ Labs	Limited Data

** Limited Data (<50% of samples), Incomplete Data (50% - 99% of Samples)

This report is not to be used for purposes other than those for which it was intended. The geochemical risk assessment and classification of Acid Generating Potential of the suite of samples provided is based on the parameters indicated above. All of the data has been provided by the CLIENT and sourced from third party laboratories unless otherwise stated.

The Acid Generating Potential may vary greatly from the actual Acid Generating Capacity due a number of factors and, as a result, some samples may require additional static and kinetic testwork. Where possible additional suggested testwork has been indicated. It is recommended that any additional work be discussed with a qualified professional environmental geochemist.

Where sample parameters are reported as less than ("<"), or below detection ("B.D.") one half the reported detection limit has been used for the statistical analysis.

This report has been automatically generated byAMDACTv.5.2 using data indicated above and supersedes any previous report(s) issued under the same work order / report number.

Sample Details		AMD Risk Classification - No. of Samples											
Sample Type	Sample Sub-Type	General Classification			Detailed Classification							Totals	
		Potential Acid Forming (PAF)	Non-Acid Forming (NAF)	Not Classified	Potential Acid Forming (PAF)				Non-Acid Forming (NAF)		Not Classified	Sub-total (lithology)	Sub-total (mine material type)
					High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Low Potential for Acid Generation	Unlikely to be Acid Generating	Likely to be Acid Consuming	Insufficient, Inconsistent, Ambiguous Data		
Ore	Altered Volcanic	71	2	1	9	35	19	8	2	0	1	74	91
	Sulfides	15	0	2	14	1	0	0	0	0	2	17	
Waste Rock	Altered Volcanic	32	19	4	2	5	10	15	17	2	4	55	99
	Metasediments	16	20	0	0	5	6	5	12	8	0	36	
	Regolith	0	6	0	0	0	0	0	1	5	0	6	
	Carbonate Rock	0	2	0	0	0	0	0	0	2	0	2	
Tailings	Tailings	4	6	0	4	0	0	0	6	0	0	10	10
Sub-Total		138	55	7	29	46	35	28	38	17	7	200	200

Table B-1: Summary of the number of samples in each of the AMD Risk Classification categories. Sample numbers under the General Classification heading include samples in the appropriate Detailed Sample Classification categories.

Generated using: AMDact v.5.2.2

Sample Details		AMD Risk Classification - % of Samples									
Sample Type	Sample Sub-Type	General Classification			Detailed Classification						
		Potential Acid Forming (PAF)	Non-Acid Forming (NAF)	Not Classified	Potential Acid Forming (PAF)				Non-Acid Forming (NAF)		Not Classified
					High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Low Potential for Acid Generation	Unlikely to be Acid Generating	Likely to be Acid Consuming	
Ore	Altered Volcanic	95.9%	2.7%	1.4%	12.2%	47.3%	25.7%	10.8%	2.7%	0.0%	1.4%
	Sulfides	88.2%	0.0%	11.8%	82.4%	5.9%	0.0%	0.0%	0.0%	0.0%	11.8%
Waste Rock	Altered Volcanic	58.2%	34.5%	7.3%	3.6%	9.1%	18.2%	27.3%	30.9%	3.6%	7.3%
	Metasediments	44.4%	55.6%	0.0%	0.0%	13.9%	16.7%	13.9%	33.3%	22.2%	0.0%
	Regolith	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	16.7%	83.3%	0.0%
	Carbonate Rock	0.0%	100.0%	0.0%	0.0%	0.0%	0.0%	0.0%	0.0%	100.0%	0.0%
Tailings	Tailings	40.0%	60.0%	0.0%	40.0%	0.0%	0.0%	0.0%	60.0%	0.0%	0.0%

Table B-2: Summary of the relative proportions (in percentage) of samples in each of the AMD Risk Classification categories, relative to the total number of samples assessed. Sample numbers under the General Classification heading include samples in the appropriate Detailed Sample Classification categories.

Generated using: AMDact v.5.2.2

Geochemical Risk Classification

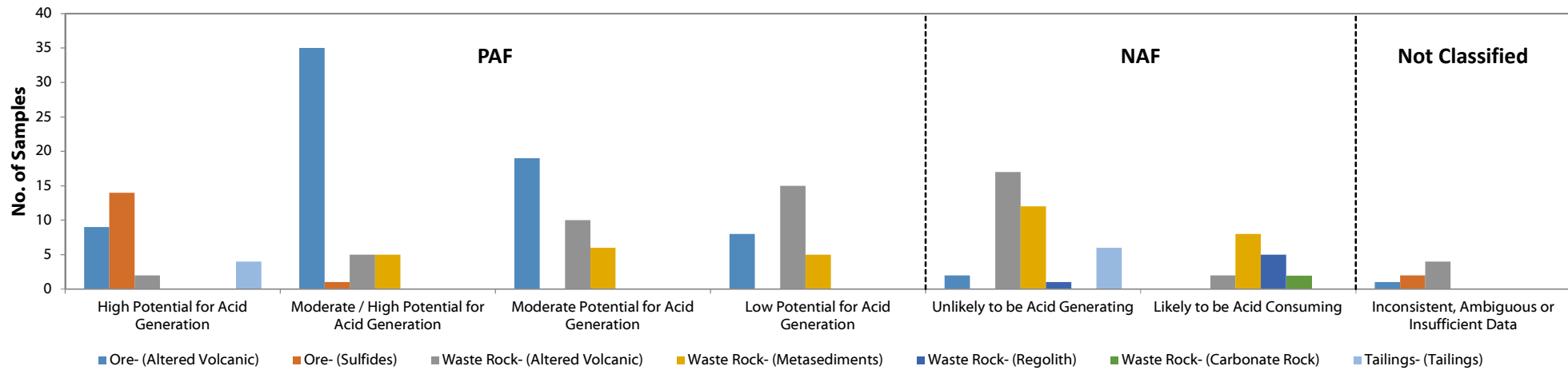


Figure C1: A chart showing the distribution of samples in each of the geochemical risk classification categories.

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Sample Details			Geochemical Risk Classification			
Sample ID	Sample Type	Sample Sub-Type	AMD / ARD Risk Classification		Additional Risk Classification	
			General Classification	Detailed Classification	Neutral Metalliferous Drainage (NMD/ML)	Saline Drainage (SD)
ES45893	Tailings	Tailings	NAF	Unlikely to be Acid Generating	Unlikely to Generate NMD	Low SD Potential
ES45894	Tailings	Tailings	NAF	Unlikely to be Acid Generating	Unlikely to Generate NMD	Low SD Potential
ES45895	Tailings	Tailings	NAF	Unlikely to be Acid Generating	Unlikely to Generate NMD	Low SD Potential
ES45896	Tailings	Tailings	NAF	Unlikely to be Acid Generating	Unlikely to Generate NMD	Low SD Potential
ES10004	Tailings	Tailings	PAF	High Potential for Acid Generation	-	High SD Potential
ES10005	Tailings	Tailings	PAF	High Potential for Acid Generation	-	High SD Potential

Generated using:
AMDact v.5.2.2

Sample Details	Sample ID		E578524	E578529	E578537	E578539	E578540	E578541	E578542	E578543	E578544	E578546
	Sample Type		Ore	Ore	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Ore	Ore	Ore	Waste Rock
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		NAF	NAF	NAF	NAF	NAF	NAF	PAF	PAF	PAF	PAF
	Detailed Classification		Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	1.2	2.5	-3.8	-32.7	-24.9	1.7	66.7	58.1	55.0	36.8
	NNP	kg CaCO ₃ / tonne	-1.2	-2.6	3.9	33.4	25.3	-1.7	-68.1	-59.3	-56.2	-37.6
	MPA	kg H ₂ SO ₄ / tonne	39.5	41.3	49.6	28.8	57.5	49.3	71.9	61.2	90.0	39.5
	AP	kg CaCO ₃ / tonne	40.3	42.2	50.6	29.4	58.8	50.3	73.4	62.5	91.9	40.3
	MPA _(SC)	kg H ₂ SO ₄ / tonne	37.6	38.6	48.7	29.4	55.4	44.1	58.4	53.2	83.5	28.0
	AP _(SC)	kg CaCO ₃ / tonne	38.4	39.4	49.7	30.0	56.6	45.0	59.7	54.4	85.3	28.6
	ANC	kg H ₂ SO ₄ / tonne	38.3	38.8	53.4	61.5	82.4	47.6	5.2	3.1	35.0	2.7
	NP	kg CaCO ₃ / tonne	39.1	39.6	54.5	62.8	84.1	48.6	5.3	3.2	35.7	2.8
	ANC/MPA	-	1.0	0.9	1.1	2.1	1.4	1.0	0.1	0.1	0.4	0.1
	NPR (NP/AP)	-	1.0	0.9	1.1	2.1	1.4	1.0	0.1	0.1	0.4	0.1
	Pyrite _(TOT)	% Pyrite	2.4	2.5	3.0	1.8	3.5	3.0	4.4	3.7	5.5	2.4
	Pyrite _(SC)	% Pyrite	2.3	2.4	3.0	1.8	3.4	2.7	3.6	3.3	5.1	1.7
	Paste pH	pH units										
	NAG _{pH}	pH units	8.5	8.6	8.3	8.2	8.1	8.4	2.8	2.9	4.2	3.0
	NAG _{4.5}	kg H ₂ SO ₄ / tonne	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	28.7	20.1	1.2	7.4
Sulfur Speciation	NAG _{7.0}	kg H ₂ SO ₄ / tonne	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	42.6	37.0	26.2	27.4
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	1.29	1.35	1.62	0.94	1.88	1.61	2.35	2.00	2.94	1.29
	S _{Cr}	wt% S	1.23	1.26	1.59	0.96	1.81	1.44	1.91	1.74	2.73	0.91
	S _p	wt% S										
	S _{KCl}	wt% S	0.07	0.04	0.06	0.04	0.05	0.04	0.19	0.20	0.08	0.15
	S _{HCl}	wt% S	0.14	0.18	0.18	0.50	0.88	0.18	0.72	0.60	0.55	0.39
	S _{TOS}	wt% S	1.2	1.2	1.4	0.4	1.0	1.4	1.6	1.4	2.4	0.9
	S _{NAS}	wt% S	0.1	0.1	0.1	0.5	0.8	0.1	0.5	0.4	0.5	0.2
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S	1.2	1.3	1.6	1.0	1.8	1.4	1.9	1.7	2.7	0.9
	Pyrite (equiv.)	wt%	2.3	2.4	3.0	1.8	3.4	2.7	3.6	3.3	5.1	1.7
	Readily soluble non-acid storing Sulfate-S	wt% S	0.1	0.0	0.1	0.0	0.1	0.0	0.2	0.1	0.1	0.1
	Gypsum (equiv.)	wt%	0.4	0.2	0.3	0.2	0.3	0.2	0.9	0.6	0.4	0.6
Acidity	Readily soluble acid storing Sulfate-S	wt% S							0.0	0.1		0.0
	Melanterite (equiv.)	wt%							0.3	0.8		0.3
	Sparingly soluble acid storing Sulfate-S	wt% S	0.1	0.1	0.1	0.5	0.8	0.1	0.5	0.4	0.5	0.2
	Jarosite (equiv.)	wt%	0.5	1.1	0.9	3.6	6.5	1.1	4.1	3.1	3.7	1.9
	pH _{KCl}	pH units	9.2	9.2	9.2	9.4	9.3	9.4	6.1	5.4	6.7	5.9
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne	<12.474	<12.474	<12.474	<12.474	<12.474	<12.474	18.7	56.1	<12.474	24.9
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	767.2	785.9	991.7	599.4	1128.9	898.1	1191.3	1085.2	1702.7	570.1
	Actual Acidity	mol H ⁺ / tonne	0.0	0.0	0.0	0.0	0.0	0.0	18.7	56.1	0.0	24.9
	Retained Acidity	mol H ⁺ / tonne	32.7	65.5	56.1	215.2	388.3	65.5	247.9	187.1	219.9	112.3
	Net Acidity	mol H ⁺ / tonne										
	C _{TOT}	wt% C	0.43	0.46	0.60	0.79	1.59	0.57	0.21	0.18	1.19	0.28
	C _{TO}	wt% C										
	C _{IN}	wt% C										
Carbon	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	3.9	4.0	5.4	6.3	8.4	4.9	0.5	0.3	3.6	0.3
	CaCO ₃ based on C _{TOT}	% CaCO ₃	3.6	3.8	5.0	6.6	13.2	4.7	1.7	1.5	9.9	2.3
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Calcium Carbonate	Additional Potential Risks		Potential for NMD / Moderate SD Potential	Potential for NMD / Moderate SD Potential	Potential for NMD / Moderate SD Potential	Potential for NMD / Low SD Potential	Potential for NMD / Moderate SD Potential	Potential for NMD / Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential
	Details ^a		9, 17, 24, 43, 73 (64, 112), 203, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	9, 17, 24, 43, 73 (64, 112), 203, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	9, 17, 24, 43, 73 (64, 112), 203, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	9, 17, 24, 43, 73 (64, 112), 203, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	9, 17, 24, 43, 73 (64, 112), 203, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	9, 17, 24, 43, 73 (64, 112), 203, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		30, 84, 84.2, 84.3, 84.4, 84.5, 84.6	30, 84, 84.2, 84.3, 84.4, 84.5, 84.6	30, 84, 84.2, 84.3, 84.4, 84.5, 84.6	30, 86, 86.2, 86.3, 86.4, 86.5, 86.6	30, 86, 86.2, 86.3, 86.4, 86.5, 86.6	30, 84, 84.2, 84.3, 84.4, 84.5, 84.6	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 57

^a Calculated values based on:

AMIRA (2002). ARD Test Handbook - Project P387A Prediction & Kinetic Control of Acid Mine Drainage. AMIRA International

Ahern CR, McElnea AE, Sullivan LA (2004). Acid Sulfate Soils Laboratory Methods Guidelines. Queensland Department of Natural Resources, Mines and Energy, Indooroopilly, Queensland, Australia.

^{ab} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		E578547	E578548	E578549	E578550	E555098	E555099	E555100	E572946	E572947	E572948
	Sample Type		Waste Rock	Waste Rock	Waste Rock	Waste Rock	Ore	Ore	Ore	Waste Rock	Waste Rock	Waste Rock
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	PAF	Not assessed	PAF	PAF	PAF	PAF	Not assessed	PAF	PAF
	Detailed Classification		Moderate Potential for Acid Generation	Moderate Potential for Acid Generation	WARNING: NAPP is greater than the MPA.	Low Potential for Acid Generation	High Potential for Acid Generation	High Potential for Acid Generation	High Potential for Acid Generation	Inconsistent Data	Low Potential for Acid Generation	Low Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	42.8	24.9	3.2	15.3	382.5			0.2	5.7	3.5
	NNP	kg CaCO ₃ / tonne	-41.0	-25.4	-1.7	-14.2	-389.2			-0.2	-5.8	-3.5
	MPA	kg H ₂ SO ₄ / tonne	42.8	26.3	3.1	15.3	382.5	153.6	120.0	4.0	9.2	8.3
	AP	kg CaCO ₃ / tonne	43.8	26.9	3.1	15.6	390.6	156.9	122.5	4.1	9.4	8.4
	MPA _(SC)	kg H ₂ SO ₄ / tonne	22.2	22.7	1.7	8.2	315.2	120.6	99.1			
	AP _(SC)	kg CaCO ₃ / tonne	22.7	23.2	1.7	8.3	321.9	123.1	101.3			
	ANC	kg H ₂ SO ₄ / tonne	<0.5	1.4	<0.5	<0.5	<0.5			3.8	3.5	4.8
	NP	kg CaCO ₃ / tonne	<0.5	1.4	<0.5	<0.5	<0.5			3.9	3.6	4.9
	ANC/MPA	-	-	0.1	-	-	-	-	-	1.0	0.4	0.6
	NPR (NP/AP)	-	0.1	0.1	0.5	0.1	0.0	0.0	0.0	1.0	0.4	0.6
	Pyrite _(TOT)	% Pyrite	2.6	1.6	0.2	0.9	23.4	9.4	7.3	0.2	0.6	0.5
	Pyrite _(SC)	% Pyrite	1.4	1.4	0.1	0.5	19.3	7.4	6.1			
	Paste pH	pH units										
	NAG _{pH}	pH units	2.8	3.5	6.4	3.3	2.0	2.1	2.2	3.9	3.4	3.5
Sulfur Speciation	NAG _{4.5}	kg H ₂ SO ₄ / tonne	13.7	12.0	<0.1	6.9	172.0	108.0	97.5	0.7	3.0	2.2
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	23.2	21.6	1.6	8.6	180.0	115.0	102.0	3.3	5.6	4.6
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	1.40	0.86	0.10	0.50	12.50	5.02	3.92	0.13	0.30	0.27
	S _{Cr}	wt% S	0.73	0.74	0.06	0.27	10.30	3.94	3.24			
	S _p	wt% S										
	S _{KCl}	wt% S	0.19	0.05	0.02	0.05	0.06	0.61	0.09	<0.02	<0.02	<0.02
	S _{HCl}	wt% S	0.70	0.36	0.06	0.25	0.12	0.81	0.17	<0.02	<0.02	<0.02
	S _{TOS}	wt% S	0.7	0.5	0.0	0.3	12.4	4.2	3.8	0.1	0.3	0.3
	S _{NAS}	wt% S	0.5	0.3	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.0
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S	0.7	0.7	0.1	0.3	10.3	3.9	3.2			
	Pyrite (equiv.)	wt%	1.4	1.4	0.1	0.5	19.3	7.4	6.1			
	Readily soluble non-acid storing Sulfate-S	wt% S	0.1	0.0	0.0	0.0	0.0	0.2	0.0			
	Gypsum (equiv.)	wt%	0.5	0.1	0.0	0.1	0.1	1.0	0.1			
	Readily soluble acid storing Sulfate-S	wt% S	0.1	0.0	0.0	0.0	0.0	0.4	0.1			
	Melanterite (equiv.)	wt%	0.9	0.3	0.4	0.3	0.3	3.7	0.6			
Acidity	Sparingly soluble acid storing Sulfate-S	wt% S	0.5	0.3	0.0	0.2	0.1	0.2	0.1	0.0	0.0	0.0
	Jarosite (equiv.)	wt%	4.0	2.4	0.3	1.6	0.5	1.6	0.6	-	-	-
	pH _{KCl}	pH units	5.1	5.7	5.6	5.3	4.2	2.7	3.6			
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne	62.4	18.7	31.2	24.9	20.0	269.0	42.0			
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	452.8	462.8	34.3	166.5	6424.1	2457.4	2020.8			
	Actual Acidity	mol H ⁺ / tonne	62.4	18.7	31.2	24.9	20.0	269.0	42.0			
Carbon	Retained Acidity	mol H ⁺ / tonne	238.6	145.0	18.7	93.6	28.1	93.6	37.4	0.0	0.0	0.0
	Net Acidity	mol H ⁺ / tonne										
	C _{TOT}	wt% C	0.11	0.40	0.75	0.36	0.25	0.25	0.27			
	C _{TO}	wt% C										
Calcium Carbonate	C _{IN}	wt% C										
	ANC _L (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	0.0	0.1	0.0	0.0	0.0			0.4	0.4	0.5
	CaCO ₃ based on C _{TOT}	% CaCO ₃	0.9	3.3	6.2	3.0	2.1	2.1	2.2			
Assessment	Additional Potential Risks		Moderate SD Potential	Low SD Potential	Not assessed	Low SD Potential	High SD Potential	High SD Potential	High SD Potential	Not assessed	Low SD Potential	Low SD Potential
	Details ^a		1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]		1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 15, 23, 41, 99, 203, [IF NAG4.5 / NAG7.0 <<1 then see 130,131,132]	1, 15, 23, 41, 99, 203, [IF NAG4.5 / NAG7.0 <<1 then see 130,131,132]	73 (66, 108), 170, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 8, 16, 23, 24, 42, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4		1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4	1, 12, 12.1, 12.2, 12.4, 67	1, 12, 12.1, 12.2, 12.4, 67	35, 40, 40.1, 61, 66	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		E572949	E572950	E500432	E500433	E500434	E500435	E500436	E590226	E590227	E590228
	Sample Type		Waste Rock	Waste Rock	Ore	Waste Rock	Waste Rock	Waste Rock	Ore	Waste Rock	Waste Rock	Waste Rock
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Metasediments	Metasediments	Metasediments
	General Classification		PAF	PAF	PAF	PAF	PAF	PAF	PAF	NAF	NAF	NAF
	Detailed Classification		Moderate Potential for Acid Generation	Low Potential for Acid Generation	High Potential for Acid Generation	Low Potential for Acid Generation	Moderate / High Potential for Acid Generation	Low Potential for Acid Generation	Moderate / High Potential for Acid Generation	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	23.9	5.6	240.0	10.7	28.4	14.7	52.6	-23.0	-13.0	-5.0
	NNP	kg CaCO ₃ / tonne	-24.4	-5.7	-241.3	-6.7	-24.8	-10.7	-49.5	23.5	13.0	5.2
	MPA	kg H ₂ SO ₄ / tonne	29.7	9.8	240.5	10.7	28.5	14.7	52.6	4.0	4.0	5.0
	AP	kg CaCO ₃ / tonne	30.3	10.0	245.6	10.9	29.1	15.0	53.8	4.1	4.4	5.0
	MPA _(SC)	kg H ₂ SO ₄ / tonne			160.0	7.5	26.6	10.7	34.9			
	AP _(SC)	kg CaCO ₃ / tonne			163.4	7.7	27.1	10.9	35.6			
	ANC	kg H ₂ SO ₄ / tonne	5.8	4.2	<0.5	<0.5	<0.5	<0.5	<0.5	27.0	17.0	10.0
	NP	kg CaCO ₃ / tonne	5.9	4.3	<0.5	<0.5	<0.5	<0.5	<0.5	27.6	17.3	10.2
	ANC/MPA	-	0.2	0.4	-	-	-	-	-	6.8	4.3	2.0
	NPR (NP/AP)	-	0.2	0.4	0.0	0.4	0.1	0.3	0.1	6.8	4.0	2.0
	Pyrite _(TOT)	% Pyrite	1.8	0.6	14.7	0.7	1.7	0.9	3.2	0.2	0.3	0.3
	Pyrite _(SC)	% Pyrite			9.8	0.5	1.6	0.7	2.1			
	Paste pH	pH units										
	NAG _{pH}	pH units	2.6	3.5	2.2	2.6	2.5	2.5	2.6	6.9	5.1	5.0
Sulfur Speciation	NAG _{4.5}	kg H ₂ SO ₄ / tonne	17.9	3.1	150.0	7.8	27.0	10.9	33.9	0.0	0.0	0.0
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	23.7	6.0	165.0	10.6	36.2	13.5	38.1	0.0	1.0	1.0
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	0.97	0.32	7.86	0.35	0.93	0.48	1.72	0.13	0.14	0.16
	S _{Cr}	wt% S			5.23	0.25	0.87	0.35	1.14			
	S _p	wt% S										
	S _{KCl}	wt% S	0.03	<0.02	0.50	0.04	0.08	0.05	0.13			
	S _{HCl}	wt% S	0.03	<0.02	0.61	0.04	0.09	0.06	0.15			
	S _{TOS}	wt% S	0.9	0.3	7.3	0.3	0.8	0.4	1.6			
	S _{NAS}	wt% S	0.0	0.0	0.1	0.0	0.0	0.0	0.0			
	S _{POS}	wt% S										
	S _{BAS}	wt% S										
	Sulfide Sulfur	wt% S			5.2	0.2	0.9	0.3	1.1			
	Pyrite (equiv.)	wt%			9.8	0.5	1.6	0.7	2.1			
	Readily soluble non-acid storing Sulfate-S	wt% S			0.4	0.0	0.1	0.1	0.1			
	Gypsum (equiv.)	wt%			2.4	0.2	0.4	0.3	0.6			
	Readily soluble acid storing Sulfate-S	wt% S			0.1		0.0		0.0			
	Melanterite (equiv.)	wt%			0.5		0.1		0.2			
	Sparingly soluble acid storing Sulfate-S	wt% S	0.0	0.0	0.1	0.0	0.0	0.0	0.0			
	Jarosite (equiv.)	wt%	-	-	0.9	-	0.1	0.1	0.2			
Acidity	pH _{KCl}	pH units			4.6	6.0	4.5	6.2	4.8			
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne			37.0	<2	8.0	<2	12.0			
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne			3262.0	153.4	541.4	217.7	711.0			
	Actual Acidity	mol H ⁺ / tonne			37.0	0.0	8.0	0.0	12.0			
	Retained Acidity	mol H ⁺ / tonne	0.0	0.0	51.5	0.0	4.7	4.7	9.4			
Carbon	Net Acidity	mol H ⁺ / tonne										
	C _{TOT}	wt% C			1.68	0.04	0.03	0.07	0.30			
	C _{TO}	wt% C										
	C _{IN}	wt% C										
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	0.6	0.4	0.0	0.0	0.0	0.0	0.0	2.8	1.7	1.0
	CaCO ₃ based on C _{TOT}	% CaCO ₃			14.0	0.3	0.2	0.6	2.5			
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Assessment	Additional Potential Risks		Low SD Potential	Low SD Potential	High SD Potential	Low SD Potential	Low SD Potential	Low SD Potential	Moderate SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential
	Details ^a		1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 66, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 63	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES90240	ES90256	ES90259	ES90261	ES90262	ES90277	ES90297	ES90299	ES87778	ES87779
	Sample Type		Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Ore	Ore
	Sample Sub-Type		Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Sulfides	Sulfides
	General Classification		NAF	PAF	PAF	PAF	PAF	NAF	NAF	NAF	PAF	PAF
	Detailed Classification		Unlikely to be Acid Generating	Moderate Potential for Acid Generation	Low Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate Potential for Acid Generation	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	High Potential for Acid Generation	High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	-10.0	1.0	4.0	11.0	9.0	-15.0	-3.0	-1.0	1036.6	1030.6
	NNP	kg CaCO ₃ / tonne	9.8	-0.7	-3.8	-10.8	-9.5	15.0	3.1	1.0	-1058.7	-1052.5
	MPA	kg H ₂ SO ₄ / tonne	7.0	15.0	19.0	20.0	22.0	0.3	1.0	3.0	1101.6	1101.6
	AP	kg CaCO ₃ / tonne	7.5	15.0	19.1	20.0	22.8	0.3	0.9	3.1	1125.0	1125.0
	MPA _(SC)	kg H ₂ SO ₄ / tonne										
	AP _(SC)	kg CaCO ₃ / tonne										
	ANC	kg H ₂ SO ₄ / tonne	17.0	14.0	15.0	9.0	13.0	15.0	4.0	4.0	65.0	71.0
	NP	kg CaCO ₃ / tonne	17.3	14.3	15.3	9.2	13.3	15.3	4.1	4.1	66.3	72.5
	ANC/MPA	-	2.4	0.9	0.8	0.5	0.6	49.0	4.0	1.3	0.1	0.1
	NPR (NP/AP)	-	2.3	1.0	0.8	0.5	0.6	49.0	4.4	1.3	0.1	0.1
	Pyrite _(TOT)	% Pyrite	0.4	0.9	1.1	1.2	1.4	0.0	0.1	0.2	67.3	67.3
	Pyrite _(SC)	% Pyrite										
	Paste pH	pH units										
	NAG _{pH}	pH units	5.0	3.3	3.1	3.1	3.2	7.1	6.4	5.7	2.6	2.5
Sulfur Speciation	NAG _{4.5}	kg H ₂ SO ₄ / tonne	0.0	8.0	7.0	9.0	11.0	0.0	0.0	0.0	220.0	240.0
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	2.0	16.0	14.0	17.0	21.0	0.0	3.0	4.0	320.0	360.0
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	0.24	0.48	0.61	0.64	0.73	0.01	0.03	0.10	36.00	36.00
	S _{Gr}	wt% S										
	S _P	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S										
	Pyrite (equiv.)	wt%										
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
Acidity	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne										
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C										
	C _{TO}	wt% C										
	C _{IN}	wt% C										
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	1.7	1.4	1.5	0.9	1.3	1.5	0.4	0.4	6.6	7.2
	CaCO ₃ based on C _{TOT}	% CaCO ₃										
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Assessment	Additional Potential Risks		Unlikely to Generate NMD / Low SD Potential	Low SD Potential	Low SD Potential	Low SD Potential	Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	High SD Potential	High SD Potential
	Details ^a		3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 99, 102 (66), 203, 206, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 8, 16, 23, 24, 42, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4, 61, 65	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES87780	ES87781	ES87782	ES87783	ES87784	ES87785	ES87786	ES87791	ES87792	ES87793
	Sample Type		Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore
	Sample Sub-Type		Sulfides	Sulfides	Sulfides	Sulfides	Sulfides	Sulfides	Sulfides	Sulfides	Sulfides	Sulfides
	General Classification		PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	Not assessed	PAF
	Detailed Classification		High Potential for Acid Generation	High Potential for Acid Generation	High Potential for Acid Generation	High Potential for Acid Generation	High Potential for Acid Generation	High Potential for Acid Generation	Moderate / High Potential for Acid Generation	High Potential for Acid Generation	Inconsistent Data	High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	1008.0	1009.0	1394.6	917.4	1343.8	1022.8	910.4	1369.6	137.3	818.8
	NNP	kg CaCO ₃ / tonne	-1029.5	-1030.5	-1424.2	-936.9	-1372.3	-1044.6	-929.8	-1398.7	-140.2	-836.2
	MPA	kg H ₂ SO ₄ / tonne	1071.0	1071.0	1407.6	918.0	1346.4	1162.8	1040.4	1377.0	217.3	826.2
	AP	kg CaCO ₃ / tonne	1093.8	1093.8	1437.5	937.5	1375.0	1187.5	1062.5	1406.3	221.9	843.8
	MPA _(SC)	kg H ₂ SO ₄ / tonne										
	AP _(SC)	kg CaCO ₃ / tonne										
	ANC	kg H ₂ SO ₄ / tonne	63.0	62.0	13.0	0.6	2.6	140.0	130.0	7.4	80.0	7.4
	NP	kg CaCO ₃ / tonne	64.3	63.3	13.3	0.6	2.7	142.9	132.7	7.6	81.6	7.6
	ANC/MPA	-	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.4	0.0
	NPR (NP/AP)	-	0.1	0.1	0.0	0.0	0.0	0.1	0.1	0.0	0.4	0.0
	Pyrite _(TOT)	% Pyrite	65.5	65.5	86.1	56.1	82.3	71.1	63.6	84.2	13.3	50.5
	Pyrite _(SC)	% Pyrite										
	Paste pH	pH units										
	NAG _{pH}	pH units	2.6	2.4	1.9	2.1	1.9	2.4	4.5	2.2	7.9	2.3
	NAG _{4.5}	kg H ₂ SO ₄ / tonne	210.0	900.0	240.0	320.0	470.0	370.0	0.0	240.0	0.0	93.0
Sulfur Speciation	NAG _{7.0}	kg H ₂ SO ₄ / tonne	310.0	1002.0	310.0	420.0	550.0	460.0	35.0	410.0	0.0	340.0
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	35.00	35.00	46.00	30.00	44.00	38.00	34.00	45.00	7.10	27.00
	S _{Cr}	wt% S										
	S _p	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S										
	Pyrite (equiv.)	wt%										
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
Acidity	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne										
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C										
	C _{TO}	wt% C										
	C _{IN}	wt% C										
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	6.4	6.3	1.3	0.1	0.3	14.3	13.3	0.8	8.2	0.8
	CaCO ₃ based on C _{TOT}	% CaCO ₃										
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Assessment	Additional Potential Risks		High SD Potential	High SD Potential	High SD Potential	High SD Potential	High SD Potential	High SD Potential	High SD Potential	High SD Potential	Not assessed	High SD Potential
	Details ^a		1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	7, 73, 96 (63, 97), 170, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4	86, 86.2, 86.3, 86.4, 86.5, 86.6, 86.7	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES87794	ES87797	ES87798	ES87799	ES87804	ES87809	ES87811	ES87812	ES87814	ES87815
	Sample Type		Ore	Ore	Ore	Ore	Ore	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock
	Sample Sub-Type		Sulfides	Sulfides	Sulfides	Sulfides	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	PAF	Not assessed	PAF	PAF	NAF	NAF	NAF	NAF	PAF
	Detailed Classification		High Potential for Acid Generation	High Potential for Acid Generation	Inconsistent Data	High Potential for Acid Generation	Moderate Potential for Acid Generation	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Likely to be Acid Consuming	Likely to be Acid Consuming	Low Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ /tonne	695.2	944.9	216.6	644.8	-9.8	-20.7	-17.7	-50.8	-56.0	45.9
	NNP	kg CaCO ₃ /tonne	-710.0	-965.0	-221.3	-658.5	10.0	21.2	18.1	51.8	57.1	-46.9
	MPA	kg H ₂ SO ₄ /tonne	703.8	948.6	336.6	703.8	110.2	8.3	2.8	9.8	0.3	66.4
	AP	kg CaCO ₃ /tonne	718.8	968.8	343.8	718.8	112.5	8.4	2.8	10.0	0.3	67.8
	MPA _(SC)	kg H ₂ SO ₄ /tonne										
	AP _(SC)	kg CaCO ₃ /tonne										
	ANC	kg H ₂ SO ₄ /tonne	8.6	3.7	120.0	59.0	120.0	29.0	20.5	60.6	56.3	20.5
	NP	kg CaCO ₃ /tonne	8.8	3.8	122.5	60.2	122.5	29.6	20.9	61.8	57.5	20.9
	ANC/MPA	-	0.0	0.0	0.4	0.1	1.1	3.5	7.4	6.2	184.0	0.3
	NPR (NP/AP)	-	0.0	0.0	0.4	0.1	1.1	3.5	7.4	6.2	183.8	0.3
	Pyrite _(TOT)	% Pyrite	43.0	58.0	20.6	43.0	6.7	0.5	0.2	0.6	0.0	4.1
	Pyrite _(SC)	% Pyrite										
	Paste pH	pH units										
	NAG _{pH}	pH units	2.3	2.2	7.5	2.7	3.1	8.8	9.0	8.8	8.9	2.7
	NAG _{4.5}	kg H ₂ SO ₄ /tonne	290.0	190.0	0.0	65.0	2.9	0.0	0.0	0.0	0.0	10.0
Sulfur Speciation	NAG _{7.0}	kg H ₂ SO ₄ /tonne	380.0	270.0	0.0	160.0	21.0	0.0	0.0	0.0	0.0	14.8
	NAG _{9.5}	kg H ₂ SO ₄ /tonne										
	S _{TOT}	wt% S	23.00	31.00	11.00	23.00	3.60	0.27	0.09	0.32	0.01	2.17
	S _{Cr}	wt% S										
	S _p	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S										
	Pyrite (equiv.)	wt%										
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
Acidity	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ /tonne										
	TPA	mol H ⁺ /tonne										
	TSA	mol H ⁺ /tonne										
	Potential Acidity	mol H ⁺ /tonne										
	Actual Acidity	mol H ⁺ /tonne										
	Retained Acidity	mol H ⁺ /tonne										
	Net Acidity	mol H ⁺ /tonne										
	C _{TOT}	wt% C										
	C _{TO}	wt% C										
	C _{IN}	wt% C										
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	0.9	0.4	12.2	6.0	12.2	3.0	2.1	6.2	5.7	2.1
	CaCO ₃ based on C _{TOT}	% CaCO ₃										
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Assessment	Additional Potential Risks		High SD Potential	High SD Potential	Not assessed	High SD Potential	High SD Potential	Potential for NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Potential for NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Moderate SD Potential
	Details ^a		1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	7, 73, 96 (63, 97), 170, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 99, 102 (66), 203, 206, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	4, 13, 19, 23, 24, 43, 99, 155	4, 13, 19, 23, 24, 43, 99, 155	1, 7, 8, 15, 24, 41, 91 (63, 92), 151, 203, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	86, 86.2, 86.3, 86.4, 86.5, 86.6, 86.7	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 61, 65	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	62, 90, 90.2	62, 90, 90.2	1, 80, 80.2, 80.4, 80.5, 80.6, 80.7, 80.8

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES87833	ES87849	ES87850	ES87851	ES87852	ES87853	ES87854	ES87855	ES87867	ES87869
	Sample Type		Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Ore
	Sample Sub-Type		Altered Volcanic	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Sulfides
	General Classification		PAF	NAF	PAF	NAF	NAF	PAF	NAF	NAF	NAF	PAF
	Detailed Classification		Moderate Potential for Acid Generation	Unlikely to be Acid Generating	Moderate Potential for Acid Generation	Likely to be Acid Consuming	Likely to be Acid Consuming	Moderate Potential for Acid Generation	Likely to be Acid Consuming	Unlikely to be Acid Generating	Likely to be Acid Consuming	High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	24.9	-22.8	21.1	-138.0	-276.0	38.1	-54.7	-15.6	-63.9	790.7
	NNP	kg CaCO ₃ / tonne	-25.4	23.3	-21.6	140.5	281.5	-38.9	55.7	15.9	65.1	-807.5
	MPA	kg H ₂ SO ₄ / tonne	29.4	2.1	37.9	0.3	0.2	40.4	0.2	4.9	0.2	795.6
	AP	kg CaCO ₃ / tonne	30.0	2.2	38.8	0.3	0.2	41.3	0.2	5.0	0.2	812.5
	MPA _(SC)	kg H ₂ SO ₄ / tonne										
	AP _(SC)	kg CaCO ₃ / tonne										
	ANC	kg H ₂ SO ₄ / tonne	4.5	25.0	16.8	138.0	276.0	2.3	54.7	20.5	63.9	4.9
	NP	kg CaCO ₃ / tonne	4.6	25.5	17.1	140.8	281.7	2.3	55.8	20.9	65.2	5.0
	ANC/MPA	-	0.2	11.7	0.4	451.0	1803.9	0.1	357.5	4.2	417.6	0.0
	NPR (NP/AP)	-	0.2	11.7	0.4	450.6	1802.6	0.1	357.2	4.2	417.3	0.0
	Pyrite _(TOT)	% Pyrite	1.8	0.1	2.3	0.0	0.0	2.5	0.0	0.3	0.0	48.6
	Pyrite _(SC)	% Pyrite										
	Paste pH	pH units										
	NAG _{pH}	pH units	2.4	10.0	2.5	11.3	11.3	2.7	10.5	7.6	11.0	2.3
	NAG _{4.5}	kg H ₂ SO ₄ / tonne	19.8	0.0	19.6	0.0	0.0	22.1	0.0	0.0	0.0	430.0
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	22.5	0.0	22.3	0.0	0.0	26.4	0.0	0.0	0.0	540.0
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
Sulfur Speciation	S _{TOT}	wt% S	0.96	0.07	1.24	0.01	0.01	1.32	0.01	0.16	0.01	26.00
	S _{Gr}	wt% S										
	S _p	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S										
	Pyrite (equiv.)	wt%										
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
Acidity	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne										
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C										
	C _{TO}	wt% C										
	C _{IN}	wt% C										
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	0.5	2.6	1.7	14.1	28.2	0.2	5.6	2.1	6.5	0.5
	CaCO ₃ based on C _{TOT}	% CaCO ₃										
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Assessment	Additional Potential Risks		Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Moderate SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Moderate SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	High SD Potential
	Details ^a		1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	4, 13, 19, 23, 24, 43, 99, 155	4, 13, 19, 23, 24, 43, 99, 155	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	4, 13, 19, 23, 24, 43, 99, 155	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	4, 13, 19, 23, 24, 43, 99, 155	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		1, 30, 30.1, 30.3, 30.4	30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4	62, 90, 90.2	62, 90, 90.2	1, 30, 30.1, 30.3, 30.4, 57	62, 90, 90.2	30, 30.1, 30.3, 30.4, 62	62, 90, 90.2	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES87871	ES87872	ES87873	ES87875	ES87876	ES87877	ES87878	ES87884	ES87885	ES87887
	Sample Type		Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock
	Sample Sub-Type		Altered Volcanic	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Metasediments	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	NAF	NAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF
	Detailed Classification		Moderate / High Potential for Acid Generation	Likely to be Acid Consuming	Unlikely to be Acid Generating	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Low Potential for Acid Generation	High Potential for Acid Generation	Moderate / High Potential for Acid Generation	High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	50.8	-62.3	-6.7	48.3	53.3	23.5	5.2	173.0	80.2	153.6
	NNP	kg CaCO ₃ / tonne	-51.9	63.6	6.9	-49.3	-54.4	-24.0	-5.4	-176.7	-81.9	-156.8
	MPA	kg H ₂ SO ₄ / tonne	52.0	3.7	4.3	52.0	55.1	29.1	12.5	173.8	82.6	162.2
	AP	kg CaCO ₃ / tonne	53.1	3.8	4.4	53.1	56.3	29.7	12.8	177.5	84.4	165.6
	MPA _(SC)	kg H ₂ SO ₄ / tonne										
	AP _(SC)	kg CaCO ₃ / tonne										
	ANC	kg H ₂ SO ₄ / tonne	1.2	66.0	11.0	3.7	1.8	5.6	7.3	0.8	2.4	8.6
	NP	kg CaCO ₃ / tonne	1.2	67.4	11.2	3.8	1.8	5.7	7.4	0.8	2.4	8.8
	ANC/MPA	-	0.0	18.0	2.6	0.1	0.0	0.2	0.6	0.0	0.0	0.1
	NPR (NP/AP)	-	0.0	18.0	2.6	0.1	0.0	0.2	0.6	0.0	0.0	0.1
	Pyrite _(TOT)	% Pyrite	3.2	0.2	0.3	3.2	3.4	1.8	0.8	10.6	5.1	9.9
	Pyrite _(SC)	% Pyrite										
	Paste pH	pH units										
	NAG _{pH}	pH units	2.0	10.5	7.8	1.9	1.8	2.5	2.7	2.1	1.9	1.6
	NAG _{4.5}	kg H ₂ SO ₄ / tonne	29.0	0.0	0.0	39.0	14.0	21.2	5.1	133.0	47.0	130.0
Sulfur Speciation	NAG _{7.0}	kg H ₂ SO ₄ / tonne	35.0	0.0	0.0	42.0	36.0	25.2	5.8	144.0	48.0	170.0
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	1.70	0.12	0.14	1.70	1.80	0.95	0.41	5.68	2.70	5.30
	S _{Gr}	wt% S										
	S _P	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S										
	Pyrite (equiv.)	wt%										
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
Acidity	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne										
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
	Net Acidity	mol H ⁺ / tonne										
	C _{TOT}	wt% C										
	C _{TO}	wt% C										
	C _{IN}	wt% C										
Calcium Carbonate	ANC _L (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	0.1	6.7	1.1	0.4	0.2	0.6	0.7	0.1	0.2	0.9
	CaCO ₃ based on C _{TOT}	% CaCO ₃										
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Assessment	Additional Potential Risks		Moderate SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Moderate SD Potential	Moderate SD Potential	Low SD Potential	Low SD Potential	High SD Potential	Moderate SD Potential	High SD Potential
	Details ^a		1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	4, 13, 19, 23, 24, 43, 99, 155	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		1, 30, 30.1, 30.3, 30.4	62, 90, 90.2	30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		E587888	E587892	E587893	E587894	E512675	E512676	E512678	E512679	E512680	E512681
	Sample Type		Waste Rock	Waste Rock	Waste Rock	Waste Rock	Ore	Ore	Ore	Ore	Ore	Ore
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		NAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF
	Detailed Classification		Unlikely to be Acid Generating	Moderate Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate / High Potential for Acid Generation	High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	-9.0	44.1	48.9	57.2	136.0					44.7
	NNP	kg CaCO ₃ / tonne	9.2	-45.0	-50.0	-58.4	-130.6					-45.7
	MPA	kg H ₂ SO ₄ / tonne	4.0	49.0	58.1	65.5	136.2	131.0	67.0	84.8	82.3	85.7
	AP	kg CaCO ₃ / tonne	4.1	50.0	59.4	66.9	139.1	133.8	68.4	86.6	84.1	87.5
	MPA _(SC1)	kg H ₂ SO ₄ / tonne					101.6	79.6	59.4	40.1	73.1	82.6
	AP _(SC1)	kg CaCO ₃ / tonne					103.8	81.3	60.6	40.9	74.7	84.4
	ANC	kg H ₂ SO ₄ / tonne	13.0	4.9	9.2	8.3	<0.5					41.0
	NP	kg CaCO ₃ / tonne	13.3	5.0	9.4	8.5	<0.5					41.8
	ANC/MPA	-	3.3	0.1	0.2	0.1	-	-	-	-	-	0.5
	NPR (NP/AP)	-	3.3	0.1	0.2	0.1	0.1	0.1	0.1	0.1	0.1	0.5
	Pyrite _(STOT)	% Pyrite	0.2	3.0	3.6	4.0	8.3	8.0	4.1	5.2	5.0	5.2
	Pyrite _(SC1)	% Pyrite					6.2	4.9	3.6	2.5	4.5	5.1
	Paste pH	pH units										
	NAG _{pH}	pH units	8.6	2.5	2.1	2.6	2.3					2.8
Sulfur Speciation	NAG _{4.5}	kg H ₂ SO ₄ / tonne	0.0	9.8	20.0	43.8	83.4					28.1
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	0.0	18.0	30.0	50.6	90.6					36.3
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	0.13	1.60	1.90	2.14	4.45	4.28	2.19	2.77	2.69	2.80
	S _{Cr}	wt% S					3.32	2.60	1.94	1.31	2.39	2.70
	S _p	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S					3.3	2.6	1.9	1.3	2.4	2.7
	Pyrite (equiv.)	wt%					6.2	4.9	3.6	2.5	4.5	5.1
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
Acidity	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne					2070.7	1621.6	1210.0	817.0	1490.6	1684.0
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C					0.04	0.10	2.45	2.23	1.23	1.30
	C _{TO}	wt% C					0.03	0.07	0.61	0.57	0.76	0.74
	C _{IN}	wt% C					0.0	0.0	1.8	1.7	0.5	0.6
Calcium Carbonate	ANC _L (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	1.3	0.5	0.9	0.8	0.0					4.2
	CaCO ₃ based on C _{TOT}	% CaCO ₃					0.3	0.8	20.4	18.6	10.2	10.8
	CaCO ₃ based on C _{IN}	% CaCO ₃					0.1	0.2	15.3	13.8	3.9	4.7
Assessment	Additional Potential Risks		Unlikely to Generate NMD / Low SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	High SD Potential	High SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential
	Details ^a		3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		E512682	E512683	E512684	E512685	E512686	E512687	E512688	E512690	E512692	E512693
	Sample Type		Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF
	Detailed Classification		Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate / High Potential for Acid Generation	Low Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne										
	NNP	kg CaCO ₃ / tonne										
	MPA	kg H ₂ SO ₄ / tonne	81.4	63.3	15.9	65.8	5.5	20.2	97.9	58.1	55.1	37.3
	AP	kg CaCO ₃ / tonne	83.1	64.7	16.3	67.2	5.6	20.6	100.0	59.4	56.3	38.1
	MPA _(SC)	kg H ₂ SO ₄ / tonne	76.8	61.2	10.1	38.3	2.4	12.2	84.8	41.9	45.9	28.5
	AP _(SC)	kg CaCO ₃ / tonne	78.4	62.5	10.3	39.1	2.5	12.5	86.6	42.8	46.9	29.1
	ANC	kg H ₂ SO ₄ / tonne										
	NP	kg CaCO ₃ / tonne										
	ANC/MPA	-	0.5	0.6	2.6	0.6	7.4	2.0	0.4	0.7	0.7	1.1
	NPR (NP/AP)	-	0.5	0.6	2.6	0.6	7.4	2.0	0.4	0.7	0.7	1.1
	Pyrite _(TOT)	% Pyrite	5.0	3.9	1.0	4.0	0.3	1.2	6.0	3.6	3.4	2.3
	Pyrite _(SC)	% Pyrite	4.7	3.7	0.6	2.3	0.1	0.7	5.2	2.6	2.8	1.7
	Paste pH	pH units										
	NAG _{pH}	pH units										
	NAG _{4.5}	kg H ₂ SO ₄ / tonne										
Sulfur Speciation	NAG _{7.0}	kg H ₂ SO ₄ / tonne										
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	2.66	2.07	0.52	2.15	0.18	0.66	3.20	1.90	1.80	1.22
	S _{Cr}	wt% S	2.51	2.00	0.33	1.25	0.08	0.40	2.77	1.37	1.50	0.93
	S _p	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{BAS}	wt% S										
	Sulfide Sulfur	wt% S	2.5	2.0	0.3	1.3	0.1	0.4	2.8	1.4	1.5	0.9
	Pyrite (equiv.)	wt% S	4.7	3.7	0.6	2.3	0.1	0.7	5.2	2.6	2.8	1.7
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
Acidity	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
Carbon	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	1565.5	1247.4	205.8	779.6	49.9	249.5	1727.6	854.5	935.6	580.0
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
Calcium Carbonate	Net Acidity	mol H ⁺ / tonne										
	C _{TOT}	wt% C	2.08	1.38	5.76	0.79	0.53	0.53	0.80	1.78	4.63	0.77
	C _{TO}	wt% C	0.62	0.67	0.15	0.77	0.36	0.47	0.78	0.63	0.81	0.62
	C _{IN}	wt% C	1.5	0.7	5.6	0.0	0.2	0.1	0.0	1.2	3.8	0.2
	ANC _f (SPOCAS)	% CaCO ₃										
Assessment	CaCO ₃ based on ANC	% CaCO ₃										
	CaCO ₃ based on C _{TOT}	% CaCO ₃	17.3	11.5	48.0	6.6	4.4	4.4	6.7	14.8	38.6	6.4
	CaCO ₃ based on C _{IN}	% CaCO ₃	12.2	5.9	46.7	0.2	1.4	0.5	0.2	9.6	31.8	1.2
	Additional Potential Risks		Moderate SD Potential	Moderate SD Potential	Low SD Potential	Moderate SD Potential	Low SD Potential	Low SD Potential	High SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential
Assessment	Details ^a		1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	2, 9, 14, 23, 42, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203
	Recommendations ^b		1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES12694	ES12695	ES12696	ES12698	ES12699	ES12700	ES12701	ES12702	ES12703	ES12704
	Sample Type		Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF
	Detailed Classification		Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate / High Potential for Acid Generation	Low Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne										
	NNP	kg CaCO ₃ / tonne										
	MPA	kg H ₂ SO ₄ / tonne	64.6	50.5	75.6	10.4	55.7	20.2	56.9	88.4	65.8	35.5
	AP	kg CaCO ₃ / tonne	65.9	51.6	77.2	10.6	56.9	20.6	58.1	90.3	67.2	36.3
	MPA _(SC)	kg H ₂ SO ₄ / tonne	57.2	48.3	61.2	5.8	51.4	11.9	45.3	67.6	58.1	13.2
	AP _(SC)	kg CaCO ₃ / tonne	58.4	49.4	62.5	5.9	52.5	12.2	46.3	69.1	59.4	13.4
	ANC	kg H ₂ SO ₄ / tonne										
	NP	kg CaCO ₃ / tonne										
	ANC/MPA	-	0.6	0.8	0.5	3.9	0.7	2.0	0.7	0.5	0.6	1.2
	NPR (NP/AP)	-	0.6	0.8	0.5	3.9	0.7	2.0	0.7	0.5	0.6	1.2
	Pyrite _(TOT)	% Pyrite	3.9	3.1	4.6	0.6	3.4	1.2	3.5	5.4	4.0	2.2
	Pyrite _(SC)	% Pyrite	3.5	3.0	3.7	0.4	3.1	0.7	2.8	4.1	3.6	0.8
	Paste pH	pH units										
	NAG _{pH}	pH units										
	NAG _{4.5}	kg H ₂ SO ₄ / tonne										
	NAG _{7.0}	kg H ₂ SO ₄ / tonne										
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
Sulfur Speciation	S _{TOT}	wt% S	2.11	1.65	2.47	0.34	1.82	0.66	1.86	2.89	2.15	1.16
	S _{Cr}	wt% S	1.87	1.58	2.00	0.19	1.68	0.39	1.48	2.21	1.90	0.43
	S _p	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{BAS}	wt% S										
	Sulfide Sulfur	wt% S	1.9	1.6	2.0	0.2	1.7	0.4	1.5	2.2	1.9	0.4
	Pyrite (equiv.)	wt% S	3.5	3.0	3.7	0.4	3.1	0.7	2.8	4.1	3.6	0.8
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
Acidity	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	1166.3	985.4	1247.4	118.5	1047.8	243.2	923.1	1378.4	1185.0	268.2
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C	2.08	4.46	1.12	0.51	2.02	0.69	2.92	0.81	2.01	0.78
	C _{TO}	wt% C	0.48	0.50	0.52	0.50	0.63	0.13	0.42	0.66	0.49	0.49
	C _{IN}	wt% C	1.6	4.0	0.6	0.0	1.4	0.6	2.5	0.2	1.5	0.3
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃										
	CaCO ₃ based on C _{TOT}	% CaCO ₃	17.3	37.2	9.3	4.2	16.8	5.7	24.3	6.7	16.7	6.5
	CaCO ₃ based on C _{IN}	% CaCO ₃	13.3	33.0	5.0	0.1	11.6	4.7	20.8	1.2	12.7	2.4
Assessment	Additional Potential Risks		Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	Low SD Potential	Moderate SD Potential	Low SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential
	Details ^a		1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	2, 9, 14, 23, 42, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203
	Recommendations ^b		1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES12705	ES12706	ES12707	ES12708	ES12709	ES12710	ES12711	ES12712	ES12713	ES12714
	Sample Type		Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF
	Detailed Classification		Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Low Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	High Potential for Acid Generation	Moderate Potential for Acid Generation	Low Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne								83.4		
	NNP	kg CaCO ₃ / tonne								-85.2		
	MPA	kg H ₂ SO ₄ / tonne	110.8	81.1	29.7	12.9	116.3	70.4	93.0	100.4	57.8	14.7
	AP	kg CaCO ₃ / tonne	113.1	82.8	30.3	13.1	118.8	71.9	95.0	102.5	59.1	15.0
	MPA _(SC)	kg H ₂ SO ₄ / tonne	76.2	54.5	24.2	6.1	91.5	53.9	78.6	92.4	44.4	10.7
	AP _(SC)	kg CaCO ₃ / tonne	77.8	55.6	24.7	6.3	93.4	55.0	80.3	94.4	45.3	10.9
	ANC	kg H ₂ SO ₄ / tonne								17.0		
	NP	kg CaCO ₃ / tonne								17.3		
	ANC/MPA	-	0.4	0.5	1.4	3.2	0.4	0.6	0.4	0.2	0.3	1.2
	NPR (NP/AP)	-	0.4	0.5	1.4	3.2	0.4	0.6	0.4	0.2	0.3	1.2
	Pyrite _(TOT)	% Pyrite	6.8	5.0	1.8	0.8	7.1	4.3	5.7	6.1	3.5	0.9
	Pyrite _(SC)	% Pyrite	4.7	3.3	1.5	0.4	5.6	3.3	4.8	5.6	2.7	0.7
	Paste pH	pH units										
	NAG _{pH}	pH units								2.4		
	NAG _{4.5}	kg H ₂ SO ₄ / tonne								66.2		
	NAG _{7.0}	kg H ₂ SO ₄ / tonne								76.0		
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
Sulfur Speciation	S _{TOT}	wt% S	3.62	2.65	0.97	0.42	3.80	2.30	3.04	3.28	1.89	0.48
	S _{Cr}	wt% S	2.49	1.78	0.79	0.20	2.99	1.76	2.57	3.02	1.45	0.35
	S _p	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{BAS}	wt% S										
	Sulfide Sulfur	wt% S	2.5	1.8	0.8	0.2	3.0	1.8	2.6	3.0	1.5	0.4
	Pyrite (equiv.)	wt% S	4.7	3.3	1.5	0.4	5.6	3.3	4.8	5.6	2.7	0.7
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
Acidity	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	1553.0	1110.2	492.7	124.7	1864.9	1097.7	1602.9	1883.6	904.4	218.3
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C	0.97	0.71	4.01	0.72	0.21	1.50	0.89	0.93	0.14	0.48
	C _{TO}	wt% C	0.96	0.70	0.49	0.70	0.09	0.62	0.78	0.78	0.13	0.32
	C _{IN}	wt% C	0.0	0.0	3.5	0.0	0.1	0.9	0.1	0.2	0.0	0.2
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃								1.7		
	CaCO ₃ based on C _{TOT}	% CaCO ₃	8.1	5.9	33.4	6.0	1.7	12.5	7.4	7.7	1.2	4.0
	CaCO ₃ based on C _{IN}	% CaCO ₃	0.1	0.1	29.3	0.2	1.0	7.3	0.9	1.2	0.1	1.3
Assessment	Additional Potential Risks		High SD Potential	Moderate SD Potential	Low SD Potential	Low SD Potential	High SD Potential	Moderate SD Potential	High SD Potential	High SD Potential	Moderate SD Potential	Low SD Potential
	Details ^a		1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	2, 9, 14, 23, 42, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 7, 15, 24, 41, 99, 151, 205, [if NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 23, 41, 150, 203	2, 9, 14, 23, 42, 150, 203
	Recommendations ^b		1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 30, 30.1, 30.3, 30.4	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES12715	ES12716	ES12717	ES12718	ES12719	ES12720	ES12721	ES12722	ES12723	ES12724
	Sample Type		Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF
	Detailed Classification		Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne										
	NNP	kg CaCO ₃ / tonne										
	MPA	kg H ₂ SO ₄ / tonne	83.2	64.6	50.8	104.0	84.8	62.4	68.5	90.3	82.9	103.7
	AP	kg CaCO ₃ / tonne	85.0	65.9	51.9	106.3	86.6	63.8	70.0	92.2	84.7	105.9
	MPA _(SC)	kg H ₂ SO ₄ / tonne	63.0	53.2	33.7	89.4	78.3	37.3	60.3	81.4	65.5	75.9
	AP _(SC)	kg CaCO ₃ / tonne	64.4	54.4	34.4	91.3	80.0	38.1	61.6	83.1	66.9	77.5
	ANC	kg H ₂ SO ₄ / tonne										
	NP	kg CaCO ₃ / tonne										
	ANC/MPA	-	0.2	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2
	NPR (NP/AP)	-	0.2	0.3	0.3	0.2	0.2	0.3	0.2	0.2	0.2	0.2
	Pyrite _(TOT)	% Pyrite	5.1	3.9	3.1	6.4	5.2	3.8	4.2	5.5	5.1	6.3
	Pyrite _(SC)	% Pyrite	3.9	3.3	2.1	5.5	4.8	2.3	3.7	5.0	4.0	4.6
	Paste pH	pH units										
	NAG _{pH}	pH units										
	NAG _{4.5}	kg H ₂ SO ₄ / tonne										
	NAG _{7.0}	kg H ₂ SO ₄ / tonne										
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
Sulfur Speciation	S _{TOT}	wt% S	2.72	2.11	1.66	3.40	2.77	2.04	2.24	2.95	2.71	3.39
	S _{Cr}	wt% S	2.06	1.74	1.10	2.92	2.56	1.22	1.97	2.66	2.14	2.48
	S _p	wt% S										
	S _{KCl}	wt% S										
	S _{HCl}	wt% S										
	S _{TOS}	wt% S										
	S _{NAS}	wt% S										
	S _{POS}	wt% S										
	S _{BAS}	wt% S										
	Sulfide Sulfur	wt% S	2.1	1.7	1.1	2.9	2.6	1.2	2.0	2.7	2.1	2.5
	Pyrite (equiv.)	wt%	3.9	3.3	2.1	5.5	4.8	2.3	3.7	5.0	4.0	4.6
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S										
	Jarosite (equiv.)	wt%										
Acidity	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	1284.8	1085.2	686.1	1821.2	1596.7	760.9	1228.7	1659.0	1334.7	1546.8
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne										
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C	1.95	2.32	0.69	0.79	0.63	0.75	3.46	0.64	0.63	1.42
	C _{TO}	wt% C	0.73	0.61	0.10	0.74	0.61	0.50	0.78	0.61	0.60	0.74
	C _{IN}	wt% C	1.2	1.7	0.6	0.1	0.0	0.3	2.7	0.0	0.0	0.7
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃										
	CaCO ₃ based on C _{TOT}	% CaCO ₃	16.2	19.3	5.7	6.6	5.2	6.2	28.8	5.3	5.2	11.8
	CaCO ₃ based on C _{IN}	% CaCO ₃	10.2	14.2	4.9	0.4	0.2	2.1	22.3	0.2	0.2	5.7
Assessment	Additional Potential Risks		Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	High SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	Moderate SD Potential	High SD Potential
	Details ^a		1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203
	Recommendations ^b		1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		E512726	E512727	E512728	E512855	E512857	E512866	E512871	E512872	E503460	E503461
	Sample Type		Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore	Ore
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF
	Detailed Classification		Moderate Potential for Acid Generation	Moderate Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate Potential for Acid Generation	Low Potential for Acid Generation	Low Potential for Acid Generation	Low Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne									44.7	83.4
	NNP	kg CaCO ₃ / tonne									-45.7	-85.2
	MPA	kg H ₂ SO ₄ / tonne	51.1	26.6	103.7	31.8	14.1	12.5	12.5	67.0	85.7	100.4
	AP	kg CaCO ₃ / tonne	52.2	27.2	105.9	32.5	14.4	12.8	12.8	68.4	87.5	102.5
	MPA _(SC)	kg H ₂ SO ₄ / tonne	30.3	9.8	6.7	15.0	4.0	7.3	7.7	33.0	82.6	92.4
	AP _(SC)	kg CaCO ₃ / tonne	30.9	10.0	6.9	15.3	4.1	7.5	7.8	33.8	84.4	94.4
	ANC	kg H ₂ SO ₄ / tonne									41.0	17.0
	NP	kg CaCO ₃ / tonne									41.8	17.3
	ANC/MPA	-	0.3	0.6	0.2	0.5	1.2	1.4	1.4	0.3	0.5	0.2
	NPR (NP/AP)	-	0.3	0.6	0.2	0.5	1.2	1.4	1.4	0.3	0.5	0.2
	Pyrite _(TOT)	% Pyrite	3.1	1.6	6.3	1.9	0.9	0.8	0.8	4.1	5.2	6.1
	Pyrite _(SC)	% Pyrite	1.9	0.6	0.4	0.9	0.2	0.4	0.5	2.0	5.1	5.6
	Paste pH	pH units										
	NAG _{pH}	pH units									2.8	2.4
	NAG _{4.5}	kg H ₂ SO ₄ / tonne									28.1	66.2
	NAG _{7.0}	kg H ₂ SO ₄ / tonne									36.3	76.0
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
Sulfur Speciation	S _{TOT}	wt% S	1.67	0.87	3.39	1.04	0.46	0.41	0.41	2.19	2.80	3.28
	S _{Cr}	wt% S	0.99	0.32	0.22	0.49	0.13	0.24	0.25	1.08	2.70	3.02
	S _p	wt% S										
	S _{KCl}	wt% S									0.11	0.14
	S _{HCl}	wt% S									0.11	0.16
	S _{TOS}	wt% S									2.7	3.1
	S _{NAS}	wt% S									0.0	0.0
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S	1.0	0.3	0.2	0.5	0.1	0.2	0.3	1.1	2.7	3.0
	Pyrite (equiv.)	wt% S	1.9	0.6	0.4	0.9	0.2	0.4	0.5	2.0	5.1	5.6
	Readily soluble non-acid storing Sulfate-S	wt% S									0.1	0.1
	Gypsum (equiv.)	wt%									0.6	0.8
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S									0.0	0.0
	Jarosite (equiv.)	wt%									-	0.2
Acidity	pH _{KCl}	pH units									8.5	8.5
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne									<12.474	<12.474
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	617.5	199.6	137.2	305.6	81.1	149.7	155.9	673.6	1684.0	1883.6
	Actual Acidity	mol H ⁺ / tonne									0.0	0.0
	Retained Acidity	mol H ⁺ / tonne									0.0	9.4
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C	0.25	0.64	0.49	0.47	0.28	0.19	0.19	0.71	1.30	0.93
	C _{TO}	wt% C	0.08	0.43	0.39	0.10	0.06	0.11	0.03	0.08	0.74	0.78
	C _{IN}	wt% C	0.2	0.2	0.1	0.4	0.2	0.1	0.2	0.6	0.6	0.2
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃									4.2	1.7
	CaCO ₃ based on C _{TOT}	% CaCO ₃	2.1	5.3	4.1	3.9	2.3	1.6	1.6	5.9	10.8	7.7
	CaCO ₃ based on C _{IN}	% CaCO ₃	1.4	1.7	0.8	3.1	1.8	0.7	1.3	5.2	4.7	1.2
Assessment	Additional Potential Risks		Moderate SD Potential	Low SD Potential	High SD Potential	Moderate SD Potential	Low SD Potential	Low SD Potential	Low SD Potential	Moderate SD Potential	Moderate SD Potential	High SD Potential
	Details ^a		1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	1, 23, 41, 150, 203	2, 9, 14, 23, 42, 150, 203	2, 9, 14, 23, 42, 150, 203	2, 9, 14, 23, 42, 150, 203	1, 23, 41, 150, 203	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 10, 10.1, 10.2, 10.3, 10.4, 10.5, 67	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		E503462	E503463	E503468	E503484	E503493	E503507	E503509	E503514	E503515	E503516
	Sample Type		Ore	Ore	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Regolith	Regolith	Regolith	Regolith	Regolith	Regolith	Carbonate Rock	Metasediments
	General Classification		PAF	Not assessed	NAF	NAF	NAF	NAF	NAF	NAF	NAF	NAF
	Detailed Classification		High Potential for Acid Generation	Inconsistent Data	Unlikely to be Acid Generating	Likely to be Acid Consuming	Likely to be Acid Consuming	Likely to be Acid Consuming	Likely to be Acid Consuming	Likely to be Acid Consuming	Likely to be Acid Consuming	Likely to be Acid Consuming
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	136.0	8.0	-30.7	-41.8	-271.0	-51.2	-216.0	-990.0	-280.0	-40.3
	NNP	kg CaCO ₃ / tonne	-121.7	-8.2	31.3	42.7	276.9	52.2	220.2	1010.3	285.8	41.1
	MPA	kg H ₂ SO ₄ / tonne	136.2	10.7	<1	<1	0.6	0.9	5.2	<1	4.9	5.5
	AP	kg CaCO ₃ / tonne	139.1	10.9	<0.3125	<0.3125	0.6	0.9	5.3	<0.3125	5.0	5.6
	MPA _(SC)	kg H ₂ SO ₄ / tonne	101.6	0.0	0.0	0.2	0.0	0.0	4.7	0.0	3.6	3.7
	AP _(SC)	kg CaCO ₃ / tonne	103.8			0.2			4.8		3.7	3.8
	ANC	kg H ₂ SO ₄ / tonne	<0.5	2.7	30.7	41.8	272.0	52.1	221.0	990.0	285.0	45.8
	NP	kg CaCO ₃ / tonne	<0.5	2.8	31.3	42.7	277.6	53.2	225.5	1010.3	290.8	46.7
	ANC/MPA	-	-	0.3	-	-	444.4	56.8	42.5	-	58.2	8.3
	NPR (NP/AP)	-	0.1	0.3	-	-	444.1	56.7	42.5	-	58.2	8.3
	Pyrite _(TOT)	% Pyrite	8.3	0.7	-	-	0.0	0.1	0.3	-	0.3	0.3
	Pyrite _(SC)	% Pyrite	6.2	-	-	0.0	-	-	0.3	-	0.2	0.2
	Paste pH	pH units										
	NAG _{pH}	pH units	2.3	6.0	9.4	8.8	9.4	10.3	9.2	10.0	10.8	8.9
Sulfur Speciation	NAG _{4.5}	kg H ₂ SO ₄ / tonne	83.4	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	90.6	4.9	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	4.45	0.35	<0.01	<0.01	0.02	0.03	0.17	<0.01	0.16	0.18
	S _{Cr}	wt% S	3.32	<0.005	<0.005	0.01	<0.005	<0.005	0.15	<0.005	0.12	0.12
	S _p	wt% S										
	S _{KCl}	wt% S	1.10	0.10	<0.02	<0.02	<0.02	0.02	0.03	<0.02	<0.02	0.03
	S _{HCl}	wt% S	1.32	0.11	<0.02	<0.02	<0.02	0.03	0.03	<0.02	0.03	0.04
	S _{TOS}	wt% S	3.1	0.2	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
	S _{NAS}	wt% S	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S	3.3	<0.005	<0.005	0.0	<0.005	<0.005	0.2	<0.005	0.1	0.1
	Pyrite (equiv.)	wt%	6.2	-	-	0.0	-	-	0.3	-	0.2	0.2
	Readily soluble non-acid storing Sulfate-S	wt% S	1.0	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Gypsum (equiv.)	wt%	5.5	0.5	0.0	0.0	0.0	0.1	0.2	0.0	0.0	0.2
	Readily soluble acid storing Sulfate-S	wt% S	0.1									
Acidity	Melanterite (equiv.)	wt%	0.7									
	Sparingly soluble acid storing Sulfate-S	wt% S	0.2	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Jarosite (equiv.)	wt%	1.7	0.1	-	-	-	0.1	-	-	0.2	0.1
	pH _{KCl}	pH units	4.7	7.2	9.1	9.0	9.5	9.3	9.2	9.7	9.3	9.0
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne	49.9	<12.474	<12.474	<12.474	<12.474	<12.474	<12.474	<12.474	<12.474	<12.474
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	2070.7	0.0	0.0	4.4	0.0	0.0	96.0	0.0	73.6	74.8
Carbon	Actual Acidity	mol H ⁺ / tonne	49.9	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Retained Acidity	mol H ⁺ / tonne	102.9	4.7	0.0	0.0	0.0	4.7	0.0	0.0	14.0	4.7
	Net Acidity	mol H ⁺ / tonne										
	C _{TOT}	wt% C	0.04	0.04	0.53	0.69	4.13	0.84	3.26	9.90	4.33	1.75
Calcium Carbonate	C _{TO}	wt% C	0.03	0.04	0.19	0.18	0.10	0.29	0.37	<0.02	0.47	0.32
	C _{IN}	wt% C	0.0	0.0	0.3	0.5	4.0	0.6	2.9	9.9	3.9	1.4
	ANC _L (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	0.0	0.3	3.1	4.3	27.8	5.3	22.6	101.0	29.1	4.7
Assessment	CaCO ₃ based on C _{TOT}	% CaCO ₃	0.3	0.3	4.4	5.7	34.4	7.0	27.2	82.5	36.1	14.6
	CaCO ₃ based on C _{IN}	% CaCO ₃	0.1	0.0	2.8	4.2	33.6	4.6	24.1	82.5	32.2	11.9
	Additional Potential Risks		High SD Potential	Not assessed	Potential for NMD / Low SD Potential	Potential for NMD / Low SD Potential	Potential for NMD / Low SD Potential	Potential for NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Potential for NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential
Assessment	Details ^a		1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	7, 73, 96 (63, 97), 170, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	4, 13, 19, 23, 24, 43, 99, 155	4, 13, 19, 23, 24, 43, 99, 155	4, 13, 19, 23, 24, 43, 99, 155	4, 13, 19, 23, 24, 43, 99, 155	4, 13, 19, 23, 24, 43, 99, 155	4, 13, 19, 23, 24, 43, 99, 155	4, 13, 19, 23, 24, 43, 99, 155
	Recommendations ^b		1, 30, 30.1, 30.3, 30.4	86, 86.2, 86.3, 86.4, 86.5, 86.6, 86.7	30, 30.1, 30.3, 30.4, 62	62, 90, 90.2	62, 90, 90.2	62, 90, 90.2	62, 90, 90.2	62, 90, 90.2	62, 90, 90.2	62, 90, 90.2

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		E503517	E503519	E513388	E513393	E513395	E513402	E513403	E513404	E513405	E513406
	Sample Type		Waste Rock	Waste Rock	Ore	Ore	Ore	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock
	Sample Sub-Type		Carbonate Rock	Metasediments	Altered Volcanic	Altered Volcanic	Altered Volcanic	Metasediments	Metasediments	Metasediments	Altered Volcanic	Altered Volcanic
	General Classification		NAF	NAF	PAF	PAF	PAF	PAF	PAF	PAF	NAF	NAF
	Detailed Classification		Likely to be Acid Consuming	Unlikely to be Acid Generating	High Potential for Acid Generation	Moderate Potential for Acid Generation	Low Potential for Acid Generation	Low Potential for Acid Generation	Low Potential for Acid Generation	Moderate / High Potential for Acid Generation	Unlikely to be Acid Generating	Unlikely to be Acid Generating
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	-928.0	-32.8	83.7	25.7	20.3	-2.8	8.7	33.3	-9.0	-17.7
	NNP	kg CaCO ₃ / tonne	947.1	33.5	-85.5	-26.3	-20.7	2.8	-8.9	-34.0	9.2	18.1
	MPA	kg H ₂ SO ₄ / tonne	0.9	2.1	92.4	66.4	34.3	16.8	15.6	40.7	<0.306	2.8
	AP	kg CaCO ₃ / tonne	0.9	2.2	94.4	67.8	35.0	17.2	15.9	41.6	<0.3125	2.8
	MPA _(SC)	kg H ₂ SO ₄ / tonne	0.7	1.6	64.0	28.9	26.1	12.0	13.6	33.7	0.0	2.8
	AP _(SC)	kg CaCO ₃ / tonne	0.7	1.7	65.3	29.5	26.7	12.3	13.9	34.4		2.8
	ANC	kg H ₂ SO ₄ / tonne	929.0	35.0	8.7	40.7	14.0	19.6	6.9	7.4	9.0	20.5
	NP	kg CaCO ₃ / tonne	948.0	35.7	8.9	41.5	14.3	20.0	7.0	7.6	9.2	20.9
	ANC/MPA	-	1012.0	16.3	0.1	0.6	0.4	1.2	0.4	0.2	-	7.4
	NPR (NP/AP)	-	1011.2	16.3	0.1	0.6	0.4	1.2	0.4	0.2	-	7.4
	Pyrite _(TOT)	% Pyrite	0.1	0.1	5.6	4.1	2.1	1.0	1.0	2.5	-	0.2
	Pyrite _(SC)	% Pyrite	0.0	0.1	3.9	1.8	1.6	0.7	0.8	2.1	-	0.2
	Paste pH	pH units										
	NAG _{pH}	pH units										
	NAG _{4.5}	kg H ₂ SO ₄ / tonne	<0.1	<0.1	60.8	16.8	9.4	1.9	10.6	28.4	<0.1	<0.1
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	<0.1	<0.1	64.2	22.2	14.5	4.9	13.7	36.3	<0.1	0.2
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
Sulfur Speciation	S _{TOT}	wt% S	0.03	0.07	3.02	2.17	1.12	0.55	0.51	1.33	<0.01	0.09
	S _{Cr}	wt% S	0.02	0.05	2.09	0.94	0.85	0.39	0.45	1.10	<0.005	0.09
	S _p	wt% S										
	S _{Cl}	wt% S	<0.02	0.02	<0.02	0.14	<0.02	<0.02	0.00	0.00	0.00	0.00
	S _{HCl}	wt% S	<0.02	0.02	<0.02	0.14	<0.02	<0.02	0.00	0.00	0.00	0.00
	S _{TOS}	wt% S	0.0	0.1	3.0	2.0	1.1	0.6	0.5	1.3	0.0	0.1
	S _{NAS}	wt% S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S	0.0	0.1	2.1	0.9	0.9	0.4	0.4	1.1	<0.005	0.1
	Pyrite (equiv.)	wt%	0.0	0.1	3.9	1.8	1.6	0.7	0.8	2.1	-	0.2
	Readily soluble non-acid storing Sulfate-S	wt% S	0.0	0.0								
	Gypsum (equiv.)	wt%	0.0	0.1								
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
	Sparingly soluble acid storing Sulfate-S	wt% S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Jarosite (equiv.)	wt%	-	-	-	-	-	-	-	-	-	-
Acidity	pH _{KCl}	pH units	9.7	8.9								
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne	<12.474	<12.474								
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	13.7	33.1	1303.5	588.1	532.0	244.5	277.5	686.1	0.0	56.8
	Actual Acidity	mol H ⁺ / tonne	0.0	0.0								
	Retained Acidity	mol H ⁺ / tonne	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Net Acidity	mol H ⁺ / tonne										
Carbon	C _{TOT}	wt% C	10.90	1.36								
	C _{TO}	wt% C	0.02	0.35								
	C _{IN}	wt% C	10.9	1.0								
Calcium Carbonate	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	94.8	3.6	0.9	4.2	1.4	2.0	0.7	0.8	0.9	2.1
	CaCO ₃ based on C _{TOT}	% CaCO ₃	90.8	11.3								
	CaCO ₃ based on C _{IN}	% CaCO ₃	90.7	8.4								
Assessment	Additional Potential Risks		Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	High SD Potential	Moderate SD Potential	Moderate SD Potential	Low SD Potential	Low SD Potential	Moderate SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential
	Details ^a		4, 13, 19, 23, 24, 43, 99, 155	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 8, 16, 23, 24, 42, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		62, 90, 90.2	30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES13407	ES13408	ES13409	ES13410	ES13411	ES13412	ES13413	ES13414	ES13425	ES13426
	Sample Type		Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Metasediments	Metasediments	Metasediments	Altered Volcanic	Altered Volcanic	Metasediments	Metasediments
	General Classification		NAF	NAF	Not assessed	PAF	PAF	NAF	NAF	PAF	NAF	PAF
	Detailed Classification		Unlikely to be Acid Generating	Unlikely to be Acid Generating	Inconsistent Data	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Low Potential for Acid Generation	Likely to be Acid Consuming	Low Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	-25.4	-8.2	-10.8	71.5	26.5	-11.1	-6.5	-1.7	-229.0	-26.1
	NNP	kg CaCO ₃ / tonne	25.9	8.3	11.0	-73.1	-27.1	11.3	6.6	1.7	233.3	26.6
	MPA	kg H ₂ SO ₄ / tonne	<0.306	1.8	14.4	78.0	32.1	6.1	<0.306	6.7	14.4	31.5
	AP	kg CaCO ₃ / tonne	<0.3125	1.9	14.7	79.7	32.8	6.3	<0.3125	6.9	14.7	32.2
	MPA _(SC)	kg H ₂ SO ₄ / tonne	0.0	1.8	11.6	57.8	28.4	5.4	0.0	5.9	10.4	24.9
	AP _(SC)	kg CaCO ₃ / tonne	0.0	1.9	11.8	59.1	29.0	5.5	-	6.1	10.6	25.4
	ANC	kg H ₂ SO ₄ / tonne	25.4	10.0	25.2	6.5	5.6	17.2	6.5	8.4	243.0	57.6
	NP	kg CaCO ₃ / tonne	25.9	10.2	25.7	6.6	5.7	17.6	6.6	8.6	248.0	58.8
	ANC/MPA	-	-	5.4	1.8	0.1	0.2	2.8	-	1.2	16.9	1.8
	NPR (NP/AP)	-	-	5.4	1.8	0.1	0.2	2.8	-	1.2	16.9	1.8
	Pyrite _(TOT)	% Pyrite	-	0.1	0.9	4.8	2.0	0.4	-	0.4	0.9	1.9
	Pyrite _(SC)	% Pyrite	-	0.1	0.7	3.5	1.7	0.3	-	0.4	0.6	1.5
	Paste pH	pH units										
	NAG _{pH}	pH units	7.1	6.5	3.4	2.4	2.8	7.4	7.0	4.1	10.1	3.2
	NAG _{4.5}	kg H ₂ SO ₄ / tonne	<0.1	<0.1	2.8	48.7	24.8	<0.1	<0.1	0.5	<0.1	5.7
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	<0.1	0.2	6.5	56.7	32.2	<0.1	<0.1	2.4	<0.1	10.9
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
Sulfur Speciation	S _{TOT}	wt% S	<0.01	0.06	0.47	2.55	1.05	0.20	<0.01	0.22	0.47	1.03
	S _{Cr}	wt% S	<0.005	0.06	0.38	1.89	0.93	0.18	<0.005	0.19	0.34	0.81
	S _p	wt% S										
	S _{Cl}	wt% S	0.00	0.00	0.00	<0.02	0.00	0.00	0.00	0.00	<0.02	<0.02
	S _{HCl}	wt% S	0.00	0.00	0.00	<0.02	0.00	0.00	0.00	0.00	<0.02	<0.02
	S _{TOS}	wt% S	0.0	0.1	0.5	2.6	1.1	0.2	0.0	0.2	0.5	1.0
	S _{NAS}	wt% S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S	<0.005	0.1	0.4	1.9	0.9	0.2	<0.005	0.2	0.3	0.8
	Pyrite (equiv.)	wt%	-	0.1	0.7	3.5	1.7	0.3	-	0.4	0.6	1.5
	Readily soluble non-acid storing Sulfate-S	wt% S										
	Gypsum (equiv.)	wt%										
	Readily soluble acid storing Sulfate-S	wt% S										
	Melanterite (equiv.)	wt%										
Acidity	Sparingly soluble acid storing Sulfate-S	wt% S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Jarosite (equiv.)	wt%	-	-	-	-	-	-	-	-	-	-
	pH _{KCl}	pH units										
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne										
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	0.0	37.4	235.8	1178.8	578.8	110.4	0.0	121.0	211.4	507.7
	Actual Acidity	mol H ⁺ / tonne										
	Retained Acidity	mol H ⁺ / tonne	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Carbon	Net Acidity	mol H ⁺ / tonne										
	C _{TOT}	wt% C										
	C _{TO}	wt% C										
Calcium Carbonate	C _{IN}	wt% C										
	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	2.6	1.0	2.6	0.7	0.6	1.8	0.7	0.9	24.8	5.9
	CaCO ₃ based on C _{TOT}	% CaCO ₃										
Assessment	CaCO ₃ based on C _{IN}	% CaCO ₃										
	Additional Potential Risks		Potential for NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Not assessed	Moderate SD Potential	Moderate SD Potential	Potential for NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Low SD Potential	Potential for NMD / Low SD Potential	Moderate SD Potential
	Details ^a		3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	73 (66, 67, 107), 170, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 66, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 8, 16, 23, 24, 42, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	4, 13, 19, 23, 24, 43, 99, 155	1, 8, 16, 23, 24, 42, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
Assessment	Recommendations ^b		30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	35, 40, 40.1, 61, 66	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4, 63	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4	62, 90, 90.2	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES13433	ES27791	ES27792	ES27793	ES27794	ES27795	ES27796	ES27797	ES27798	ES27799
	Sample Type		Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Ore	Waste Rock	Waste Rock	Waste Rock	Ore
	Sample Sub-Type		Metasediments	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		NAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF	PAF
	Detailed Classification		Likely to be Acid Consuming	Moderate Potential for Acid Generation	Moderate Potential for Acid Generation	Low Potential for Acid Generation	Moderate / High Potential for Acid Generation	Moderate / High Potential for Acid Generation	Low Potential for Acid Generation	Low Potential for Acid Generation	Low Potential for Acid Generation	Moderate / High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ / tonne	910.0	60.9	36.7	16.2	77.1		15.2	14.5	34.9	84.5
	NNP	kg CaCO ₃ / tonne	928.6	869.5	894.2	-16.5	-74.3		-15.5	-14.8	-32.9	-86.3
	MPA	kg H ₂ SO ₄ / tonne	3.1	60.9	36.7	20.5	77.1	97.0	18.4	17.1	34.9	91.8
	AP	kg CaCO ₃ / tonne	3.1	62.2	37.5	20.9	78.8	99.1	18.8	17.5	35.6	93.8
	MPA _(SC)	kg H ₂ SO ₄ / tonne	2.5	24.2	19.6	11.2	17.5	52.0	2.7	3.1	8.4	50.5
	AP _(SC)	kg CaCO ₃ / tonne	2.6	24.7	20.1	11.4	17.9	53.1	2.7	3.1	8.5	51.6
	ANC	kg H ₂ SO ₄ / tonne	913.0	<0.1	<0.1	4.3	<0.1		3.1	2.6	<0.1	7.3
	NP	kg CaCO ₃ / tonne	931.7	<0.1	<0.1	4.4	<0.1		3.2	2.7	<0.1	7.4
	ANC/MPA	-	298.4	-	-	0.2	-	-	0.2	0.2	-	0.1
	NPR (NP/AP)	-	298.1	15.0	24.8	0.2	0.1	0.0	0.2	0.2	0.1	0.1
	Pyrite _(TOT)	% Pyrite	0.2	3.7	2.2	1.3	4.7	5.9	1.1	1.0	2.1	5.6
	Pyrite _(SC)	% Pyrite	0.2	1.5	1.2	0.7	1.1	3.2	0.2	0.2	0.5	3.1
	Paste pH	pH units										
	NAG _{pH}	pH units	11.4	2.6	2.7	3.0	2.5	2.5	3.3	3.4	3.0	2.6
Sulfur Speciation	NAG _{4.5}	kg H ₂ SO ₄ / tonne	<0.1	18.2	13.3	6.5	42.8	47.6	3.5	2.8	9.3	38.0
	NAG _{7.0}	kg H ₂ SO ₄ / tonne	<0.1	24.2	18.0	11.3	46.8	54.9	6.0	5.2	14.4	58.6
	NAG _{9.5}	kg H ₂ SO ₄ / tonne										
	S _{TOT}	wt% S	0.10	1.99	1.20	0.67	2.52	3.17	0.60	0.56	1.14	3.00
	S _{Cr}	wt% S	0.08	0.79	0.64	0.37	0.57	1.70	0.09	0.10	0.27	1.65
	S _p	wt% S										
	S _{KCl}	wt% S	<0.02	0.08	0.08	0.05	0.07	0.10	0.06	0.07	0.07	0.15
	S _{HCl}	wt% S	<0.02	0.34	0.28	0.19	0.56	0.44	0.29	0.31	0.55	0.25
	S _{TOS}	wt% S	0.1	1.7	0.9	0.5	2.0	2.7	0.3	0.3	0.6	2.8
	S _{NAS}	wt% S	0.0	0.3	0.2	0.1	0.5	0.3	0.2	0.2	0.5	0.1
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S	0.1	0.8	0.6	0.4	0.6	1.7	0.1	0.1	0.3	1.7
	Pyrite (equiv.)	wt%	0.2	1.5	1.2	0.7	1.1	3.2	0.2	0.2	0.5	3.1
	Readily soluble non-acid storing Sulfate-S	wt% S		0.1	0.1	0.0	0.0	0.1	0.0	0.0	0.0	0.1
	Gypsum (equiv.)	wt%		0.3	0.3	0.2	0.2	0.4	0.1	0.1	0.1	0.6
	Readily soluble acid storing Sulfate-S	wt% S		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.1	0.0
	Melanterite (equiv.)	wt%		0.2	0.3	0.2	0.3	0.2	0.4	0.4	0.5	0.3
	Sparingly soluble acid storing Sulfate-S	wt% S	0.0	0.3	0.2	0.1	0.5	0.3	0.2	0.2	0.5	0.1
	Jarosite (equiv.)	wt%	-	2.0	1.6	1.1	3.8	2.7	1.8	1.9	3.7	0.8
Acidity	pH _{KCl}	pH units		5.3	5.0	5.2	4.8	5.0	4.7	4.5	4.5	5.2
	pH _{ox}	pH units										
	TAA	mol H ⁺ / tonne		12.5	18.7	12.5	18.7	12.5	31.2	31.2	37.4	18.7
	TPA	mol H ⁺ / tonne										
	TSA	mol H ⁺ / tonne										
	Potential Acidity	mol H ⁺ / tonne	51.8	492.7	400.4	228.3	356.8	1060.3	54.3	62.4	170.3	1029.1
	Actual Acidity	mol H ⁺ / tonne		12.5	18.7	12.5	18.7	12.5	31.2	31.2	37.4	18.7
	Retained Acidity	mol H ⁺ / tonne	0.0	121.6	93.6	65.5	229.2	159.0	107.6	112.3	224.5	46.8
Carbon	Net Acidity	mol H ⁺ / tonne										
	C _{TOT}	wt% C										
	C _{TO}	wt% C										
	C _{IN}	wt% C										
Calcium Carbonate	ANC _L (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	93.2	0.0	0.0	0.4	0.0		0.3	0.3	0.0	0.7
	CaCO ₃ based on C _{TOT}	% CaCO ₃										
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Assessment	Additional Potential Risks		Unlikely to Generate NMD / Low SD Potential	Moderate SD Potential	Moderate SD Potential	Low SD Potential	Moderate SD Potential	High SD Potential	Low SD Potential	Low SD Potential	Moderate SD Potential	High SD Potential
	Details ^a		4, 13, 19, 23, 24, 43, 99, 155	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 15, 23, 41, 99, 203, [IF NAG4.5 / NAG7.0 <<1 then see 130,131,132]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 15, 24, 41, 91 (63, 92), 151, 203, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		62, 90, 90.2	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 57	1, 12, 12.1, 12.2, 12.4, 67	1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 57	1, 80, 80.2, 80.4, 80.5, 80.6, 80.7, 80.8	1, 30, 30.1, 30.3, 30.4, 57

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		ES27800	ES27801	ES27802	ES27803	ES27804	ES27805	ES27806	ES27807	ES27808	ES27809
	Sample Type		Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock	Waste Rock
	Sample Sub-Type		Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic	Altered Volcanic
	General Classification		PAF	PAF	NAF	NAF	NAF	NAF	NAF	Not assessed	PAF	PAF
	Detailed Classification		Moderate Potential for Acid Generation	Low Potential for Acid Generation	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	WARNING: The NAG 7.0 is too low for the NAG pH.	Low Potential for Acid Generation	Low Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ /tonne	34.9	20.5	0.9	0.0	1.2	0.6	1.5	-0.6	12.5	16.8
	NNP	kg CaCO ₃ /tonne	-28.2	-13.5	6.5	0.1	0.1	0.7	-0.3	0.7	-10.9	-15.3
	MPA	kg H ₂ SO ₄ /tonne	34.9	20.5	0.9	1.2	1.2	0.6	1.5	1.2	12.5	16.8
	AP	kg CaCO ₃ /tonne	35.6	20.9	0.9	1.3	1.3	0.6	1.6	1.3	12.8	17.2
	MPA _(SC)	kg H ₂ SO ₄ /tonne	24.2	0.6	0.2	0.2	0.0	0.0	0.4	0.3	0.3	0.0
	AP _(SC)	kg CaCO ₃ /tonne	24.7	0.6	0.2	0.2		0.4	0.3	0.3		
	ANC	kg H ₂ SO ₄ /tonne	<0.1	<0.1	<0.1	1.3	<0.1	<0.1	<0.1	1.9	<0.1	<0.1
	NP	kg CaCO ₃ /tonne	<0.1	<0.1	<0.1	1.3	<0.1	<0.1	<0.1	1.9	<0.1	<0.1
	ANC/MPA	-	-	-	-	1.0	-	-	-	1.5	-	-
	NPR (NP/AP)	-	0.2	0.4	7.9	1.0	1.0	2.1	0.8	1.5	0.1	0.1
	Pyrite _(TOT)	% Pyrite	2.1	1.3	0.1	0.1	0.0	0.0	0.1	0.1	0.8	1.0
	Pyrite _(SC)	% Pyrite	1.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-
	Paste pH	pH units										
	NAG _{pH}	pH units	2.7	3.7	6.2	6.3	6.5	6.2	6.5	6.8	4.0	3.9
Sulfur Speciation	NAG _{4.5}	kg H ₂ SO ₄ /tonne	13.5	2.6	<0.1	<0.1	<0.1	<0.1	<0.1	<0.1	0.7	0.9
	NAG _{7.0}	kg H ₂ SO ₄ /tonne	21.8	4.4	1.2	0.6	0.3	0.2	0.2	<0.1	3.3	3.2
	NAG _{9.5}	kg H ₂ SO ₄ /tonne										
	S _{TOT}	wt% S	1.14	0.67	0.03	0.04	0.04	0.02	0.05	0.04	0.41	0.55
	S _{Cr}	wt% S	0.79	0.02	0.01	0.01	<0.005	<0.005	0.01	0.01	0.01	<0.005
	S _p	wt% S										
	S _{Cl}	wt% S	0.04	0.03	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.12	0.08
	S _{HCl}	wt% S	0.09	0.54	<0.02	<0.02	<0.02	<0.02	<0.02	<0.02	0.32	0.42
	S _{TOS}	wt% S	1.1	0.1	0.0	0.0	0.0	0.0	0.1	0.0	0.1	0.1
	S _{NAS}	wt% S	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3
	S _{POS}	wt% S										
	S _{RAS}	wt% S										
	Sulfide Sulfur	wt% S	0.8	0.0	0.0	0.0	<0.005	<0.005	0.0	0.0	0.0	<0.005
	Pyrite (equiv.)	wt%	1.5	0.0	0.0	0.0	-	-	0.0	0.0	0.0	-
	Readily soluble non-acid storing Sulfate-S	wt% S	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Gypsum (equiv.)	wt%	0.1	0.1	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	Readily soluble acid storing Sulfate-S	wt% S	0.0	0.0		0.0	0.0	0.0	0.0		0.2	0.1
Acidity	Melanterite (equiv.)	wt%	0.2	0.2		0.3	0.2	0.3	0.3		1.6	1.1
	Sparingly soluble acid storing Sulfate-S	wt% S	0.1	0.5	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.3
	Jarosite (equiv.)	wt%	0.4	4.0	-	-	-	-	-	-	1.6	2.7
	pH _{KCl}	pH units	4.9	4.7	5.5	4.6	5.1	4.6	4.6	5.1	3.6	3.9
	pH _{ox}	pH units										
	TAA	mol H ⁺ /tonne	12.5	12.5	<12.474	24.9	12.5	24.9	24.9	<12.474	112.3	81.1
	TPA	mol H ⁺ /tonne										
	TSA	mol H ⁺ /tonne										
	Potential Acidity	mol H ⁺ /tonne	492.7	11.2	3.7	3.7	0.0	0.0	8.1	5.6	6.9	0.0
	Actual Acidity	mol H ⁺ /tonne	12.5	12.5	0.0	24.9	12.5	24.9	24.9	0.0	112.3	81.1
Carbon	Retained Acidity	mol H ⁺ /tonne	23.4	238.6	0.0	0.0	0.0	0.0	0.0	0.0	93.6	159.0
	Net Acidity	mol H ⁺ /tonne										
	C _{TOT}	wt% C										
	C _{TO}	wt% C										
Calcium Carbonate	C _{IN}	wt% C										
	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	0.0	0.0	0.0	0.1	0.0	0.0	0.0	0.2	0.0	0.0
	CaCO ₃ based on C _{TOT}	% CaCO ₃										
Assessment	CaCO ₃ based on C _{IN}	% CaCO ₃										
	Additional Potential Risks		Moderate SD Potential	Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Not assessed	Low SD Potential	Low SD Potential
	Details ^a		1, 7, 15, 24, 41, 62, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]		1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 8, 14, 24, 41, 62, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
Recommendations ^b			1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 57	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62		1, 30, 30.1, 30.3, 30.4, 57	1, 30, 30.1, 30.3, 30.4, 57

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Sample Details	Sample ID		E545889	E545890	E545891	E545892	E545893	E545894	E545895	E545896	E510004	E510005
	Sample Type		Tailings	Tailings	Tailings	Tailings	Tailings	Tailings	Tailings	Tailings	Tailings	Tailings
	Sample Sub-Type		Tailings	Tailings	Tailings	Tailings	Tailings	Tailings	Tailings	Tailings	Tailings	Tailings
	General Classification		NAF	NAF	PAF	PAF	NAF	NAF	NAF	NAF	PAF	PAF
	Detailed Classification		Unlikely to be Acid Generating	Unlikely to be Acid Generating	High Potential for Acid Generation	High Potential for Acid Generation	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	Unlikely to be Acid Generating	High Potential for Acid Generation	High Potential for Acid Generation
Static Geochemistry	NAPP	kg H ₂ SO ₄ /tonne	-1.4	-1.8	623.0	701.9	-2.6	-4.8	-1.7	-4.3	910.0	615.0
	NNP	kg CaCO ₃ /tonne	1.4	0.2	-636.4	-720.8	2.6	3.1	1.7	1.9	-929.0	-628.1
	MPA	kg H ₂ SO ₄ /tonne	6.4	6.6	630.4	709.9	5.2	4.3	6.1	5.8	914.9	618.1
	AP	kg CaCO ₃ /tonne	6.6	6.8	643.8	725.0	5.3	4.3	6.3	5.9	934.4	631.3
	MPA _(SC)	kg H ₂ SO ₄ /tonne	4.4	4.9	501.8	691.6	3.2	2.4	3.8	3.4	651.8	517.1
	AP _(SC)	kg CaCO ₃ /tonne	4.5	5.0	512.5	706.3	3.3	2.5	3.9	3.4	665.6	528.1
	ANC	kg H ₂ SO ₄ /tonne	7.8	6.8	7.2	4.1	7.8	7.3	7.8	7.7	5.3	3.1
	NP	kg CaCO ₃ /tonne	8.0	6.9	7.3	4.2	8.0	7.4	8.0	7.9	5.4	3.2
	ANC/MPA	-	1.2	1.0	0.0	0.0	1.5	1.7	1.3	1.3	0.0	0.0
	NPR (NP/AP)	-	1.2	1.0	0.0	0.0	1.5	1.7	1.3	1.3	0.0	0.0
	Pyrite _(STOT)	% Pyrite	0.4	0.4	38.5	43.4	0.3	0.3	0.4	0.4	55.9	37.8
	Pyrite _(SC)	% Pyrite	0.3	0.3	30.7	42.3	0.2	0.1	0.2	0.2	39.8	31.6
	Paste pH	pH units										
	NAG _{pH}	pH units	5.0	4.7	2.2	2.3	6.1	6.7	5.8	5.8	2.2	2.2
	NAG _{4.5}	kg H ₂ SO ₄ /tonne	<0.1	0.0	150.0	52.0	<0.1	0.0	<0.1	0.0	89.7	97.4
Sulfur Speciation	NAG _{7.0}	kg H ₂ SO ₄ /tonne	1.2	2.0	193.0	91.0	0.5	0.4	0.6	0.6	138.0	120.0
	NAG _{9.5}	kg H ₂ SO ₄ /tonne										
	S _{TOT}	wt% S	0.21	0.22	20.60	23.20	0.17	0.14	0.20	0.19	29.90	20.20
	S _{Cr}	wt% S	0.14	0.16	16.40	22.60	0.10	0.08	0.12	0.11	21.30	16.90
	S _p	wt% S										
	S _{KCl}	wt% S	0.05		0.14		0.04		0.05		0.09	0.13
	S _{HCl}	wt% S	0.06	0.06	0.22	0.61	0.04	0.06	0.05	0.08	0.10	0.52
	S _{TOS}	wt% S	0.2	0.2	20.4	22.6	0.1	0.1	0.2	0.1	29.8	19.7
	S _{NAS}	wt% S	0.0		0.1		0.0		0.0		0.0	0.4
	S _{POS}	wt% S										
	S _{BAS}	wt% S										
	Sulfide Sulfur	wt% S	0.1	0.2	16.4	22.6	0.1	0.1	0.1	0.1	21.3	16.9
	Pyrite (equiv.)	wt%	0.3	0.3	30.7	42.3	0.2	0.1	0.2	0.2	39.8	31.6
	Readily soluble non-acid storing Sulfate-S	wt% S	0.1		0.1		0.0		0.1		0.1	0.1
	Gypsum (equiv.)	wt%	0.3		0.8		0.2		0.3		0.5	0.7
Acidity	Readily soluble acid storing Sulfate-S	wt% S										0.0
	Melanterite (equiv.)	wt%										0.1
	Sparingly soluble acid storing Sulfate-S	wt% S	0.0		0.1		0.0		0.0		0.0	0.4
	Jarosite (equiv.)	wt%	0.1		0.6		-		-		0.1	3.0
	pH _{KCl}	pH units	7.9		6.8		8.5		8.4		7.2	6.1
	pH _{ox}	pH units										
	TAA	mol H ⁺ /tonne	<2		<2		<2		<2		<2	4.0
Carbon	TPA	mol H ⁺ /tonne										
	TSA	mol H ⁺ /tonne										
	Potential Acidity	mol H ⁺ /tonne	89.2	99.8	10228.7	14095.6	64.9	49.9	77.3	68.6	13284.8	10540.5
	Actual Acidity	mol H ⁺ /tonne	0.0		0.0		0.0		0.0		0.0	4.0
	Retained Acidity	mol H ⁺ /tonne	4.7		37.4		0.0		0.0		4.7	182.4
	Net Acidity	mol H ⁺ /tonne										
	C _{TOT}	wt% C	<0.02		<0.02		<0.02		<0.02		<0.02	0.02
Calcium Carbonate	C _{TO}	wt% C										
	C _{IN}	wt% C										
	ANC _f (SPOCAS)	% CaCO ₃										
	CaCO ₃ based on ANC	% CaCO ₃	0.8	0.7	0.7	0.4	0.8	0.7	0.8	0.8	0.5	0.3
Assessment	CaCO ₃ based on C _{TOT}	% CaCO ₃	0.0		0.0		0.0		0.0		0.0	0.2
	CaCO ₃ based on C _{IN}	% CaCO ₃										
Assessment	Additional Potential Risks		Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	High SD Potential	High SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	Unlikely to Generate NMD / Low SD Potential	High SD Potential	High SD Potential
	Details ^a		3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	3, 9, 19, 24, 43, 99, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]	1, 7, 15, 24, 41, 99, 151, 205, [IF NAG4.5 / NAG7.0 <<1 then see 140,141,142]
	Recommendations ^b		30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	30, 30.1, 30.3, 30.4, 62	1, 30, 30.1, 30.3, 30.4	1, 30, 30.1, 30.3, 30.4

^{a,b} See Section-H for detailed descriptions of Classification and Assessment notes.

Statistic	Paste pH	Total Sulfur	Chromium Reducible Sulfur	Max. Potential Acidity	Acid Neutralising Capacity		Net Acid Production Potential	ANC / MPA Ratio	Net Acid Generation				Neutral Meatliferous Drainage / Metal Leachate Potential		Sulfide sulfur	Spargingly soluble acid forming sulfate sulfur	Readily soluble acid forming sulfate sulfur	Readily soluble non-acid forming sulfate sulfur
		S _{Total}	S _{Cr}	MPA	ANC		NAPP		pH (OX)	NAG (pH 4.5)	NAG (pH 7.0)	NAG (pH 9.5)	NAG7.0 - NAG4.5 ¹	NAG9.5 - NAG7.0 ²				
	pH units	%	%	kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ equiv./tonne	% CaCO ₃	kg H ₂ SO ₄ /tonne	-	pH units	kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /tonne	kg H ₂ SO ₄ /tonne	%	%	%	%
Ore (91 Samples)																		
n=	-	91	73	91	37	37	37	79	40	40	40	-	40	-	73	19	16	16
Minimum		0.18	<0.005	5.5	<0.5	<0.05	-9.8	0.0	1.9	<0.1	0.0		0.0		<0.005	0.0	0.0	0.0
Average		7.76	1.81	237.6	34.3	3.5	456.5	0.7	3.2	135.5	180.5		45.0		1.8	0.1	0.1	0.2
Median		2.71	1.74	82.9	14.0	1.4	137.3	0.4	2.5	66.2	83.3		14.5		1.7	0.1	0.0	0.1
Maximum		46.00	10.30	1407.6	140.0	14.3	1394.6	7.4	8.6	900.0	1002.0		247.0		10.3	0.5	0.4	1.0
Waste Rock (99 Samples)																		
n=	-	99	55	99	99	99	99	75	99	99	99	-	99	-	55	60	39	39
Minimum		<0.01	<0.005	0.0	<0.1	<0.01	-990.0	0.0	1.6	<0.1	<0.1		0.0		<0.005	0.0	0.0	0.0
Average		0.72	0.38	22.0	57.1	5.8	-35.1	71.1	5.5	9.6	12.9		3.4		0.4	0.1	0.0	0.0
Median		0.35	0.15	10.7	8.6	0.9	0.9	1.2	4.1	0.5	3.2		1.8		0.2	0.0	0.0	0.0
Maximum		5.68	1.89	173.8	990.0	101.0	173.0	1803.9	11.4	133.0	170.0		40.0		1.9	0.8	0.2	0.1
Tailings (10 Samples)																		
n=	-	10	10	10	10	10	10	10	10	10	10	-	10	-	10	6	6	6
Minimum		0.14	0.08	4.3	3.1	0.3	-4.8	0.0	2.2	0.0	0.4		0.4		0.1	0.0	0.0	0.0
Average		9.50	7.79	290.8	6.5	0.7	283.3	0.8	4.3	38.9	54.7		15.8		7.8	0.1	0.0	0.1
Median		0.21	0.15	6.5	7.3	0.7	-1.6	1.1	4.9	0.1	1.6		1.6		0.2	0.0	0.0	0.1
Maximum		29.90	22.60	914.9	7.8	0.8	910.0	1.7	6.7	150.0	193.0		48.3		22.6	0.4	0.0	0.1
TOTAL (200 Samples)																		
n=	-	200	138	200	146	146	146	164	149	149	149	-	149	-	138	85	61	61
Minimum		0.01	<0.005	0.0	<0.1	<0.01	-990.0	0.0	1.6	0.0	0.0		0.0		<0.005	0.0	0.0	0.0
Average		4.36	1.67	133.5	47.8	0.0	111.3	32.9	4.8	45.4	60.7		15.4		1.7	0.1	0.0	0.1
Median		1.21	0.18	37.0	4.2	0.4	0.0	0.4	2.7	0.1	0.6		0.6		0.2	0.0	0.0	0.0
Maximum		46.00	22.60	1407.6	990.0	101.0	1394.6	1803.9	11.4	900.0	1002.0		247.0		22.6	0.8	0.4	1.0

Table F-1: Summary statistics for selected static geochemical parameters. Statistics are shown for all samples and also for sample subsets. Refer to the Glossary of Terms for a description of each static geochemical parameter.

Generated using: AMDact v.5.2.2

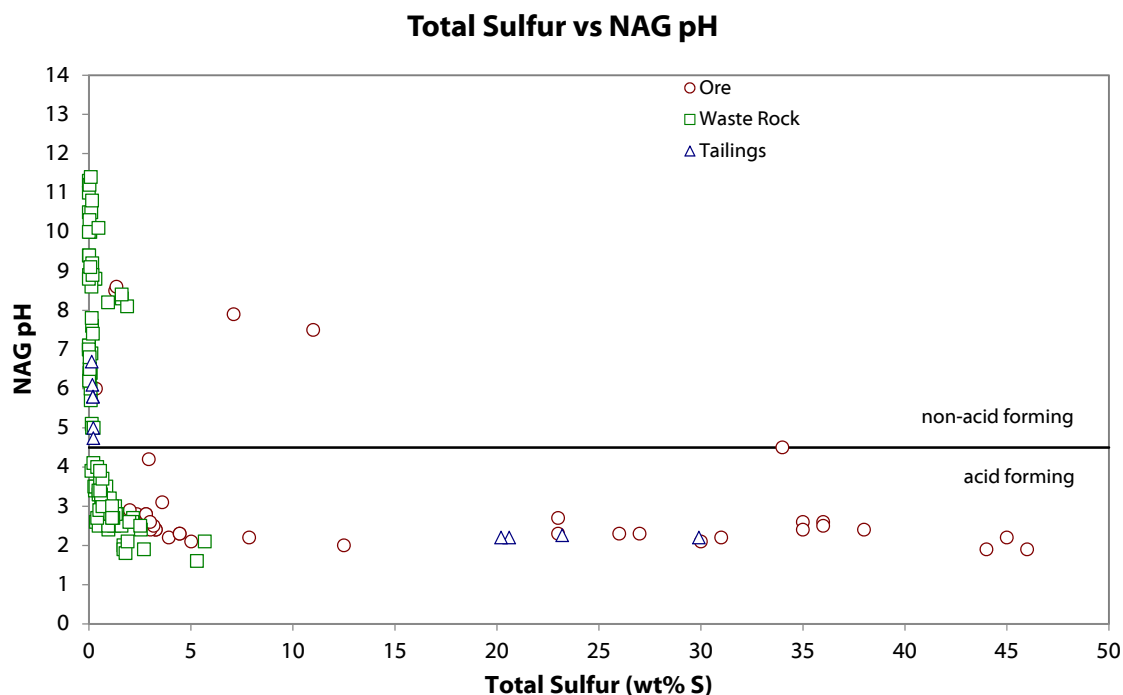


Figure G1: Total sulfur versus Net Acid Generation (NAG) pH after oxidation for all samples. The line shown at NAG pH of 4.5 identifies the accepted boundary between acid forming materials (NAG pH ≤ 4.5) and non-acid forming (NAG pH > 4.5) materials.

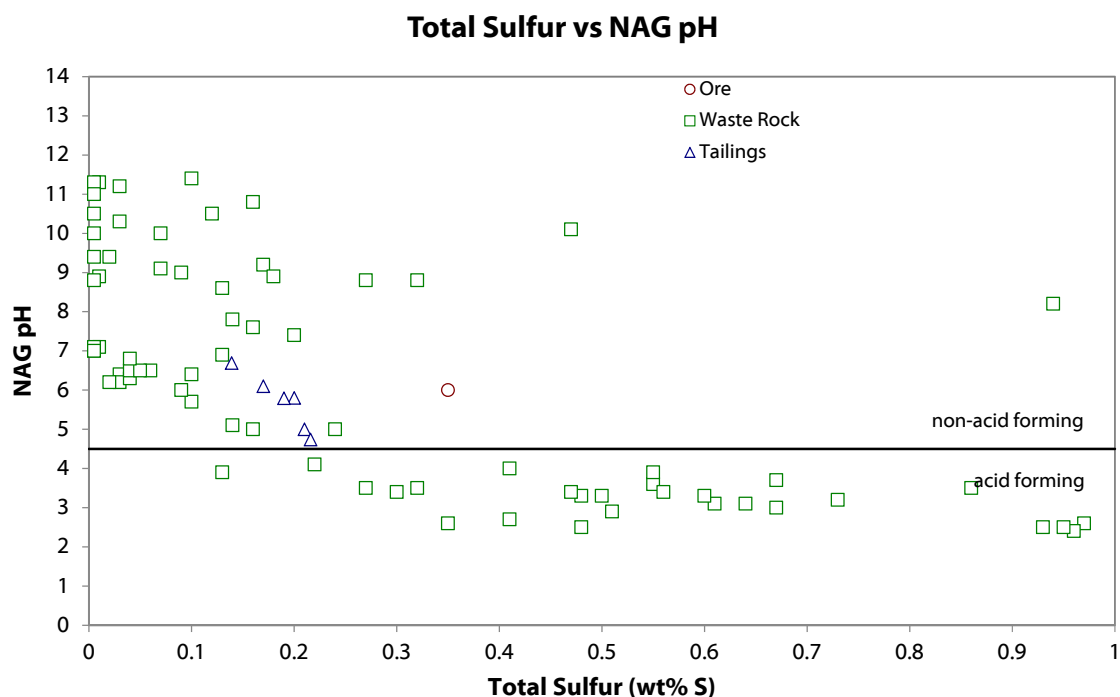


Figure G2: Total sulfur versus Net Acid Generation (NAG) pH after oxidation for samples with Total sulfur values less than 1 wt%. The line shown at NAG pH of 4.5 identifies the accepted boundary between acid forming materials (NAG pH ≤ 4.5) and non-acid forming (NAG pH > 4.5) materials.

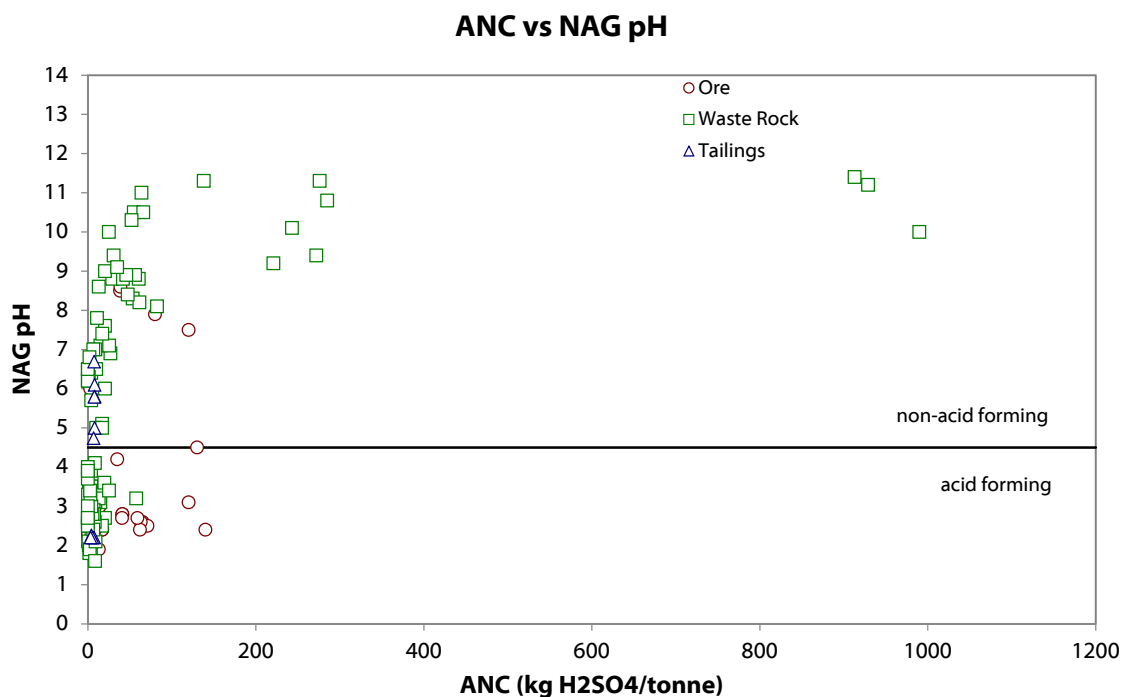


Figure G3: Acid Neutralising Capacity (ANC) versus Net Acid Generation (NAG) pH after oxidation. The line shown at NAG pH of 4.5 identifies the accepted boundary between acid forming materials (NAG pH ≤ 4.5) and non-acid forming (NAG pH > 4.5) materials.

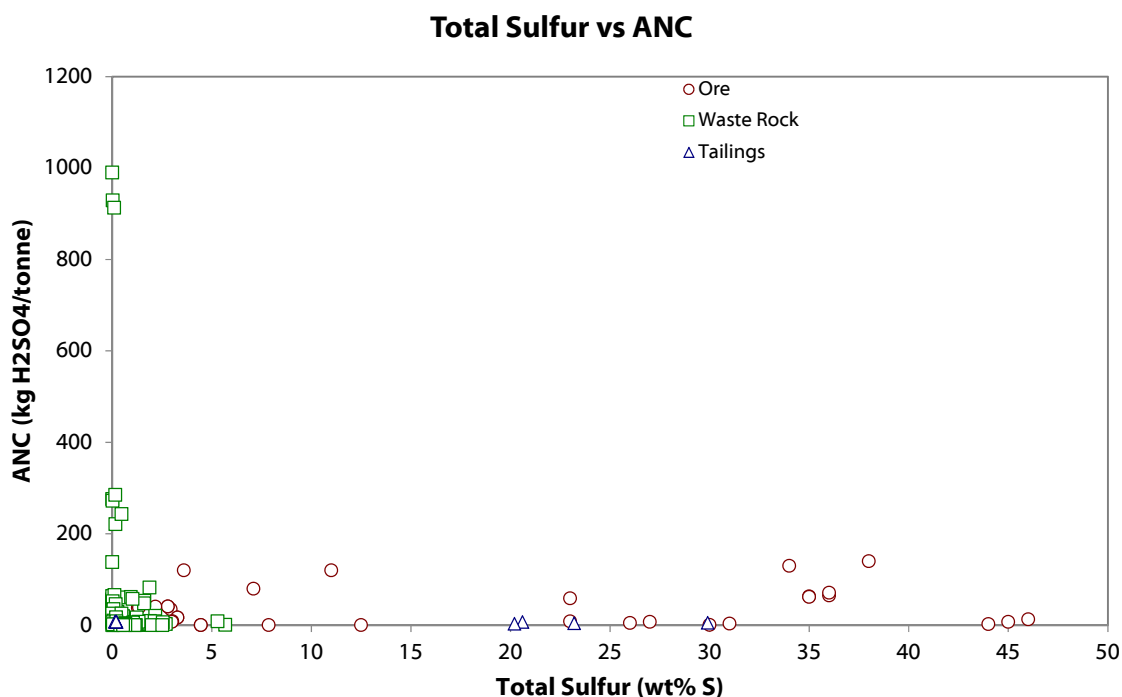


Figure G4: Total sulfur versus Acid Neutralising Capacity (ANC).

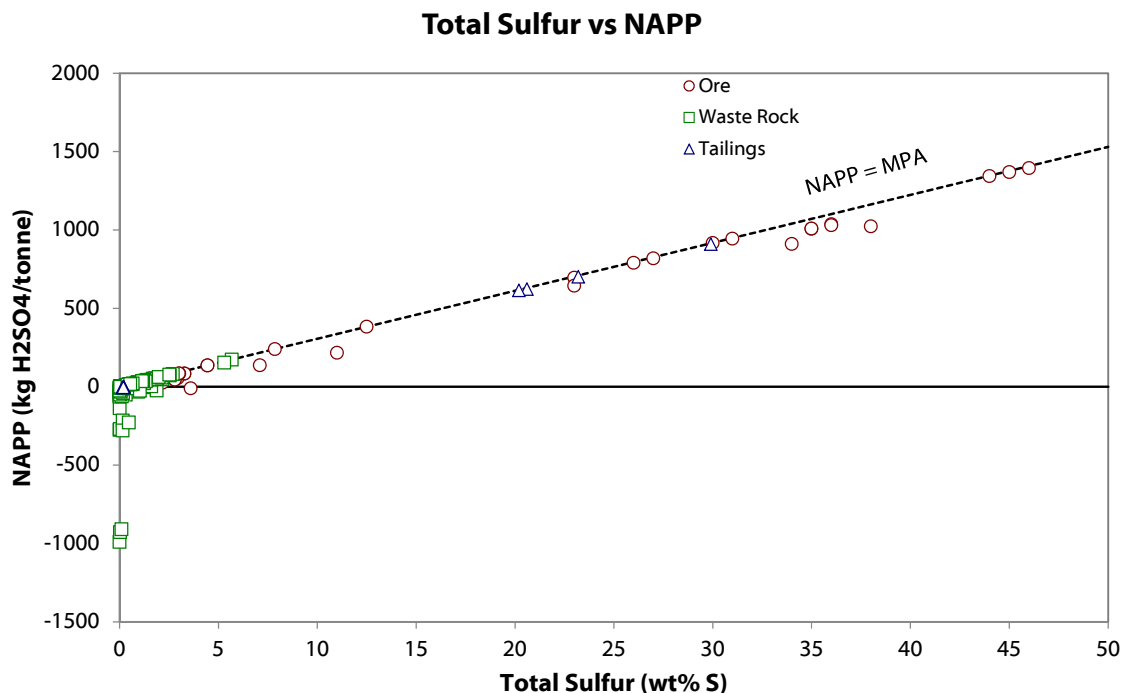


Figure G5: Total sulfur versus Net Acid Producing Potential (NAPP). The line shown at $NAPP = 0$ separates samples with an excess of Maximum Potential Acidity (MPA) from those with an excess of acid neutralising capacity (ANC). The dashed line identifies where the $NAPP = MPA$. Samples falling close to this line contain essentially no acid neutralising capacity.

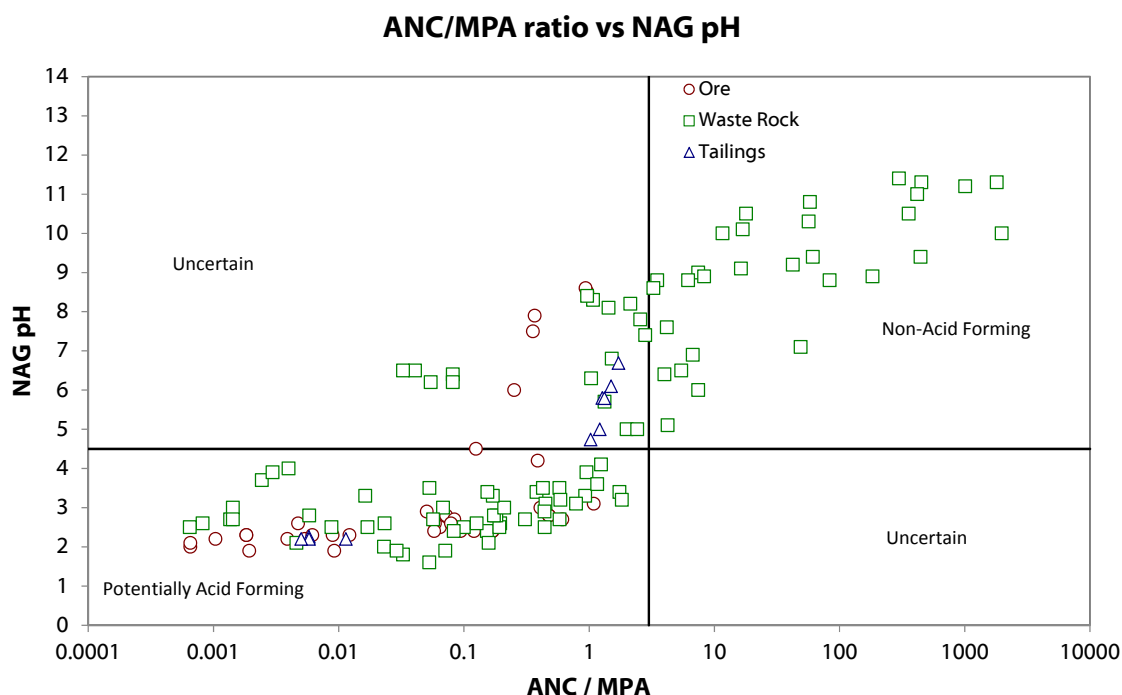


Figure G6: The ratio of Acid Neutralising Capacity to Maximum Potential Acidity (ANC/MPA) versus Net Acid Generation (NAG) pH after oxidation. The vertical line shows where $ANC/MPA = 3$. ANC/MPA ratios above this will be NAF. The line shown at a NAG pH of 4.5 is the accepted boundary between acid forming materials (NAG pH ≤ 4.5) and non-acid forming (NAG pH > 4.5) materials.

ANC vs ANC Calculated from Total Carbon

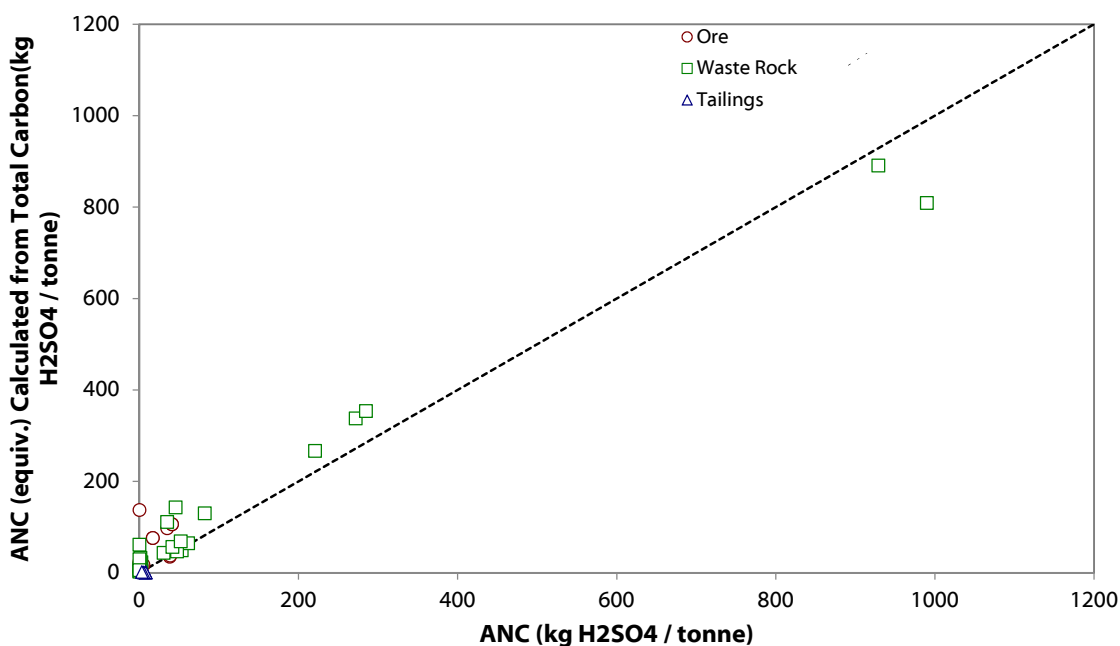


Figure G7: Laboratory measured Acid Neutralising Capacity (ANC) versus calculated ANC based on the laboratory measured Total Carbon. Samples falling above the dotted line suggest the presence of non-carbonate carbon or non-neutralising carbonates in the samples (eg. graphite). Samples falling below the dotted line suggest the presence of non-carbonate neutralising minerals.

NAPP vs NAG pH

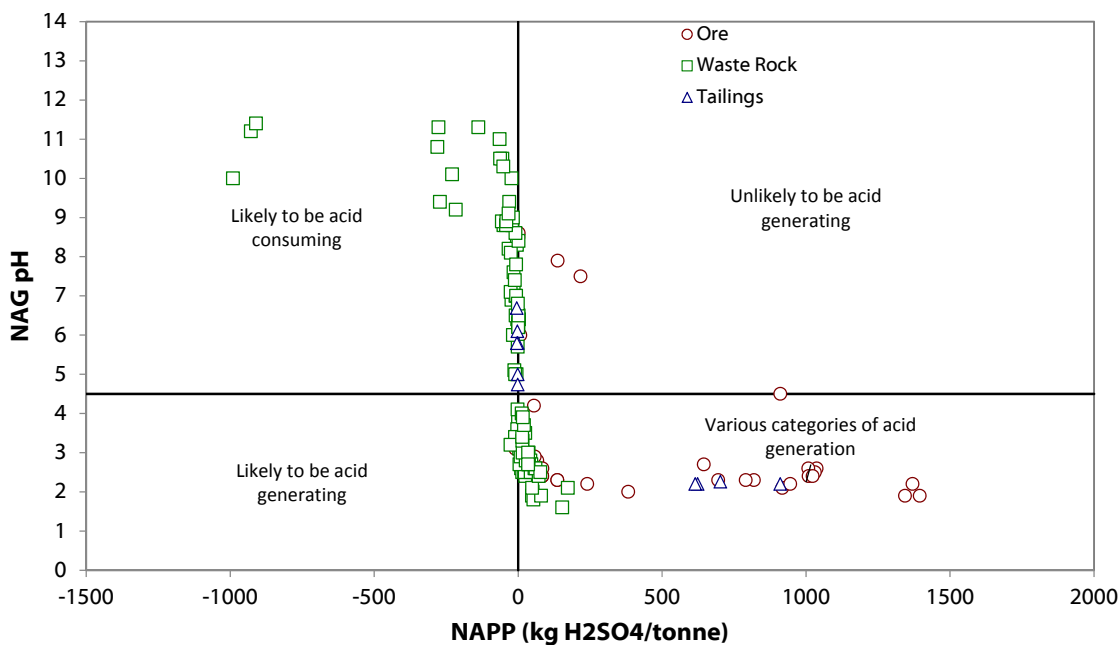


Figure G8: Net Acid Producing Potential (NAPP) versus Net Acid Generation (NAG) pH after oxidation. The line shown at NAG pH of 4.5 identifies the accepted boundary between acid forming materials (NAG pH ≤ 4.5) and non-acid forming (NAG pH > 4.5) materials. Risk classification fields are shown.

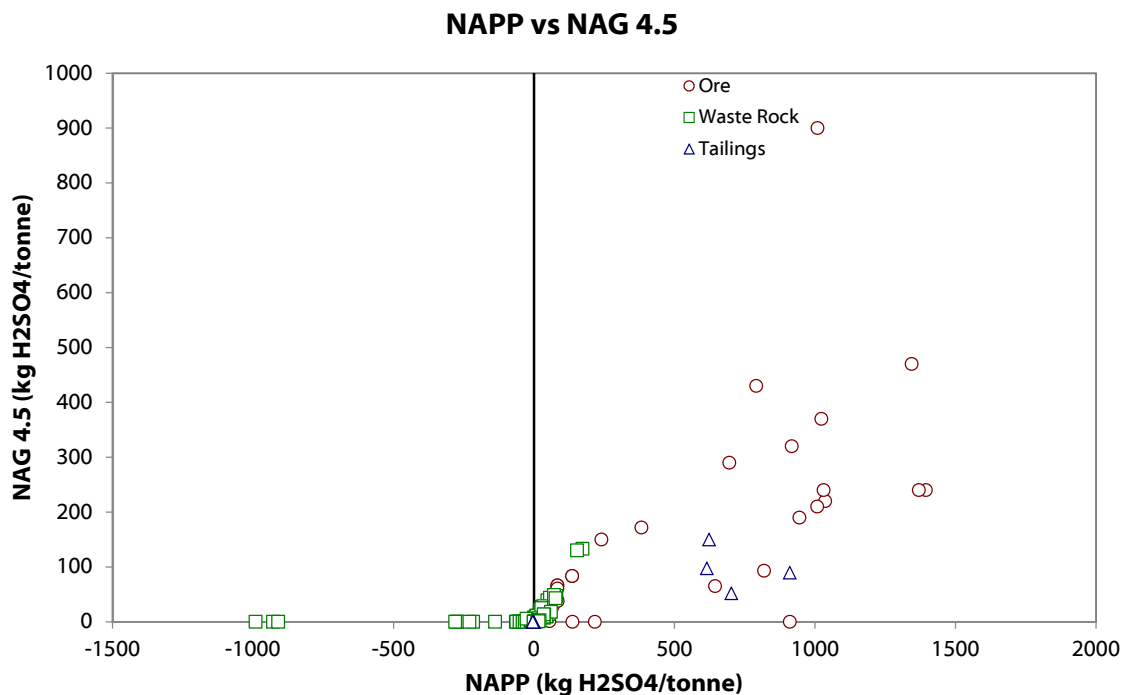


Figure G9: Net Acid Producing Potential (NAPP) versus Net Acid Generation (NAG) to pH 4.5. The line shown at NAPP = 0 separates samples with an excess of Maximum Potential Acidity (MPA) from those with an excess of acid neutralising capacity (ANC). NAG4.5 values >0 indicate an acid generating capacity.

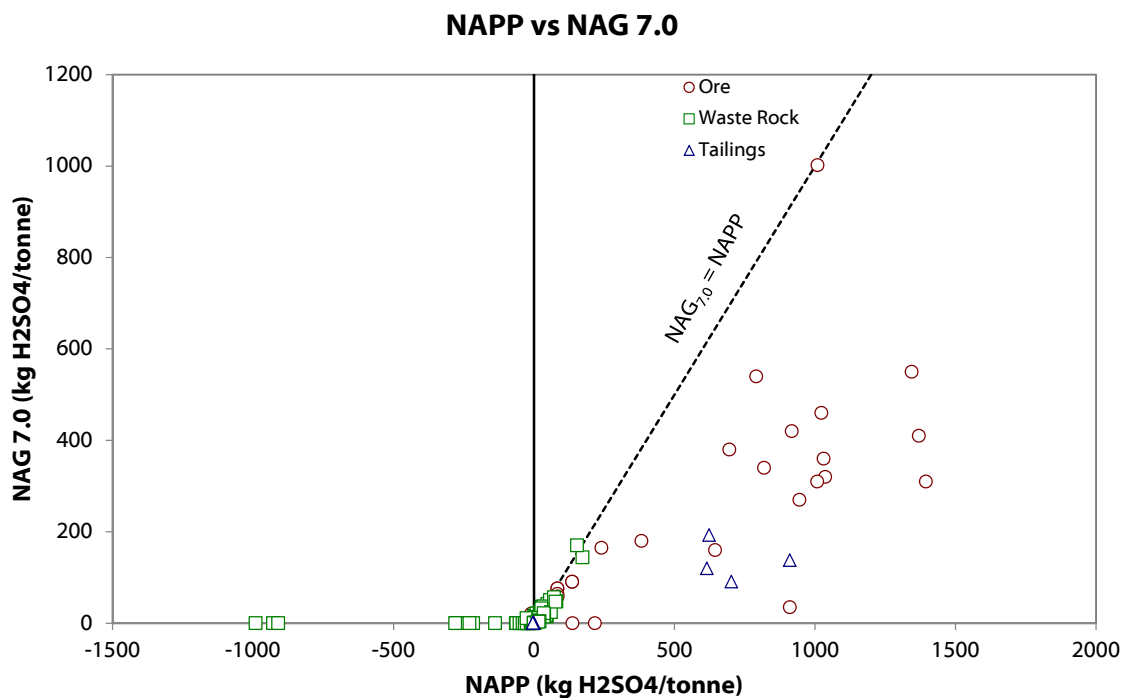


Figure G10: Net Acid Producing Potential (NAPP) versus Net Acid Generation (NAG) to pH 7.0. The line shown at NAPP = 0 separates samples with an excess of MPA from those with an excess of ANC. NAG7.0 values >0 generally indicate an acid generating capacity. Samples below the dashed line could indicate non-acid forming sulfur is present in samples.

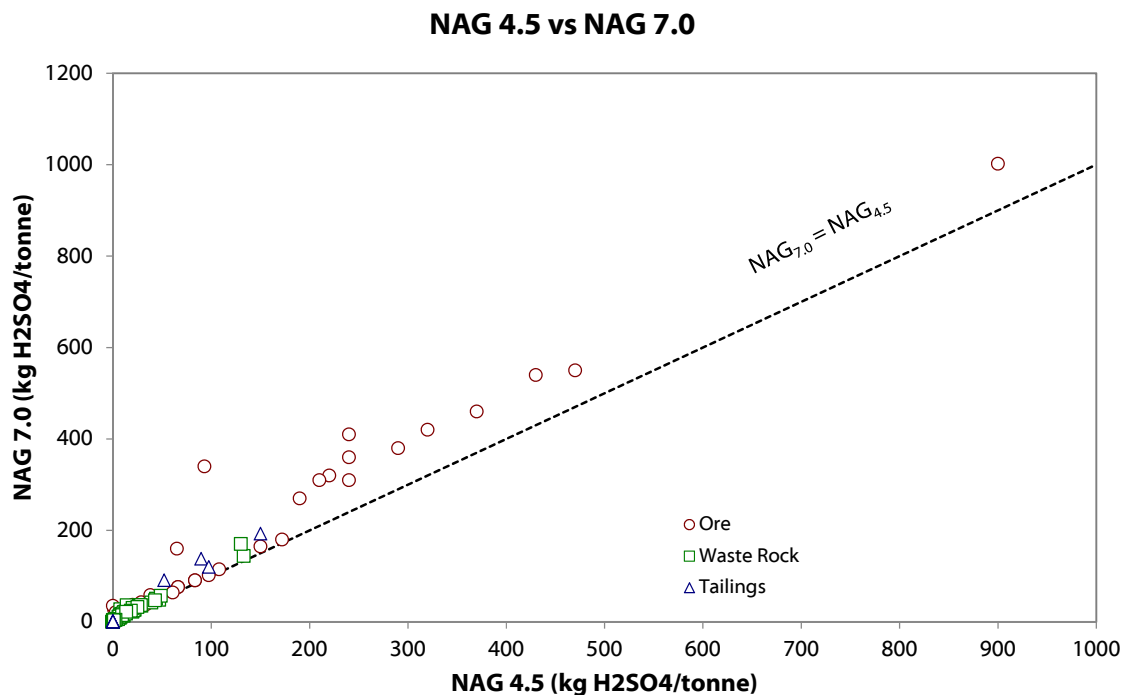


Figure G11: NAG 4.5 versus NAG 7.0. Samples with NAG 4.5 and NAG 7.0 >0 are likely to produce acid and metalliferous drainage. Samples with NAG 4.5 =0 but NAG 7.0 >0 are likely to produce neutral metalliferous drainage. Samples should not fall below the line.

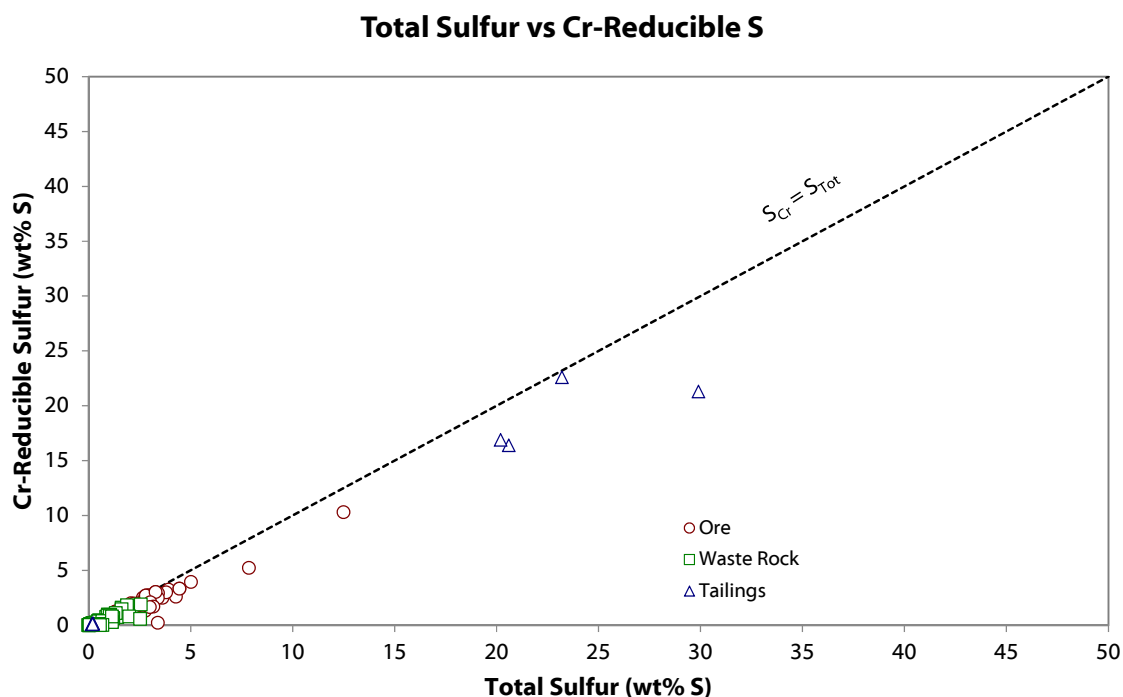


Figure G12: Total Sulfur versus chromium reducible sulfur (S-Cr). S-Cr is a laboratory measure of the sulfur within a sample that is present in sulfide minerals. The dashed line on the plot represents the case where the sulfide sulfur (S-Cr) is equal to the total sulfur in the sample. Samples plotting below the line contain at least some sulfur not in the form of sulfide minerals.

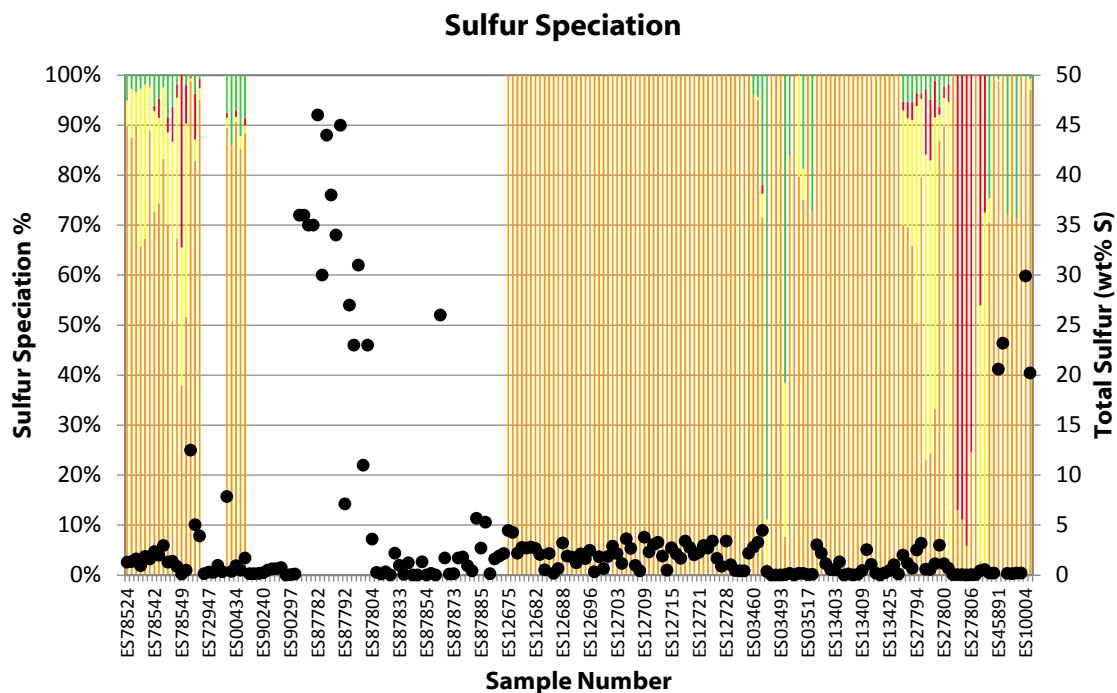


Figure H1: Chart showing the relative proportion of the various forms of sulfur within each sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

Legend for ALL Sulfur Speciation charts

- Readily soluble non-acid storing sulfate sulfur
- Readily soluble acid storing sulfate sulfur
- Sparingly soluble acid storing sulfate sulfur
- Sulfide sulfur
- Total sulfur (wt %)

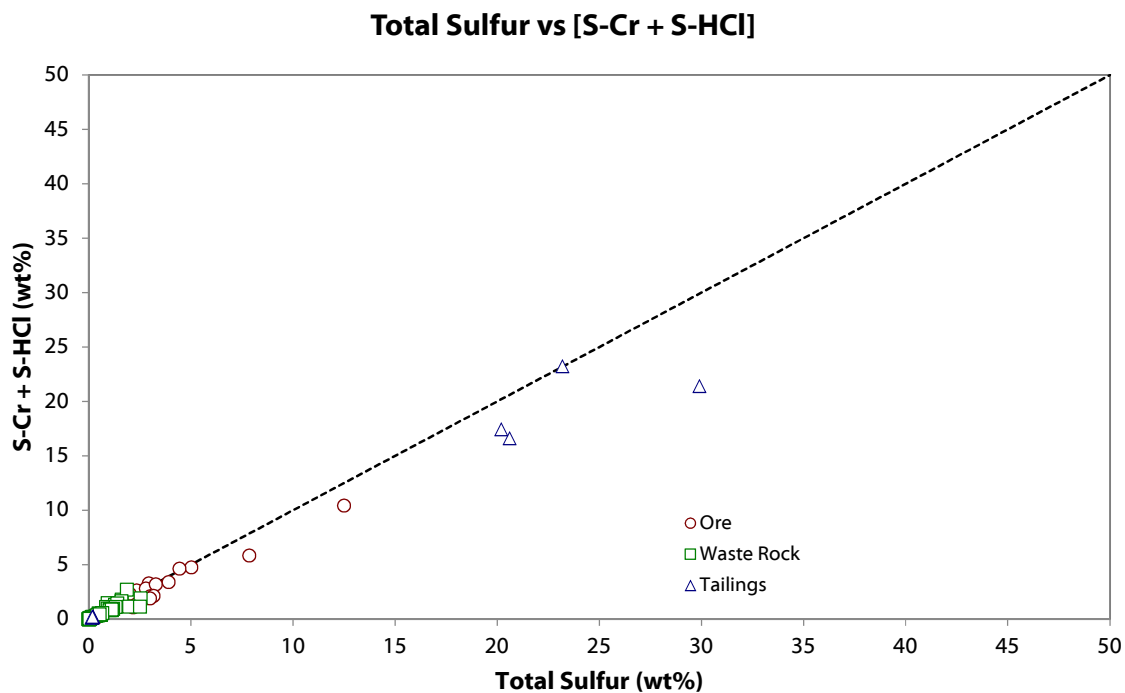
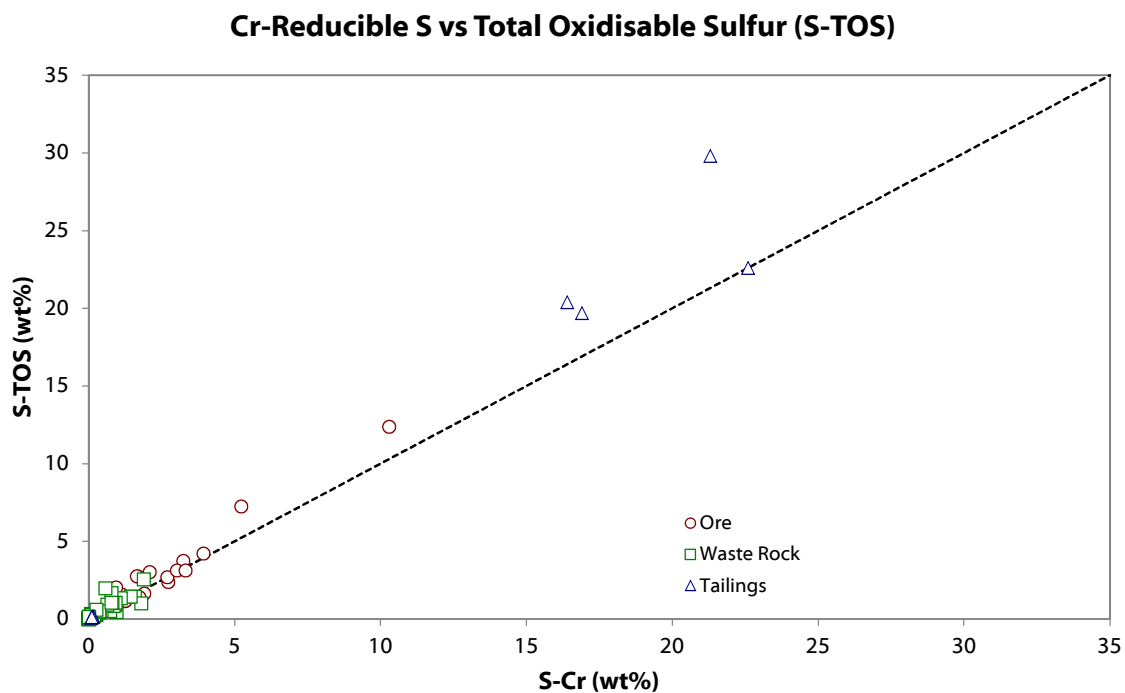


Figure H2: Total sulfur versus the sum of chromium reducible sulfur (S-Cr) and hydrochloric acid extractable sulfur (S-HCl). The sum of S-Cr and S-HCl can be used as an approximation of total sulfur. Samples should ideally not fall above the dashed line.



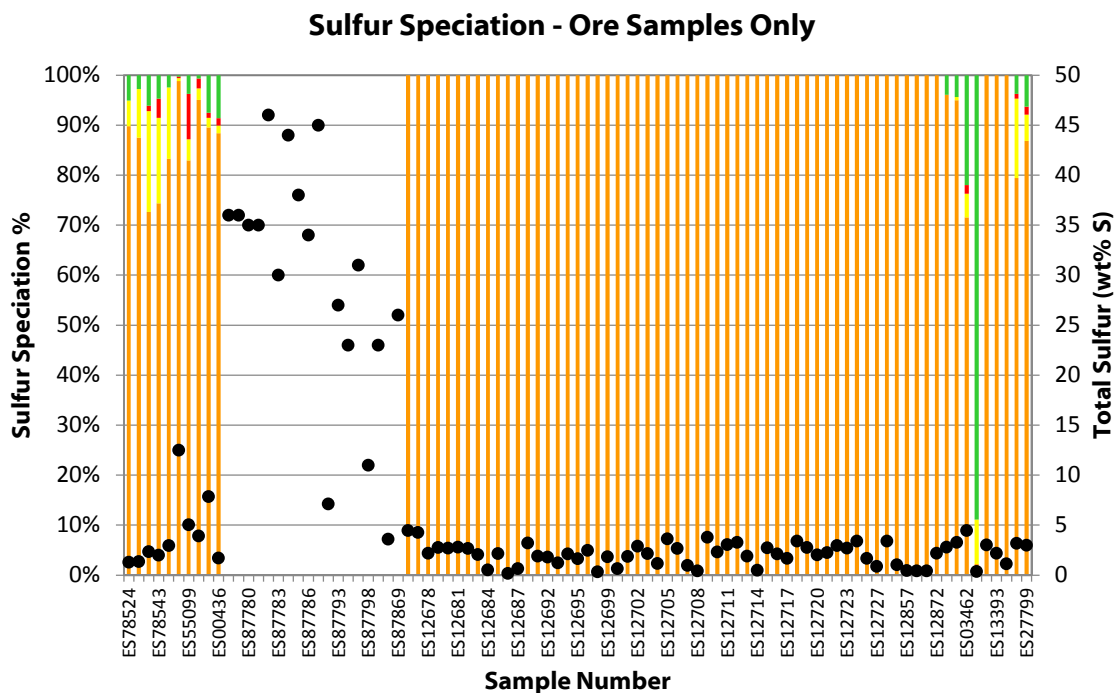


Figure H4: Chart showing the relative proportion of the various forms of sulfur within each Ore sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

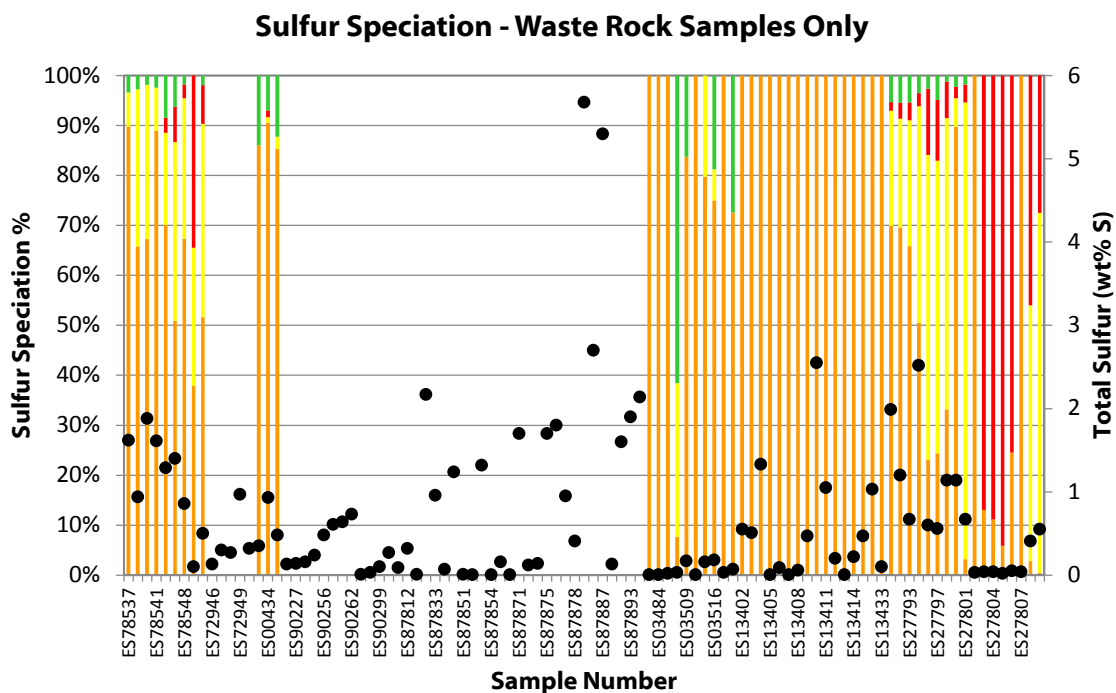


Figure H5: Chart showing the relative proportion of the various forms of sulfur within each Waste Rock sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

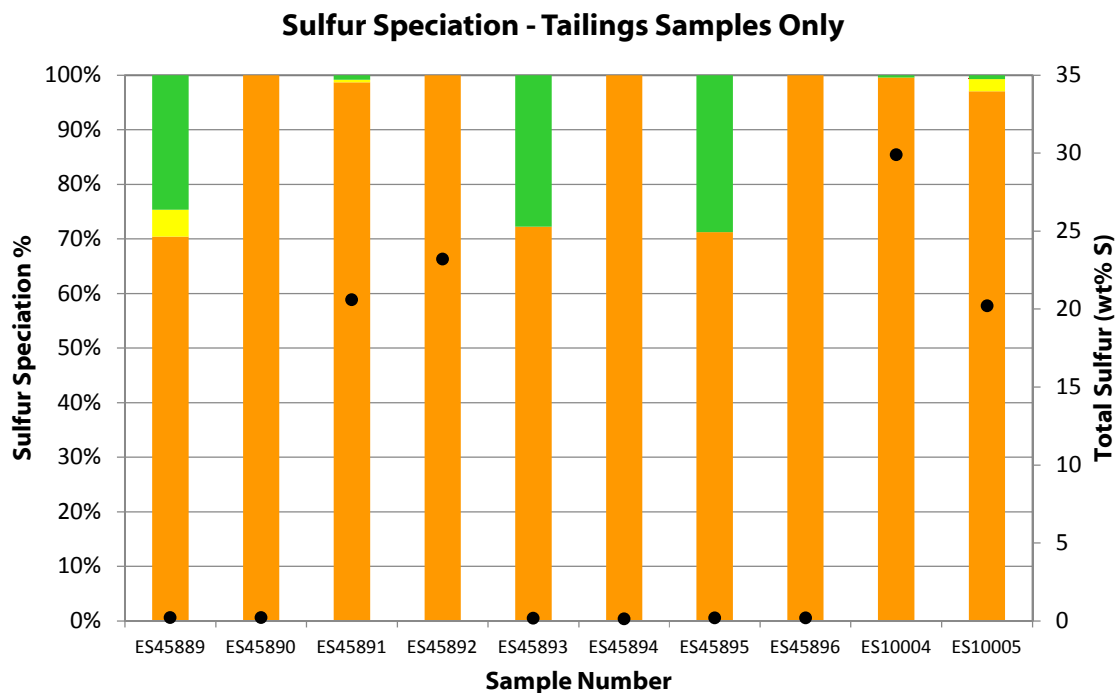


Figure H6: Chart showing the relative proportion of the various forms of sulfur within each Tailings sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

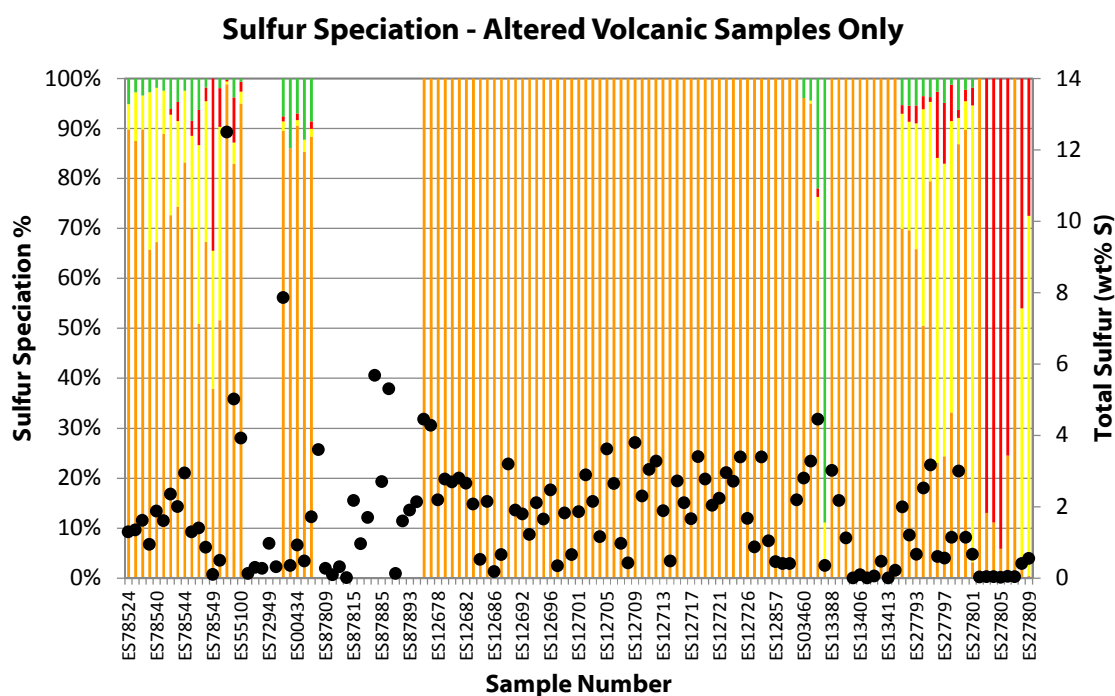


Figure H7: Chart showing the relative proportion of the various forms of sulfur within each Altered Volcanic sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

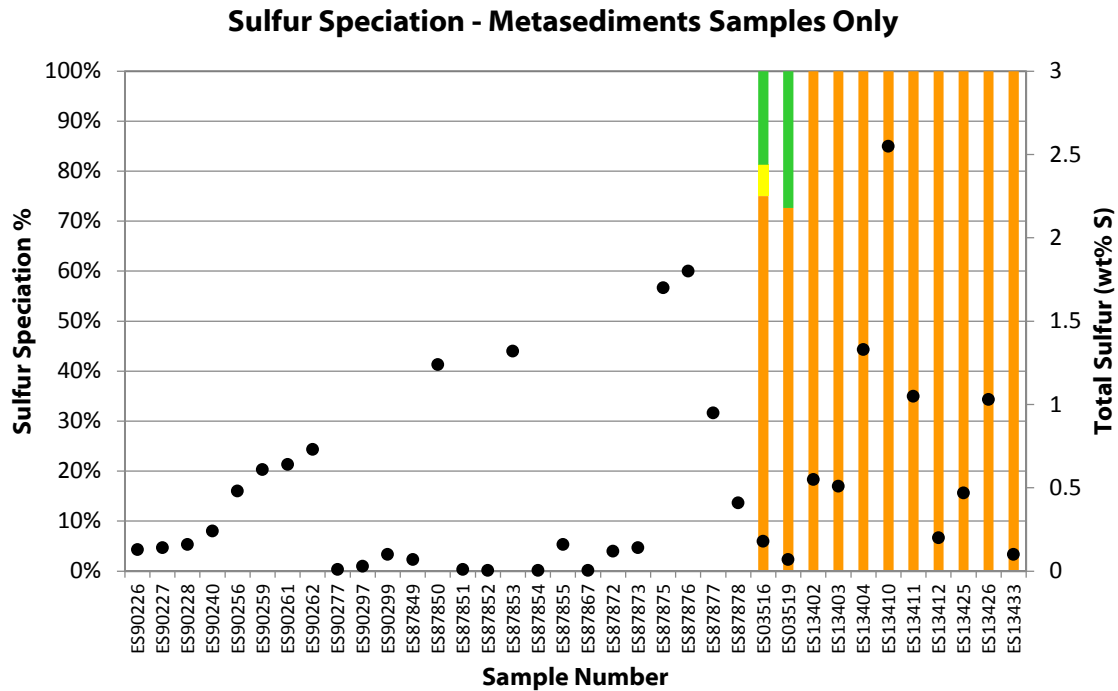


Figure H8: Chart showing the relative proportion of the various forms of sulfur within each Metasediments sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

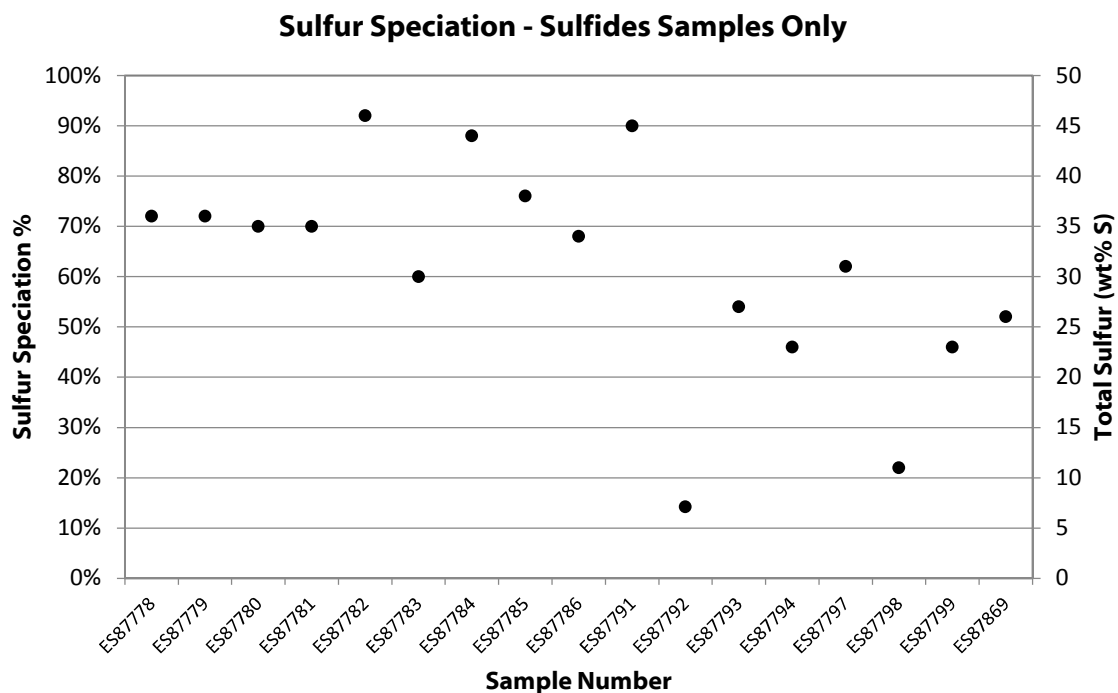


Figure H9: Chart showing the relative proportion of the various forms of sulfur within each Sulfides sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

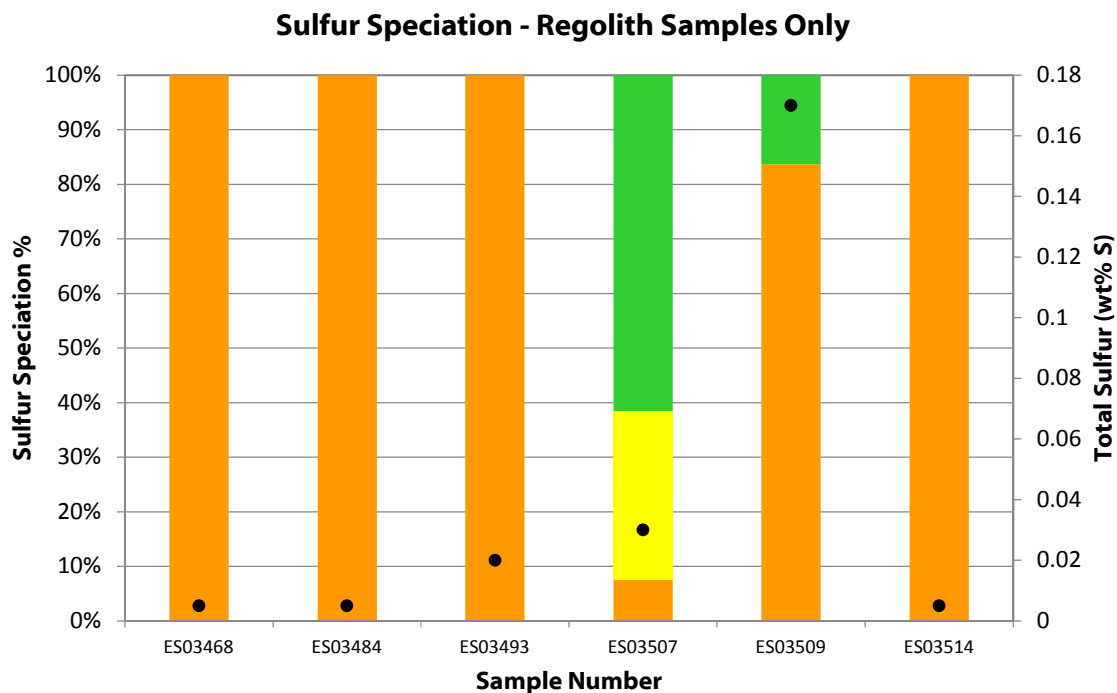


Figure H10: Chart showing the relative proportion of the various forms of sulfur within each Regolith sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

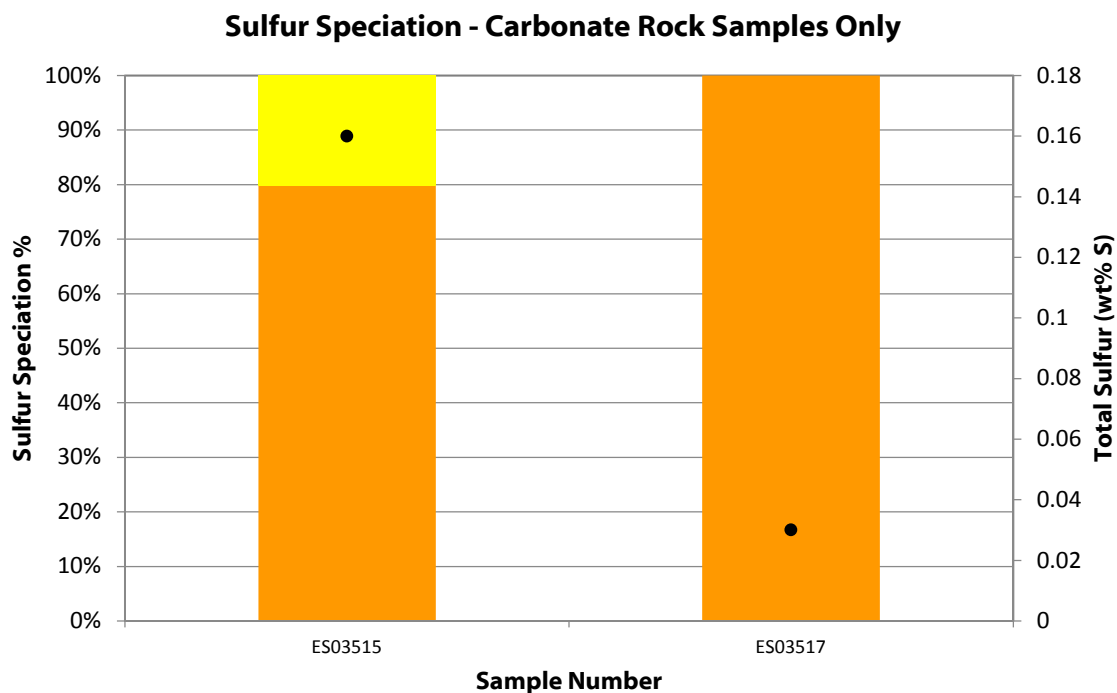


Figure H11: Chart showing the relative proportion of the various forms of sulfur within each Carbonate Rock sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

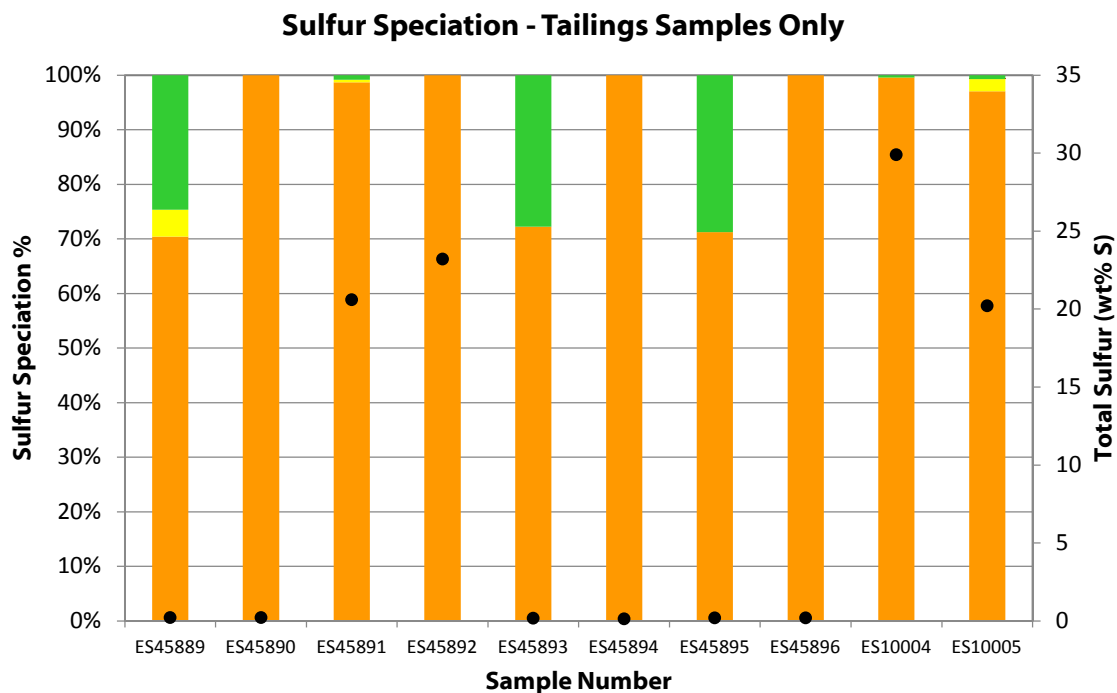


Figure H12: Chart showing the relative proportion of the various forms of sulfur within each Tailings sample, normalised to the sample's total sulfur content (left axis). The corresponding total sulfur for each sample is shown as a black circle (right axis). The legend is shown below Figure H1.

ASSESSMENT COMMENTS
CODE EXPLANATION
Drainage Characteristics

- | | |
|----|--|
| 1 | Material expected to produce Acid & Metalliferous Drainage |
| 2 | Material may potentially produce Acid & Metalliferous Drainage |
| 3 | Material unlikely to produce Acid & Metalliferous Drainage |
| 4 | Material NOT expected produce Acid & Metalliferous Drainage |
| | |
| 5 | Material expected to produce metalliferous, near neutral pH drainage |
| 6 | Material expected to produce alkaline, non-metalliferous drainage |
| | |
| 7 | Material expected to produce acid drainage |
| 8 | Material expected to produce drainage with low pH |
| 9 | Material expected to produce drainage with low to near neutral pH (slightly acidic) |
| 10 | Material expected to produce drainage with near neutral pH |
| 11 | Material expected to produce drainage with alkaline pH (may need confirmation) |
| 12 | Material unlikely to produce acid drainage |
| 13 | Material NOT expected to produce acid drainage |
| | |
| 14 | Material expected to produce drainage containing dissolved metals |
| 15 | Material expected to produce drainage with high levels of dissolved metals |
| 16 | Material expected to produce drainage with moderate levels of dissolved metals |
| 17 | Material expected to produce drainage with low levels of dissolved metals |
| 18 | Material may produce drainage with low levels of dissolved metals |
| 19 | Material expected to produce drainage with no or low levels of dissolved metals |
| 20 | Metalliferous drainage cannot be excluded |
| 21 | Material NOT expected to produce drainage with metal acidity |
| | |
| 22 | For high S and high ANC / NP, drainage might contain high level of Mn and other metals (depending on mineralisation) |
| | |
| 23 | Leachate characteristics need to be confirmed |
| 24 | Leachate composition unknown |

Management Options

- | | |
|----|---|
| 41 | Material likely to require special AMD management & handling to limit oxidation |
| 42 | Material may require special AMD management & handling to limit oxidation |
| 43 | Material unlikely to require special AMD management & handling |

NAPP / NNP Characteristics

- | | |
|----|--|
| 60 | NAPP / NNP results indicate net acid producing potential |
| 61 | NAPP / NNP results indicate net acid consumption |
| | |
| 62 | NAPP / NNP possibly overestimated |
| 63 | NAPP / NNP possibly be overestimated (sulphides other than pyrite present, or non sulphide sulphur e.g. gypsum or other sulphates) |
| 64 | MPA / AP could be overestimated (pyrite is not the main sulphide) |
| | |
| 65 | NAPP / NNP likely to be underestimated (ANC / NP overestimated or not readily available for neutralisation) |

ASSESSMENT COMMENTS
CODE EXPLANATION

- 66 NAPP / NNP potentially underestimated (ANC / NP potentially overestimated, or not readily available for neutralisation)
- 67 NAPP / NNP suggests excess acid neutralising capacity; NAG suggest net acid generating capacity
- 68 NAPP / NNP suggests net acid generation but NAGpH suggests no acid production
- 69 NAPP / NNP suggests net acid generation but NAGpH suggests potentially no acid production
- 70 NAPP / NNP indicates excess acid neutralising capacity; NAGpH indicates high acid generation capacity
- 71 NAPP / NNP indicates excess acid neutralising capacity; NAGpH indicates net acid generating capacity
- 72 NAPP / NNP indicates likelihood of excess acid neutralisation capacity; NAGpH indicates net acid generation capacity
- 73 Inconsistency between NAPP / NNP and NAG results
- 74 Inconsistency between NAPP / NNP and NAGpH results
- 75 NAPP / NNP to be confirmed with further test work

NAG Characteristics

- 90 Net acid generation capacity needs to be quantified
- 91 NAG results lower than expected based on NAPP / NNP value
- 92 NAG underestimated (incomplete oxidation of sample during test)
- 93 NAG value might be overestimated (e.g. excess organic C)
- 94 NAGpH needed
- 95 NAGpH results too high to be reliable / representative
- 96 NAGpH higher than expected based on NAPP / NNP value
- 97 NAGpH higher than expected (possible incomplete oxidation of sample during test, for S > 1 wt %)
- 98 NAGpH lower than expected based on NAPP / NNP results
- 99 NAGpH likely to reflect potential drainage pH
- 100 NAGpH unlikely to reflect potential drainage pH
- 101 NAG4.5 value higher than expected based on NAPP / NNP results
- 102 NAG7 value higher than expected based on NAPP / NNP results
- 103 NAG7 value lower than expected based on NAPP / NNP results
- 104 Net acid generation potential at pH 7 (NAG7.0), unknown
- 105 Net acid generating capacity at pH 7 (NAG7.0) potentially underestimated
- 106 NAGpH and NAG4.5 might reflect contribution of organic acids (e.g. excess organic C)
- 107 NAGpH and NAG7 might reflect contribution of organic acids (e.g. excess organic C)
- 108 NAGpH and NAG values might reflect contribution of organic acids (e.g. excess organic C)
- 109 NAG results indicate contribution of metal acidity to total acid load
- 110 NAGpH and NAG7 indicate possible effects of metal acidity
- 111 If Sulphur > 1 wt%, NAGpH likely to be overestimated (incomplete oxidation of sulphides)
- 112 If Sulphur > 1 wt%, NAG likely to be underestimated (incomplete oxidation of sulphides)

ASSESSMENT COMMENTS
CODE EXPLANATION

- 140** Possible contribution of metals other than Fe to total acidity
- 141** Non-pyritic sulphide minerals might be important
- 142** Specific metal acidity issues likely

ANC / NP Characteristics

- 150** ANC / NP required to evaluate acid consuming potential
- 151** ANC / NP insufficient to neutralise acid generated
- 152** ANC / NP likely to be insufficient to neutralise acid generated
- 153** ANC / NP may be available for acid neutralisation
- 154** Excess ANC / NP available
- 155** Material could potentially be used for acid neutralisation

Additional Test work Requirements

- 170** Further test work required
- 171** Further test work required to clarify NAG_{pH}
- 172** Further tests needed to clarify discrepancy between NAPP / NNP and NAG_{pH} results
- 173** High S content requires further tests to confirm NAPP / NNP prediction of net acid consumption

Other

- 200** Insufficient data to classify sample
- 201** Insufficient data to further classify sample
- 202** Classification is tentative and needs to be confirmed
- 203** Classification needs further confirmation
- 204** Data can have multiple interpretations
- 205** Rate of acid generation (Oxidation rate) unknown
- 206** Rate of acid generation (Oxidation rate) and neutralisation rate unknown
- 207** Amount of acid likely to be generated, unknown

ASSESSMENT RECOMMENDATIONS

CODE	EXPLANATION
1	AMD potential should be considered in mine planning
2	AMD potential might need to be considered in mine planning
3	AMD potential unlikely to be a concern
10	Select a sample suite representative of waste rock / tailings (on same samples as NAPP / NNP test work):
10.1	Determine ANC / NP
10.2	Calculate NAPP / NNP
10.3	Conduct NAGpH test (same samples as NAPP / NNP)
10.4	Conduct NAG4.5 test (same samples as NAPP / NNP)
10.5	Conduct NAG7.0 test (same samples as NAPP / NNP)
10.6	Determine Total Sulfur / MPA / AP
11	Repeat ANC / NP test using modified protocol to ensure full oxidation of Fe ²⁺
12	On same samples as NAG tests:
12.1	Determine ANC / NP
12.2	Calculate NAPP / NNP
12.3	Determine NAGpH
12.4	Determine Total Sulfur / MPA / AP
13	On same samples as NAGpH test:
13.1	Determine ANC / NP
13.2	Calculate NAPP / NNP
13.3	Determine Total Sulfur / MPA / AP
14	On same samples as NAG4.5 tests:
14.1	Determine ANC / NP
14.2	Calculate NAPP / NNP
14.3	Conduct NAGpH test
14.4	Determine Total Sulfur / MPA / AP
15	If NAGpH < 5, Kinetic testwork (eg. oxygen consumption test) should be established to:
15.1	Define leachate composition
15.2	Evaluate oxidation and neutralisation rates
15.3	Constrain sample behaviour under normal weathering conditions
16	If NAGpH < 6, Kinetic testwork (eg. oxygen consumption tests) should be established to:
16.1	Define leachate composition
16.2	Evaluate oxidation and neutralisation rates
16.3	Constrain sample behaviour under normal weathering conditions
17	If NAGpH < 7 use the same sample to:
17.1	Conduct a NAG4.5 test
17.2	Conduct a NAG7.0 test
17.3	Conduct a NAG9.5 test
18	If NAGpH < 9.5 use the same sample to:
18.1	Conduct a NAG4.5 test
18.2	Conduct a NAG7.0 test
18.3	Conduct a NAG9.5 test
20	If NAG tests is repeated, ensure H ₂ O ₂ is not all consumed before end of oxidation
21	Analyse NAG liquor to determine metal concentrations
22	Analyse NAGpH liquor for presence of Mn and main metals
23	If majority of samples show similar high NAGpH values, sequential NAG tests are recommended
24	Consider conducting sequential NAG tests
25	Sequential NAG tests might be needed to confirm NAGpH
26	If NAPP / NNP result is confirmed, consider kinetic testwork (eg. oxygen consumption tests)

ASSESSMENT RECOMMENDATIONS

CODE	EXPLANATION
30	Kinetic testwork (eg. Oxygen consumption tests) should be established to:
30.1	Define leachate composition
30.2	Quantify metal acidity contribution to drainage acidity
30.3	Evaluate oxidation and neutralisation rates
30.4	Constrain sample behaviour under normal weathering conditions
35	Define Acid Buffering Characteristic curve
40	Evaluate TOC content.
40.1	If TOC < 7%, repeat ANC / NP test using modified protocol to ensure full oxidation of Fe ²⁺
40.2	If TOC < 7%, conduct NAGpH tests (same NAPP / NNP samples)
40.3	If TOC < 7%, conduct NAG7.0 tests (same NAPP / NNP samples)
50	Use lithological and mineralogical data to interpret results
51	Use lithological and mineralogical data to support results
52	Refer to lithological and mineralogical data to assist with sample classification
53	Use mineralogical data to confirm MPA / AP
54	Use mineralogical data to interpret NAPP / NNP results
55	Use mineralogical / lithological data to interpret NAPP / NNP results and identify likely metals in drainage
56	Use sulphide mineralogy to establish identity of potential metals in leachate
57	Use sulphide mineralogy to assist interpretation of results
58	Define sulphide mineralogy
58.1	If main sulphide is not pyrite, reevaluate MPA / AP using mineralogical data (ABATES)
59	Use mineralogy to assist interpretation of results (sulphides and sulphate)
60	Quantify presence of sulphates
61	Define carbonate mineralogy
62	Carbonate and sulphide mineralogy should be used to support tests results
63	Define carbonate mineralogy to confirm NAPP / NNP results
64	Use carbonate mineralogy to assist interpretation of results
65	Define distribution of carbonate within lithology (e.g. veins, pockets, disseminated)
66	Evaluate distribution of carbonate within lithology (e.g. veins, pockets, disseminated)
67	Reclassify samples using new data
68	Use NAPP / NNP value to classify sample
69	Use NAPP / NNP value to reclassify sample
70	Use NAPP / NNP classification for indicative characterisation
71	Calculate NAPP / NNP using mineralogical data (ABATES)
72	Use NAPP / NNP value to classify sample, NAGpH too high to be representative
73	Unless majority of samples show similar NAGpH values, disregard data
74	If only few samples show similar high NAGpH values, use NAPP / NNP value to classify sample
75	NAGpH value is unlikely to be reliable
80	Confirm NAPP / NNP result:
80.1	Determine NAGpH
80.2	If NAPP / NNP value is confirmed, conduct sequential NAG tests
80.3	Define sulphide mineralogy
80.4	If main sulphide is not pyrite, reevaluate MPA / AP using mineralogical data (ABATES)
80.5	Confirm absence of gypsum or other sulphates in sample
80.6	Analyse for S from Sulphide minerals only
80.7	Recalculate NAPP / NNP using Sulphur from Sulphide value
80.8	Define carbonate mineralogy

ASSESSMENT RECOMMENDATIONS

CODE	EXPLANATION
82	Resolve discrepancy between NAG and NAPP / NNP values:
82.1	If NAPP / NNP value is confirmed, conduct sequential NAG tests
82.2	Define sulphide mineralogy
82.3	If main sulphide is not pyrite, reevaluate MPA / AP using mineralogical data (ABATES)
82.4	Confirm absence of gypsum or other sulphates in sample
82.5	Analyse for S from Sulphide minerals only
82.6	Recalculate NAPP / NNP using Sulphur from Sulphide value
83	Confirm NAG and NAPP / NNP values
83.1	If NAPP / NNP value is confirmed, conduct sequential NAG tests
83.2	Define sulphide mineralogy
83.3	If main sulphide is not pyrite, reevaluate MPA / AP using mineralogical data (ABATES)
83.4	Confirm absence of gypsum or other sulphates in sample
83.5	Analyse for S from Sulphide minerals only
83.6	Recalculate NAPP / NNP using Sulphur from Sulphide value
83.7	Determine NAGpH
84	Confirm NAGpH and NAPP / NNP values:
84.1	If NAPP / NNP value is confirmed, conduct sequential NAG tests
84.2	Define sulphide mineralogy
84.3	If main sulphide is not pyrite, reevaluate MPA / AP using mineralogical data (ABATES)
84.4	Confirm absence of gypsum or other sulphates in sample
84.5	Analyse for S from Sulphide minerals only
84.6	Recalculate NAPP / NNP using Sulphur from Sulphide value
84.7	Define carbonate mineralogy
86	Resolve discrepancy between NAGpH and NAPP / NNP value:
86.1	Determine NAGpH
86.2	If NAPP / NNP value is confirmed, conduct sequential NAG tests
86.3	Define sulphide mineralogy
86.4	If main sulphide is not pyrite, reevaluate MPA / AP using mineralogical data (ABATES)
86.5	Confirm absence of gypsum or other sulphates in sample
86.6	Analyse for S from Sulphide minerals only
86.7	Recalculate NAPP / NNP using Sulphur from Sulphide value
88	If classification is confirmed, UAG samples most likely will not require special handling
90	If material is to be used as a neutralising agent:
90.1	Determine carbonate dissolution rates
90.2	Determine leachate composition
100	No further action required

GLOSSARY

SAMPLE DETAILS

Sample type: This represents the primary sample type desired by the client, generally representing various mine materials (eg. ore, waste rock and tailings). This term may also represent any differentiating characteristic of the rock that may be provided by the client (including lithology).

Sample sub-type: Generally, this represents the sample lithology provided. This term may also represent any differentiating characteristic of the rock that may be provided by the client (eg. deposit name, mine zone / spatial delineation, flood plain sample, location etc.).

General classification: The simplified classification of a sample's potential AMD risk, based on the static geochemical parameters provided. PAF samples represent the total number of samples classified as potentially acid generating. NAF samples represent the total number of samples classified as non-acid forming.

Detailed classification: The classification of a sample's potential AMD risk, based on the static geochemical parameters provided. Detailed classification categories from highest to lowest acid generating risk are High Potential for Acid generation; Moderate / High Potential for Acid Generation; Moderate Potential for Acid Generation; Low Potential for Acid Generation; Unlikely to be Acid Generating; Likely to be Acid Consuming. Samples with insufficient data or have data providing conflicting risk classifications are not classified.

STATIC GEOCHEMISTRY

PAF: Samples that are classified as Potentially Acid Forming based on the static geochemical parameters provided.

NAF: Samples that are classified as likely to be Non-Acid Forming based on the static geochemical parameters provided.

Maximum Potential Acidity (MPA): A calculation of the maximum amount of sulfuric acid (H_2SO_4) that could be produced if all reactive sulfide in the sample is oxidised ($wt\%S \times 30.6$). This is expressed in units of kilograms of H_2SO_4 equivalent per tonne of sample ($kg H_2SO_4/tonne$).

Maximum potential acidity based on S-Cr ($MPA_{(SCR)}$): A calculation of the maximum amount of sulfuric acid (H_2SO_4) that could be produced assuming that the chromium reducible sulfur represents the sulfide sulfur within the sample, and all of the sulfide sulfur is oxidised. This is expressed in units of kilograms of H_2SO_4 equivalent per tonne of sample ($kg H_2SO_4/tonne$).

Acid Neutralising Capacity (ANC): A measure of the potential acid neutralising capacity of the sample, typically due to the presence of calcium- and/or magnesium-bearing carbonate minerals. The ANC value assumes that all of the carbonate is available for acid neutralisation ($kg H_2SO_4/tonne$).

Net Acid Producing Potential (NAPP): A measure of the overall acid-generating potential of the sample, calculated by subtracting the ANC value from MPA. The NAPP value is expressed in units of kilograms of H_2SO_4 equivalent per tonne of sample ($kg H_2SO_4/tonne$).

Acid Generation Potential (AP): Analogous to MPA.

Acid Generation Potential based on S-Cr ($AP_{(SCR)}$): Analogous to $MPA_{(SCR)}$.

Neutralization Potential (NP): Analogous to ANC.

Net Neutralization Potential (NNP): Calculated. $NNP = AP - NP$. Analogous to NAPP.

ANC/MPA Ratio: Represents a calculated ratio between the Acid Neutralising Capacity (ANC) and the Maximum Potential Acidity (MPA).

Neutralization Potential Ratio (NPR): Represents a calculated ratio between the Neutralizing Potential (NP) and the Acid Generation Potential AP. $NPR = NP/AP$. Analogous to ANC/MPA ratio.

Pyrite equivalent based on Total Sulfur ($Pyrite_{(TOT)}$): The pyrite mass equivalent of the total sulfur, assuming all sulfur is present as pyrite.

Pyrite equivalent based on S-Cr ($Pyrite_{(SCR)}$): The pyrite mass equivalent of the sulfide sulfur, assuming the chromium reducible sulfur is representative of the sulfide sulfur.

Net Acid Generation pH after oxidation (NAG-pH): The pH of a sample after oxidation with an excess of hydrogen peroxide.

Net Acid Generation to pH 4.5 ($NAG_{4.5}$): The equivalent acidity of a peroxide-oxidised sample titrated to pH 4.5 ($kg H_2SO_4/tonne$).

Net Acid Generation to pH 7.0 ($NAG_{7.0}$): The equivalent acidity of a peroxide-oxidised sample titrated to pH 7.0 ($kg H_2SO_4/tonne$).

SULFUR SPECIATION

Total sulfur (S-TOT): Total sample sulfur determined by the Leco method.

Chromium reducible sulfur (S-Cr): Laboratory method for estimating the sulfide forms of sulfur within a sample.

Peroxide Sulfur (S_p): The sulfur present within the filtered leachate following TPA titration.

Potassium chloride extractable sulfur (S-KCl): The sulfur measured from a filtered sample leachate following extraction with 1M KCl.

Hydrochloric acid extractable sulfur (S-HCl): The sulfur measured from a filtered sample leachate following extraction with 4M HCl.

Total oxidisable sulfur (S-TOS): Calculated. $S-TOS = S-TOT - S-HCl$

Net acid soluble sulfur (S-NAS): Calculated. $S-NAS = S-HCl - S-KCl$

Potential oxidisable sulfur (S-POS): Calculated. $S-POS = S_p - S-KCl$

Residual acid soluble sulfur (S-RAS): Sulfur measured in the filtered leachate following 4M HCl extraction of the residual solids from the TPA test.

Sulfide sulfur: Sulfur in the form of sulfide minerals (eg. pyrite, pyrrhotite, chalcopyrite).

Readily soluble non acid storing sulfate sulfur: A measure of sulfur present as relatively soluble minerals which do not contribute to acidity upon dissolution (eg. gypsum).

Gypsum (equivalent): The calculated mass of gypsum equivalent (expressed in weight percent) based on the mass of readily soluble non acid storing sulfate sulfur.

Readily soluble acid storing sulfate sulfur: A measure of sulfur present as minerals with relatively high solubility formed by prior oxidation of sulfide minerals and which release acid upon dissolution and oxidation (eg. melanterite).

Melanterite (equivalent): The calculated mass of melanterite equivalent (expressed in weight percent) based on the mass of readily soluble acid storing sulfate sulfur.

Sparingly soluble acid-forming sulfate sulfur: A measure of the low-solubility, acidity storing sulfate minerals (eg. jarosite, alunite) present within a sample.

Jarosite (equivalent): The calculated mass of jarosite equivalent (expressed in weight percent) based on the mass of sparingly soluble acid storing sulfate sulfur.

GLOSSARY

ACIDITY

pH after potassium chloride extraction (pH_{KCl}) : The pH of a sample leachate after a 4 hour extraction with 1M KCl.

pH after hydrogen peroxide extraction (pH_{ox}) : The pH of a sample leachate after extraction with 30% hydrogen peroxide.

Titrateable actual acidity (TAA) : The acidity titrated from a sample leachate after a 4 hour extraction with 1M KCl. The titration is stopped when the solution reaches pH 6.5.

Total Potential Acidity (TPA) : The acidity titrated from a sample leachate after extraction with 30% hydrogen peroxide. The titration is stopped when the solution reaches pH 6.5.

Total sulfide acidity (TSA) : Calculated. $\text{TSA} = \text{TPA} - \text{TAA}$

Potential acidity : Represents the net potential for acid generation from a sample, following oxidation of the sulfide minerals within the sample and neutralisation against any available neutralising minerals within the sample. Expressed in units of moles of H^+ per tonne of material.

Actual acidity : The readily available / soluble acidity held within a sample. Expressed in units of Moles of H^+ per tonne of material.

Retained acidity : The relatively insoluble stored acidity within a sample. Expressed in units of moles of H^+ per tonne of material.

Existing acidity : Calculated. Existing acidity = Actual acidity + Retained acidity

Net acidity : Calculated. Net Acidity = Potential sulfidic acidity + Existing acidity - ANC

CARBON

Total carbon (C_{TOT}) : The total amount of carbon in a sample, representing all forms of carbon.

Total organic carbon (C_{TOC}) : The laboratory measured carbon in a sample that is present as organic forms. Also captures any graphite within the sample.

Total inorganic carbon (C_{TIC}) : The carbon in a sample that is present as inorganic forms. Calculated by subtracting CTOC from CTOT.

CALCIUM CARBONATE

Excess acid neutralising capacity (ANC_E) : Requires back titration with HCl to pH 4 followed by peroxide digestion and titration to pH 6.5 with NaOH. The NaOH titration result is subtracted from the HCl titration result to provide an indication of excess neutralising capacity.

Calcium carbonate equivalent based on ANC : The percentage (by mass) of the sample that contains calcium carbonate (equivalent), calculated based on the measured ANC result.

Calcium carbonate equivalent based on C_{TOT} : The percentage (by mass) of the sample that contains calcium carbonate (equivalent), calculated based on the measured total carbon result.

Calcium carbonate equivalent based on C_{TIC} : The percentage (by mass) of the sample that contains calcium carbonate (equivalent), calculated based on the measured calculated inorganic carbon content.