AGNICO EAGLE

Meliadine Division

ARD-ML Sampling and Testing Plan

DECEMBER 2022
VERSION 1_NWB

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ᑕᐃᒪᖕᒑᑦ ᓄᓇᕗᑦ ᐊᕙᑎᓕᕆᔩᑦ ᑲᑎᒪᔩᖏ ᐊᖏᓚᐅᕐᒪᑕ ᐃᓗᐊᓂ 2015, ᐊᒃᓂᑯᒃᑯᑦ ᑲᔪᑏᓐᓇᖅᑐᑦ ᐃᓚᓯᒋᐊᖏᓐᓇᖅᑐᑦ ᖃᐅᔨᒪᔭᐅᔪᓂᒃ ᒨᓗᓂᒃ ᑕᓯᕐᔪᐊᕐᒥ ᐊᓯᖏᓐᓂᒃ ᕿᓂᒃᓴᖅᓱᑎᒃ. ᑕᐃᒪᓐᓇᒧᑦ, ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᓂᖅ ᑐᒃᓯᕋᐅᑕᐅᔪᖅ. ᑕᓯᕐᔪᐊᕐᒥᑦ ᐅᐃᒍᒋᐊᖅᓯᒪᔪᖅ ᐅᐃᒍᒋᐊᖅᓯᓂᐊᖅᑐᖅ ᐊᐅᑏᕐᓂᖕᒑᓂᑦ ᐅᔭᕋᒃᑕᓇᐊᖅ 2032-ᒥᑦ 2043-ᒧᑦ ᐊᒻᒪᓗ ᐃᓚᓯᓗᑎᒃ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔭᕋᒃᑕᕐᓂᕐᒥᑦ ᓈᒻᒪᒋᔭᐅᕌᓂᒃᓯᒪᔪᖅ ᑎᑕᒐᓂᐊᕐᒥᑦ, ᐸᒻᐸ (Pump), F Zone, ᐊᒻᒪᓗ ᑎᒃᑲᕗᑕᒥᑦ (Discovery) ᐱᑕᓕᖕᓂᑦ.

ᐃᓚᒋᔭᐅᑉᓗᓂ ᑕᓯᕐᔪᐊᕐᒥ ᐊᓯᖏᓐᓄᑦ ᐃᓚᒋᐊᒃᑳᓂᕈᑎᖕᒐᓐᓂ, ᖃᓂᒋᔭᖕᒐᓂ 2.4 ᒥᓕᔭᓐ ᑕᐊᓐᓯ (Mt) ᓴᕕᒃᓴᓐᓂᒃ ᕿᓂᓚᐅᕐᒪᑕ ᑎᒃᑲᕙᒥ 6 ᐅᑭᐅᓂᒃ (2031-2036). ᓂᕈᐅᖕᓇᖅᐳᖅ ᐊᖏᑎᒋᔪᒥᒃ 2.5 ᒥᑦᑐᕈᖅ ᑕᐊᓐᓯ ᓯᐅᕋᕐᒥᒃ ᐊᒻᒪ 36.5 ᒥᑐᕈᒃ ᑕᐊᓐᓯ ᐅᔭᕋᖕᓂᒃ ᑲᑎᑕᐅᔪᖄᕐᓂᐊᕐᒪᑦ ᑎᒃᑲᕙ ᐅᔭᕋᒃᑕᕆᐊᕐᕕᖕᒐᓐᓂ. ᑎᒃᑲᕙ ᐅᔭᕋᒃᑕᕆᐊᕐᕕᖕᒐ ᓄᓇᐅᑉ ᐊᑖᓐᓂ ᒪᓐᓇᐅᔪᖅ ᐊᒧᓯᕙᓪᓕᐊᕗᖅ 1.8 ᒥᑐᕈᒃ ᑕᐊᓐᓯ ᓴᕕᒃᓴᓐᓂᒃ ᐊᒻᒪ 1.1 ᒥᑐᕈᒃ ᑕᐊᓐᓯ ᐅᔭᕋᖕᓂᒃ ᐊᑐᖏᑐᓂᒃ.

ᒪᓕᒃᑕᐅᑉᓗᓂ 2014 ᑭᖑᓪᓕᐅᑉ ᐊᕙᑎᑉ ᐊᒃᑐᐃᓂᖕᒑᓄᑦ ᑎᑎᕋᖅᓯᒪᓂᖏᑦ, ᖃᐅᔨᓴᕐᓂᒃᑯᑦ ᐅᔭᕋᖕᓂᒃ ᐱᐊᓂᓚᐅᕐᒪᑕ ᑕᓯᕐᔪᐊᑉ ᐃᓚᒋᐊᕈᑎᖕᒑᓄᑦ ᑕᑯᑎᑦᓯᓚᐅᕐᒪᑕᓗ 60% ᓇᓂᔭᐅᓚᐅᖅᑐᑦ ᑎᒃᑲᕙᒥ ᐊᑎᖅᑲᖅᑎᑕᐅᖕᒪᑕ PAG ᐅᕙᔫᓐᓃᑦ ᓇᓗᓇᖅᑐᑦ ᐊᒻᒪ 5% ᓇᓂᔭᐅᓚᐅᖅᑐᑦ ᓯᓚᑖᓂ ᑎᒃᑲᕙᐅᑉ ᐊᑎᖅᑲᕐᒪᑕ PAG ᓇᓗᓇᕐᓱᑎᒃ.

ᓄᖑᓴᐃᓱᖅᑐᖅ ᐅᔭᕋᖕᓂᒃ ᐊᒻᒪ ᓴᕕᖕᓂᒃ ᑰᒃᑎᑕᐅᕙᓪᓕᐊᓂᖕᒐ (ARD-ML) ᒥᐊᓂᕆᔭᐅᓂᖕᒑᓐᓄᑦ ᐸᕐᓇᐅᑦ ᐊᕿᒃᓱᖅᑕᐅᓚᐅᖅᐳᖅ ᐊᑐᕐᓱᑎᒃ ᑎᑎᖅᑳᓂᒃ ᒪᓕᒐᕐᓂᒃᓗ 23 ᐱᓕᕆᐊᖑᔪᑉ ᐊᔪᖏᔪᑎᖕᒐᑕ ᓇᓴᐅᑎᖕᒐᓐᓂ 006:

"ᓯᕗᓂᖕᒐᓂ ᓴᒡᒐᖅᑕᐅᓂᐊᕐᓂᖕᒐᑕ ᑎᒃᑲᕙᐅᑉ ᓇᓂᓯᓯᒪᕝᕕᖕᒐᓂ, ᐱᓕᕆᓂᐊᖅᑐᖅ, ᐅᖃᖃᑎᖃᓚᐅᕐᓗᓂ ᑲᓇᑕᐅᑉ ᓄᓇᒥᐅᑕᓕᕆᔩᖏᓐᓂᒃ, ᓄᑖᖑᖅᑎᑦᓯᓂᐊᕐᒪᑦ ᐅᔭᕋᒃᑕᕆᐊᓂ ᐊᑐᕈᖕᓇᐃᕐᓂᒃᑯᑦ ᒥᐊᓂᕆᔭᐅᓂᖏᓐᓄᑦ ᐸᕐᓇᐅᒻᒥᒃ ᓄᖑᓴᐃᓱᖅᑐᑦ ᐅᔭᕋᐃᑦ ᒥᐊᓂᕆᔭᐅᖁᑉᓗᒋᑦ ᖃᐅᔨᓴᕐᓂᐅᖁᑉᓗᒋᓪᓗ ᐊᓯᖏᓐᓂᒃ ᐊᒃᑐᐃᑕᐃᓕᔪᑕᐅᓗᑎᒃ ᐅᔭᕋᒃᑕᕆᐊᑉ ᐱᒋᐊᖅᐸᓕᐊᓂᖕᒐᓂ".

ᑐᕌᖅᑕᕐᓂᕆᓂᐊᖅᑕᖕᒐ ᓄᖑᓴᐃᓱᖅᑐᖅ ᐅᔭᕋᖕᓂᒃ ᐊᒻᒪ ᓴᕕᖕᓂᒃ ᑰᒃᑎᑕᐅᕙᓪᓕᐊᓂᖕᒐ (ARD-ML) ᒥᐊᓂᕆᔭᐅᓂᖕᒑᓐᓄᑦ ᐸᕐᓇᐅᑦ ᑐᑭᖃᑦᑎᐊᕐᑯᐸᓗᒍ ᖃᐅᔨᓴᖅᑕᐅᓂᖏᑦᑕ ᐊᑯᓂᐅᓂᖏᓐᓂᒃ, ᖄᖕᒑᐅᓂᖏᓐᓂᒃ ᐊᒻᒪ ᐊᑐᓕᖅᑎᑕᐅᓂᖏᓐᓂᒃ ᖃᐅᔨᓴᕐᓂᒃᑯᑦ ᓄᖑᓴᐃᓱᖅᑐᓂᒃ ᐅᔭᕋᖕᓂᒃ ᐊᒻᒪ ᓴᕘᑦ ᑰᒃᑎᑕᐅᕙᓕᐊᓂᖏᓐᓄᑦ ᑎᒃᑲᕙᐸ ᐅᔭᕋᒃᑕᕆᐊᖕᒑᓂ. ᑖᓐᓇ ᐃᓕᖅᑯᓯᕆᔭᐅᔪᖅ ᐅᔭᕋᒃᑕᕆᐊᓂ ᐊᑐᖅᑕᐅᓂᐊᕐᒪᑦ ᐅᔭᕋᐃᑦ ᐊᑐᖏᓕᖅᑐᑦ ᑎᒃᑲᕙᒥ ᒥᐊᓂᕆᔭᐅᑦᑎᐊᕐᑯᐸᓕᑦ ᐃᓕᖅᑯᓯᖏᑦ ᓈᒻᒪᑎᐊᖅᑐᑦ ᐊᑐᖅᑕᐅᓗᑎᒃ.

ᑖᓐᓇ ᓯᕗᓪᓕᐅᔪᖅ ᐸᕐᓇᐅᑦ ᑕᓯᕐᔪᐊᑉ ᐅᔭᕋᒃᑕᕆᐊᖏᓐᓂ, ᐊᕿᒃᓱᖅᑕᐅᔪᖅ ᑕᓯᕐᔪᐊᑉ ᐃᓚᒋᐊᕈᑎᖕᒑᓄᑦ ᐊᕙᑎᐅᑉ ᐊᒃᑐᖅᑕᐅᓂᖕᒐᓐᓄᑦ ᑎᑎᕋᖅᓯᒪᓂᖏᓐᓂ.

EXECUTIVE SUMMARY

Since the Nunavut Impact Review Board approval in 2015, Agnico Eagle has continued to extend its knowledge of the gold deposits around the Meliadine Gold Mine by way of additional exploration. As a result, Meliadine Extension is being proposed. Meliadine Extension will extend the life of the mine from 2032 to 2043 and will add underground mining activities at the already approved Tiriganiaq, Pump, F Zone, and Discovery deposits.

As part of the Meliadine Extension, approximately 2.4 million tonnes (Mt) of ore will be produced at Discovery for a period of 6 years (2031-2036). It is expected that approximately 2.5 Mt of Overburden and 36.5 Mt of waste rock will be generated by the Discovery open pit mining activities. The Discovery underground mine will produce approximately 1.8 Mt of ore and 1.1 Mt of waste rock.

Consistent with the 2014 FEIS, the results of the Geochemical characterization completed in support of the Meliadine Extension indicate that approximately 60% of Discovery waste rock is classified as PAG or Uncertain and only 5% of the total waste rock outside of Discovery is expected to be classified as PAG or Uncertain.

This Acid Rock Drainage and Metal Leaching (ARD-ML) Management Plan has been prepared to address Term and Condition 23 of the Project Certificate No.006:

> "*Prior to the commencement of excavation at the Discovery deposit, the Proponent, in consultation with Natural Resources Canada, shall update its Mine Waste Management Plan to assess the potential for acid rock drainage and to identify any monitoring and mitigation measures that may be required in this development area*".

The objectives of the ARD-ML Management Plan are to define the sampling frequency, testing procedures, and analysis that are to be implemented to define the ARD and ML potential of waste rock for the Discovery deposit. This characterization is to be used by mine staff during the operations phase to ensure that waste rock generated at the Discovery deposit is managed in an appropriate manner.

This is the first version of this plan for the Meliadine Mine, prepared in support of the Meliadine Extension Final Environmental Impact Statement Addendum.

DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1_NIRB	February 2022			First version of the Plan, prepared in support of the Meliadine Extension Final Environmental Impact Statement	Agnico Eagle Mines
1_NWB	November 2022	A yellow arrow in the right-hand margin indicates where updates have been made		Submitted to NWB as part of the Meliadine Extension Water Licence Amendment	Permitting Department

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ACRONYMS

ABA	Acid-Base Accounting
Agnico Eagle	Agnico Eagle Mines Limited
ARD	Acid Rock Drainage
HCT	Humidity Cell Test
LOM	Life of Mine
MDMER	Metal and Diamond Mining Effluent Regulations
MEND	Mine Environment Neutral Drainage
MPA	Maximum Potential Acidity
ML	Metal (and arsenic) Leaching
NML	Not Metal Leaching and Low Arsenic Leaching
NIRB	Nunavut Impact Review Board
NWB	Nunavut Water Board
NP	Neutralization Potential
NPR	Net Potential Ratio
Non-PAG	Non-Potentially Acid Generating
PAG	Potentially Acid Generating
QA/QC	Quality Assurance / Quality Control
SFE	Shake Flask Extraction
TDS	Total Dissolved Solids
TIC	Total Inorganic Carbon
WRSF	Waste Rock Storage Facility

UNITS

%	Percent
kg	kilogram(s)
km	kilometer(s)
km^2	square kilometer(s)
mg/kg	milligram per kilogram
Mt	million tonne(s)
ppm	parts per million
t	tonne(s)
µg/g	micrograms per gram
wt%	weight percent

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Limited (Agnico Eagle) is operating the Meliadine Gold Mine (Meliadine), located approximately 25 km north of Rankin Inlet, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut.

Since Nunavut Impact Review Board (NIRB) approval in 2015, and to extend the life of the mine, Agnico Eagle has continued to extend its knowledge of the gold deposits around the Meliadine Gold Mine by way of additional exploration. As a result, Meliadine Extension is being proposed. Meliadine Extension will extend the life of the mine from 2032 to 2043 and will add underground mining activities at the already approved Tiriganiaq, Pump, F Zone, and Discovery deposits.

As part of the Meliadine Extension, approximately 2.4 million tonnes (Mt) of ore will be produced at Discovery for a period of 6 years (2031-2036). It is expected that approximately 2.5 Mt of Overburden and 36.5 Mt of waste rock will be generated by the Discovery open pit mining activities. The Discovery underground mine will produce approximately 1.8 Mt of ore and 1.1 Mt of waste rock. The location of the Discovery deposit is presented in Figure 1.1.

Consistent with the 2014 FEIS, the results of the Geochemical characterization completed in support of the Meliadine Extension indicate that Discovery is the only deposit where most ore is classified as Potentially Acid Generating (PAG) or Uncertain. The results also indicate that approximately 62% of Discovery waste rock is classified as PAG or Uncertain and only 5% of the total waste rock outside of Discovery is expected to be classified as PAG or Uncertain.

The distinct Acid Rock Drainage (ARD) potential at Discovery is due to lower carbonate content in all three major waste rock lithologies found at Discovery (c), compared to other deposits (Lorax 2022). The lower carbonate content reduces the amount of Neutralizing Potential (NP) available to neutralize the Acid Potential (AP) associated with the sulphide minerals found in these lithologies.

This Acid Rock Drainage and Metal Leaching (ARD-ML) Management Plan has been prepared to address Term and Condition 23 of the Project Certificate No.006:

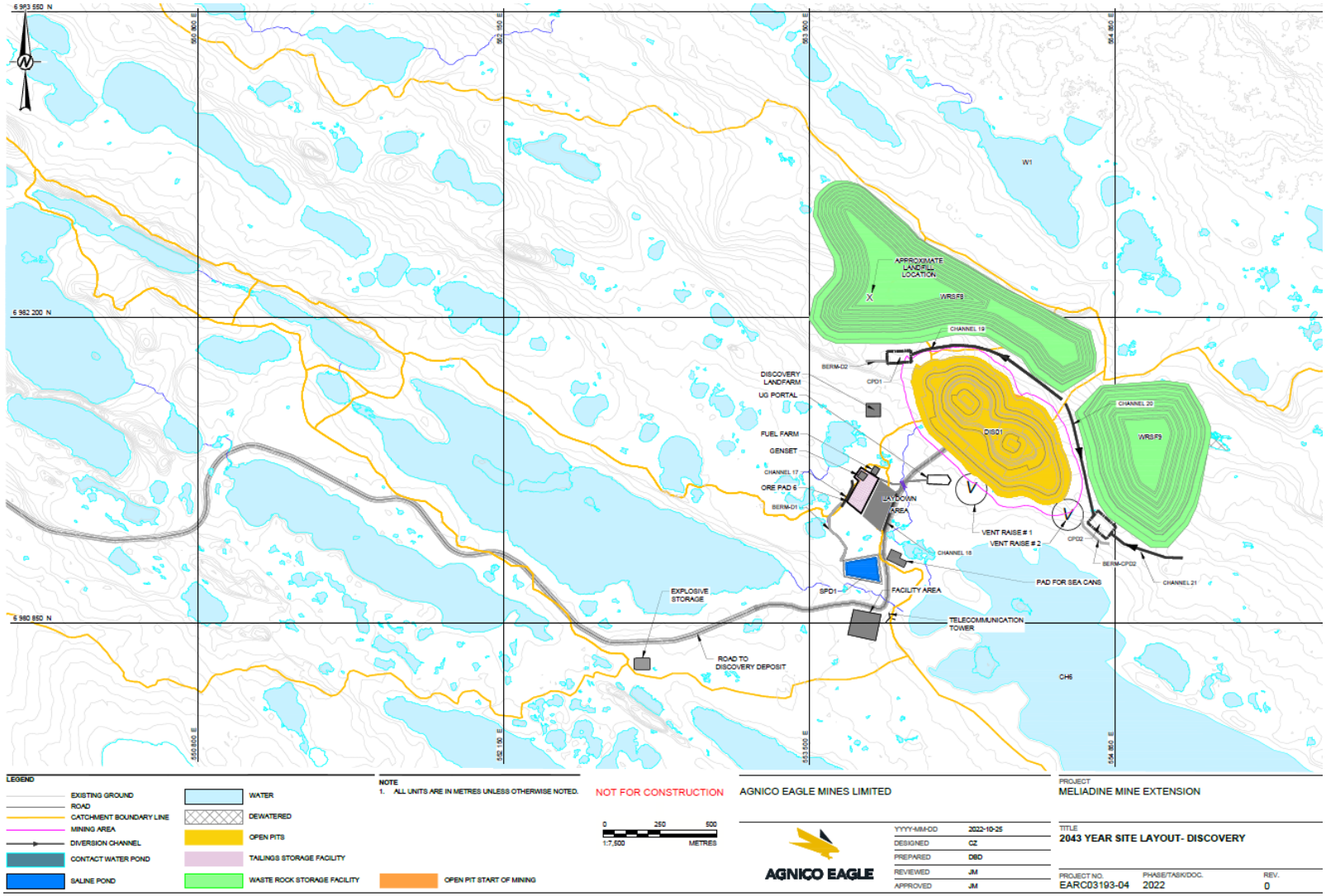
> "*Prior to the commencement of excavation at the Discovery deposit, the Proponent, in consultation with Natural Resources Canada, shall update its Mine Waste Management Plan to assess the potential for acid rock drainage and to identify any monitoring and mitigation measures that may be required in this development area*".

The objectives of the ARD-ML Management Plan are to define the sampling frequency, testing procedures and analysis that are to be implemented to define the ARD and ML potential of waste rock for the Discovery deposit. This characterization is to be used by mine staff during the operations phase to ensure that waste rock generated at the Discovery deposit is managed in an appropriate manner.

The ARD potential associated with Discovery open pit waste rock will be mitigated through the progressive construction of a thermal cover over the Discovery Waste Rock Storage Facility (i.e., WRSF8 and WRSF9) using non-PAG mine rock. Discovery underground waste rock will be backfilled into the underground mine workings and flooded at mine closure, thereby eliminating the ARD potential associated this material.

Geochemical characterization of overburden for the 2014 FEIS, showed the material to be non-acid generating and to contain low metal concentrations relative to other mine rock. Furthermore, Shake Flask Extraction (SFE) leachate concentrations for all overburden samples met the mine effluent criteria (Metal and Diamond Mining Effluent Regulations [MDMER]). As such, waste rock and overburden have compatible geochemical characteristics such that they could be managed together in the same facility.

Figure 0-1: Discovery Deposit – Meliadine Extension



SECTION 2 • WASTE ROCK MANAGEMENT

2.1 Meliadine Extension Mine Waste Quantities

Meliadine Extension gold deposits will be developed using traditional open-pit and underground mining methods. The initial construction phase for the Meliadine Extension is planned to commence in 2024 upon reception of permits and approvals. Construction will continue through the operation phase to prepare for mining of new deposits. End of operations is planned for 2043. The overall Meliadine Extension waste production by deposit is presented in Table 2.1.

Table 2.1: Summary of Meliadine Extension Mine Waste Production (V11_LOM, 2020)

Deposit (Year 2020-2043)	Overburden (Mt)	Waste Rock from Open Pit (Mt)	Waste Rock from Underground (Mt)	Saline Waste Rock from UG (Mt)
Tiriganiaq[1]	9.2	42.4	6.7	
Wesmeg[2]	14.3	69.3	4.2	
Pump	3.6	7.8	2.0	0.6
F Zone	5.0	18.5	1.9	0.3
Discovery	2.5	36.5	1.1	0.2
Total	**34.6**	**174.6**	**15.9**	**1.1**

[1] Includes Tiriganiaq-Wolf; [2] Includes Wesmeg North

2.1.1 Discovery Mine Waste Designation and Destination

As part of the Meliadine Extension, approximately 2.4 million tonnes (Mt) of ore will be produced at Discovery for a period of 6 years (2031-2036). It is expected that approximately 2.5 Mt of Overburden and 36.5 Mt of waste rock will be generated by the Discovery open pit mining activities. The Discovery underground mine will produce approximately 1.3 Mt waste rock (includes 0.2 Mt of saline waste rock). Overall, approximately 62% of Discovery waste rock is classified as PAG or Uncertain. Conversely, only 5% of the total waste rock outside of Discovery is expected to be classified as PAG or Uncertain.

The ARD potential associated with Discovery open pit waste rock will be mitigated through the progressive construction of a thermal cover using non-PAG mine rock, as defined by OKC (2022) to cover the WRSF of this deposit.

Discovery underground waste rock will be backfilled into the underground mine working during the operations phase and a small amount of excess saline waste rock (approx. 0.2 Mt), will be temporarily stored on the surface in the saline WRSF3, but will be brought back underground the first year of active closure (2044). The underground mine will be flooded at mine closure, thereby eliminating the ARD potential of Discovery waste rock from underground.

The overall usage or destination of the Meliadine Extension waste materials is presented in Table 2.2 for reference. It is anticipated that approximately 7.6 Mt of non-PAG waste rock will be required for the construction of the Discovery WRSF thermal cover.

Table 2.2: Summary of Mine Waste Tonnage and Destination

Mine Waste Stream	Estimated Quantities		Waste Destination
Overburden	34.6 Mt	0.3 Mt	Construction of the TSF cover
		34.3 Mt	Co-disposed with waste rock within WRSFs
Total Waste Rock from Open Pit	174.6 Mt	3.2 Mt	Infrastructure construction
		11.1 Mt	Construction of TSF cover
		7.62 Mt	Construction of Discovery WRSF thermal cover
		152.7 Mt	Stored in WRSFs
Total waste rock from underground	15.9 Mt	4.0 Mt	Placed WRSF1 and WRSF3
		11.9 Mt	Required for backfill underground
Saline WRSFs	1.1 Mt	0.6 Mt	Saline WRSF1 (Pump Deposit, reclaimed at closure)
		0.3 Mt	Saline WRSF2 (F Zone UG, reclaimed at closure)
		0.15 Mt	Saline WRSF3 (Discovery UG, reclaimed at closure)
		0.05 Mt	Saline WRSF4 (Tiriganiaq-Wolf UG, reclaimed at closure)
Tailings	65 Mt	51.6 Mt	Tailings placed in the TSF
		13.4Mt	Used in underground mine as cemented paste backfill

2.2 Lithologies at Discovery

There are three major lithologies are found at Discovery: Gabbro, Iron Formation, and Sedimentary (SE). Table 2.3 presents the tonnage of waste rock by lithology to be produced at Discovery open pit and stored in the Discovery WRSF during the life of mine of Meliadine Extension. The Discovery open pit will only be mined between 2031 and 2036.

Table 2.3: Proportions of Waste Rock by Lithology at Discovery

Year	Gabbro	Iron Formation	Sedimentary	Total
2031	141,078	81,811	370,242	593,132
2032	422,836	635,986	3,448,031	4,506,855
2033	826,475	1,296,697	6,485,321	8,608,494
2034	970,912	1,449,387	6,910,694	9,330,995
2035	928,892	1,265,019	6,520,812	8,714,724
2036	636,002	670,186	3,483,334	4,789,524
Total	**3,926,198**	**5,399,090**	**27,218,436**	**36,543,725**

Source: Agnico Eagle, Mine Plane V11 (2020a)

2.2.1 Anticipated ARD/ML Potential by Material Types at Discovery

Most waste rock that will be excavated as part of the Meliadine Extension is classified as non-PAG outside of the Discovery deposit. The distinct ARD potential at Discovery is due to lower carbonate mineralization compared to other deposits, reducing the amount of NP available to neutralize AP associated with sulphide minerals.

Due to the relatively low carbonate content, material classified as PAG or Uncertain are found in all three major waste rock lithologies at Discovery. The Iron Formation lithology is the primary host of gold mineralization and comprises only a minor percentage of waste rock in the other deposits.

The ARD potential of each lithology at Discovery was evaluated through a supplemental static and kinetic testing program conducted in support of the Meliadine Extension additionally to the geochemical characterization data from the 2014 FEIS (Lorax 2022). The anticipated ARD/ML potentials for each lithology at Discovery are shown in Table 2.4. Details on the test methods used and results are provided in the Geochemical Characterization Report (Lorax 2022).

Table 2.4: Anticipated ARD/ML Potential of Waste Rock Types at Discovery

Discovery Lithology	Material Type	ARD Designation	ARD Classification
			%
Gabbro	Waste Rock	Non-PAG	57%
		Uncertain	43%
		PAG	0%
Iron Formation	Waste Rock	Non-PAG	39%
		Uncertain	23%
		PAG	38%
	Ore	Non-PAG	0%
		Uncertain	5%
		PAG	95%
Sedimentary	Waste Rock	Non-PAG	28%
		Uncertain	59%
		PAG	13%
	Ore	Non-PAG	0%
		Uncertain	100%
		PAG	0%

Source: Lorax (2022).

2.2.2 Discovery Ore and Waste Rock Metal Leaching Potential

Ore

The metal leaching potential of ore was assessed through laboratory SFE tests and a field seepage survey. Ore samples generally showed higher SFE concentrations compared to waste rock, particularly for Arsenic and Selenium. Overall, the result indicates that ore will have greater metal leaching potential compared to waste rock, and underground ore stockpiles will have elevated metal leaching potential compared to the equivalent lithologies excavated from other open pits.

All ore will be processed through the mill before the end of mine life, eliminating the long-term metal leaching and ARD potential associated with this material type. Characterization of ARD potential for ore materials corresponds with the findings of the 2014 FEIS regarding the designation of Discovery ore primarily as PAG. Results from laboratory tests and the seep survey completed in 2020 demonstrates that ore presents greater metal leaching potential than waste rock materials.

Waste Rock

The waste rock metal leaching potential was assessed through a variety of laboratory tests and through a seep survey completed in support of Meliadine Extension (Lorax 2022). Both laboratory kinetic tests and the seep survey confirmed that Arsenic was the only parameter to exceed MDMER guidelines in waste rock seepages. Kinetic tests and SFEs results showed that Siltstone and Sedimentary lithologies generally produced the highest Arsenic concentrations, while lower concentrations were generally observed in Iron Formation waste rock.

The survey results also indicated distinct metal leaching potential of underground versus open pit mine rock; that is, underground mine rock tended to show greater concentrations of metal cations (Cobalt, Copper, Nickel, and Zinc), while open pit mine rock tended to have higher Arsenic and Antimony concentrations. Overall, the result indicate that underground waste rock will have elevated metal leaching potential compared to the equivalent lithologies excavated from other open pits.

The waste rock tonnages shown in Table 2.1 and the ARD classification of various lithologies at Discovery is combined to estimate the relative tonnage of non-PAG versus PAG and Uncertain waste rock. The results show that approximately 62% of Discovery waste rock is expected to be classified as PAG or Uncertain. The ARD potential associated with Discovery open pit waste rock will be mitigated through the progressive construction of a 6 m Non-PAG/Non-ML thermal waste rock cover system to limit interaction of precipitation with PAG/ML (Okane 2022).

The Non-PAG waste rock tonnage required for the construction of a 6 m thermal cover of the Discovery WRSF is approximately 7.6 Mt (Agnico Eagle 2020b).

2.3 Waste Material Segregation

Waste material segregation will be conducted at Discovery, under the following guiding principles:

- **Overburden and PAG Waste Rock Disposal** – Waste rock and overburden generated from open pits activities at Discovery will be placed within the Discovery WRSF for permanent storage.
- **General Construction and/or Closure** – Only waste rock that is Non-PAG and Non-ML will be used for the construction of the Discovery WRSF thermal cover. All waste rock being used for construction or reserved for future use during closure needs to be characterized and verified as being Non-PAG and Non-ML.
- **Saline Waste Rock:** Waste rock from the Discovery underground mine (approximately 0.2 Mt), will be stockpiled temporarily on surface in the Saline WRSF3 (Figure 1-1), and will not be used for construction purposes. This rock will be entirely used as backfill in the Discovery underground mine such that no waste rock from underground will remain on surface after mine closure.

Further details on waste rock management can be found in the Meliadine Extension – Mine Waste Management Plan.

2.3.2 Discovery Rock Storage Facility Design

The Discovery WRSF will be designed to minimize the potential for ARD and ML. The Discovery WRSF will be constructed to encapsulate the PAG ML waste rock inside a of non-PAG waste rock thermal cover. The non-PAG waste rock thermal cover will be placed on the top and sides of the Discovery WRSF to host the thawed layer and prevent liquids from contacting the centre of the pile that contains PAG and ML waste rock. Presently, thermal and seepage analysis of Discovery WRSF anticipate that 6 metres of thermal cover would maintain freezing conditions in WRSF in the long-term.

Permafrost under the Discovery WRSF will prevent contaminants from being transported away from the core of the WRSF in the long-term. Monitoring will be conducted to measure temperatures throughout the Discovery WRSF, and to measure the depth of the annual surface thaw. This information will be used to confirm the thickness of rock cover required to progressively reclaim the Discovery WRSF. Further details on the Discovery WRSF design can be found in the Meliadine Extension – Mine Waste Management Plan.

SECTION 3 • ASSESSMENT OF ARD/ML POTENTIAL OF WASTE ROCK AT MELIADINE MINE

Sampling and testing of Discovery waste rock for ARD characterization will be conducted during mine operation to segregate suitable waste for use in construction and for closure. This section discusses field sampling methods, analytical testing, ARD/ML evaluation criteria, and the delineation of waste rock from Discovery.

In accordance with Type A Water Licence 2AM-MEL1631 Schedule B, Item 9 of the Meliadine Mine, Geochemical monitoring include:

a. Operational acid/base accounting and paste pH test work used for waste rock designation (PAG and NPAG rock);
b. As-built volumes of waste rock used in construction and sent to the Waste Rock Storage Facilities with estimated balance of acid generation to acid neutralization capacity in each sample as well as metal toxicity;
c. All monitoring data with respect to geochemical analyses on site and related to roads, quarries, and the All-Weather Access Road;
d. Leaching observations and tests on pit slope and dike exposure;
e. Any geochemical outcomes or observations that could imply or lead to environmental impact;
f. Geochemical data associated with tailings solids, tailings supernatant, cyanide leach residue, and bleed from the cyanide destruction process including an interpretation of the data;

According to Item 11 of the Water Licence 2AM-MEL1631, the monitoring should also include summary of quantities and analysis of seepage and runoff monitoring from the WRSF.

3.1 Field Sampling

Drill holes will be sampled for testing as part of the ARD/ML evaluation (Section 3.2). Sampling will proceed according to the following guidelines that are authorized for the Meliadine Mine:

- To be sampled in accordance with the frequency set out in writing by the Geology Superintendent. The default sampling frequency is every fourth drill hole in each drill hole pattern, however the Geology Superintendent may vary this frequency.
- Drill holes will be spaced to aim for even distribution of samples throughout the planned blast area.
- Drill cuttings are collected and fully mixed in a stainless-steel sampling tray placed beside the drill.
- The contents of the stainless-steel sampling tray are poured into a polyethylene plastic bag.
- Material is transferred from the bags to a pan which goes into the dryers at the assay lab.
- Dried cuttings are crushed to 85% passing 10 mesh (2mm).
- Crushed cuttings are then split through a rotating sample splitter (that is where the homogenization of the raw sample occurs) down to 500-800g.

- Each sample will be collected from drill cuttings and should weigh no less than 1 kilogram (kg).
- The samples will be labeled using a convention that is readily traceable back to the production drill hole numbers.

The Geology Superintendent may vary the default frequency based on his knowledge from previous drilling, from database information and/or from visual inspections depending on where the drill pattern is situated, and which rock type is encountered.

The sampling frequency will be reviewed periodically as deemed necessary by Agnico Eagle, and a reduced sampling frequency mat be implemented. The Recommended Sampling Frequency by Rock Type at Discovery are presented in Table 3.1.

Table 3.1: Recommended Sampling Frequency by Rock Type

Meliadine Extension Lithology Name	Meliadine Extension Lithology Codes	Other Lithology Codes	Sampling Frequency
Gabbro	GB	MG	Every 4th hole
Iron Formation	IF	KSC-LJ, LL, LLM, NLJ	Every 4th hole
Sedimentary	SE	K, KWA-S	Every 4th hole

3.2 Assessment of ARD/ML Potential

The ARD and ML potential of all samples collected (Section 3.1) will be evaluated through laboratory testing, as described below.

3.2.1 ARD Testing and Classification of ARD Potential (PAG / Non-PAG)

The ARD potential of waste rock is traditionally characterized through acid-base accounting (ABA) analyses. ABA analysis involves a suite of analytical tests that include paste pH, total sulphur, sulfate sulphur, neutralization potential, and carbonate neutralization potential based on total inorganic carbon. The potential for ARD from waste rock is estimated based on the Neutralizing Potential (NP) provided by carbonate (NP-Ca) and the Acid Potential (AP) based on total sulphur. Then the NP/AP ratio, or net potential ratio (NPR) is calculated used to define the acid generating potential of the waste rock.

Neutralization Potential (NP)

NP is expected to be primarily provided by calcite and dolomite, with some ankerite (Lorax 2022). As a result, carbonate analysis alone would likely be appropriate for determining NP, although both methods were used (i.e., titration and direct carbonate analysis). Carbonate mineralogy at Discovery showed that calcite dominated the carbonate mineral assemblage in all waste rock lithologies encountered (gabbro, iron formation and sedimentary). Waste rock samples from Discovery show lower sulphide and carbonate mineral content for the Iron Formation and Sedimentary lithologies relative to the other deposits.

Acid Potential (AP)

In Discovery, gold mineralization is predominantly hosted in the northernmost 'upper oxide' iron formation, located parallel to the trend of the Pyke fault, within southeast-northwest trending stratigraphy. Gold mineralization is structurally controlled within folds and shear zones and is associated with quartz veining, silica flooding and sulphidization of magnetite by pyrrhotite and/or arsenopyrite (Lorax 2022).

The 2021 geochemical characterization results indicate that the sulphide minerals pyrrhotite, pyrite and arsenopyrite were identified by XRD in Meliadine waste rock. Each mineral phase will generate different amounts of acidity when oxidized. Pyrrhotite was found to be dominant in samples from the IF and SE units. As a result, the main consideration for AP is the presence of sulphide minerals at Discovery.

ARD Assessment

The potential for ARD was assessed using NP-Ca/AP ratios (or NPR). AP was calculated from total sulphur. Ratios below 2 were used to indicate potential for ARD (PAG or potentially ARD generating), whereas ratios above 2 indicate low potential for ARD (NPAG). The ARD Guidelines used to classify Discovery Waste Rock are presented in Table 3.2.

Table 3.2: Summary of ARD Guidelines used to classify Discovery Waste Rock

Initial Screening Criteria	ARD Potential
NPR< 1	Likely Acid Generating (PAG)
1 < NPR < 2	Uncertain
2 < NPR	Acid Consuming Non-Potentially Acid Generating (Non-PAG)

Source: Meliadine Mine 2020 Annual Report and Lorax 2022

3.2.2 Assessment of Metal Leaching Potential

Waste rock materials can also potentially leach metals and other elements when they come into contact with water and air, which is referred to as ML potential and can occur even if the materials are non-PAG. Arsenic is identified as a parameter of environmental interest based on laboratory leaching tests completed to date (Lorax 2022).

Standard laboratory techniques for analysis of ML potential at Discovery will include SFE and humidity cell tests (HCT). Both tests involve exposing the samples to water and measuring the metal content of the water after a prescribed period of contact time. The turn-around time for analytical results is too long for either of these tests to be used as a decision-making tool on a day-to-day basis as required during mine operations. Consequently, it is not feasible to segregate waste materials based on measured ML potentials derived from leaching tests.

As a result, ML potential would be determined through development of a predictive relationship between humidity cell leachate results, SFE leachate results and total metals concentrations in rock samples. Analyses for total metals would then occur onsite, and ML potential would be classified using the previously established relationship. However, a reliable model could not be developed. The ML potential will be confirmed through quarterly analyses of SFE leachate on a minimum of 75 samples sent to an external accredited laboratory. This includes 25 samples each of rock type at Discovery.

A surface runoff water monitoring program will allow for detection of ML in the Discovery WRSF and sumps (refer to the proposed monitoring stations for Meliadine Extension in the Water Quality and Flow Monitoring Plan).

3.2.3 Quality Assurance / Quality Control (QA/QC)

Mined rock samples from Discovery will be subjected to the same quality assurance / quality control (QA/QC) program currently in use at Meliadine Mine, which includes:

- Use of certified reference materials to verify precision of analytical methods used
- Quarterly analysis of a minimum of 75 duplicate samples by an accredited external lab for full ABA to verify the onsite lab's accuracy with these determinations and confirm correlations.
- The frequency of the analyses will be evaluated and altered as necessary as the database increases. A geostatistical approach will be considered to establish the number of QA/QC samples required by rock type at Discovery and to achieve statistical confidence.

The QA/QC analysis will be conducted by the Geology Department, and results will be reported to the Geology and Environment Superintendents. Data will be made available for the annual report.

3.3 Waste Rock Characterization

Following laboratory analysis, geology staff will classify waste rock as non-PAG if the NPR value is equal or greater than 2 and PAG if the NPR value is less than 2 (Table 3.2). These criteria can be re-evaluated when judged relevant by the Geology Superintendent in consultation with the mine engineer, as additional test data become available. ARD classifications of all samples will be logged in a database and will be available as required for annual reports or upon request.

Both waste types 1) NPAG/NML and 2) PAG/NML-ML and NPAG/ML will be assigned a unique identification number and tracked in WENCO to their final location.

SECTION 4 • PLAN REVIEW, PERFORMANCE MONITORING & REPORTING

4.1 Plan Review

The Mine Geology Superintendent will be responsible for implementing the ARD-ML Sampling and Testing Plan. The Plan will be reviewed as required by the Geology Superintendent and updated if necessary to reflect any adaptive changes made in the operational and testing procedures. The changes should be made in consultation with the mine engineer, environmental superintendent, and chief assayer. Revised versions should be sent according to the Distribution List.

4.2 Performance Monitoring

The ARD-ML Sampling and Testing Plan will be the primary tool to ensure that all waste rock generated at Discovery during Meliadine Extension is appropriately characterized and managed to prevent the future release of contaminants into the receiving environment.

In addition to the analytical QA/QC procedures outlined in Section 3.0, performance monitoring activities will include those activities outlined below.

4.2.1 Water Quality Monitoring

The Discovery WRSF and infrastructure contact water quality will be sampled and monitored by the Agnico Eagle in accordance with the Type A Water Licence. The details of this monitoring program are described in the Meliadine Mine – Water Quality and Flow Management Plan. The data from this monitoring is to be provided to the NWB through annual reporting, as per the Type A Water Licence.

4.2.2 Permafrost Development

Thermistors will be installed within the Discovery WRSF to determine if permafrost formation is observed. Thermal monitoring results are provided in Agnico Eagle's annual report submitted to the NWB. More information regarding the thermal monitoring plan is provided in the Meliadine Extension – Mine Waste Management Plan. Thermal monitoring results are provided in Agnico Eagle's annual report submitted to the NWB.

SECTION 5 • REFERENCES

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