AGNICO EAGLE

MELIADINE GOLD MINE

Mine Waste Management Plan

MARCH 2024
VERSION 11
6513-MPS-09

ᐃᓈᖅᓯᒪᔪᖅ

ᐊᒻᓃᑯ ᐋᒍ ᐅᔨᕋᒃᑕᕆᐊᓕᕆᔾᑯᑦ (ᐊᒻᓃᑯᒃᑯᑦ) ᒫᓐᓇ ᐊᐅᓚᖅᑎᑦᑎᔪᑦ ᑕᓯᕐᔪᐊᕐᒥᑦ ᒨᓗᒧᑦ ᐅᔨᕋᒃᑕᕆᐊᕐᒥᑦ (ᐅᔨᕋᒃᑕᕆᐊᖅ), 25 ᑭᓛᒥᑕᐃᑦ ᐅᐊᖕᓇᖓᓂᑦ ᑲᖏᖅᖠᓂᕐᒥᑦ ᐅᖓᓯᒃᑎᒋᔪᖅ, ᐊᒻᒪᓗ 80 ᑭᓛᒥᑕᐃᑦ ᓂᒋᖅᐸᓯᐊᓂᑦ ᐱᖓᖕᓇᖅᐸᓯᐊᓂᑦ ᐃᒡᓗᓕᒫᕐᔪᖕᒥᑦ ᐅᖓᓯᒃᑎᒋᔪᖅ ᑭᕙᓪᓕᕐᒥᑦ ᓄᓇᕗᒻᒥᑦ. ᐅᔨᕋᒃᑕᕆᐊᕐᒧᑦ ᐸᕐᓇᐅᑎᒥᑦ ᐃᓚᐅᔪᑦ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᖅ ᐊᒻᒪᓗ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔨᕋᒃᑕᕆᐊᑦ ᐱᕙᓪᓕᐊᔾᔭᐅᓂᖓᓄᑦ ᑎᕆᒐᓂᐊᖅ ᒨᓗᑕᓕᒃ, ᒪᕐᕉᖕᓂᒃ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᖃᖅᑐᓂ (ᑎᕆᒐᓂᐊᖅ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᖅ 1 ᐊᒻᒪᓗ ᑎᕆᒐᓂᐊᖅ ᓄᓇᒥᑦ ᐅᒃᑯᐃᖓᔪᖅ 2) ᐊᒻᒪᓗ ᐊᑕᐅᓯᖅ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᐅᔨᕋᒃᑕᕆᐊᖅ.

ᓯᑕᒪᐅᓕᖓᔪᖅ ᐱᕙᓪᓕᐊᔾᔭᐅᓂᖓ ᑎᕆᒐᓂᐊᖅ: 3.5 ᐅᑭᐅᓂᑦ ᓴᓇᔭᐅᓂᖓ (Q4 2015-ᒥᑦ Q2 2019-ᒧᑦ), 8.5 ᐅᑭᐅᓂᑦ ᐊᐅᓚᓂᖓ ᐅᔨᕋᒃᑕᕆᐊᖅ (Q3 2019-ᒥᑦ 2027-ᒧᑦ), ᐱᖓᓱᑦ ᐅᑭᐅᓂᑦ ᐅᒃᑯᐊᖅᐸᓪᓕᐊᓂᖅ (2028-ᒥᑦ 2030-ᒧᑦ), ᐊᒻᒪᓗ ᐅᒃᑯᐊᖅᓯᒪᓕᖅᑎᓪᓗᒍ (ᐅᑭᐅᖅ 2030 ᐅᖓᑖᓄᑦ). 14.6 ᒥᓕᔮᓐ ᑕᓐᓗᐊᑦ (Mt) ᐅᔨᕋᒃᑕᖅᑕᐅᔪᓂᒃ ᐱᓕᐅᕆᓂᐊᖅᑐᑦ. ᐅᔨᕋᒃᑕᖅᑕᐅᔪᑦ ᓯᖃᓪᓕᑎᖅᑕᐅᓂᐊᖅᑐᑦ 8 ᐅᑭᐅᓪᓗᐊᓄᑦ ᐊᐅᓚᓂᕆᔭᖓᑕ ᐅᔨᕋᒃᑕᕆᐊᖅ 4,550 ᑕᓐᓗᐊᑦ ᖃᐅᑕᒫᒃᑯᑦ (tpd) ᐅᑭᐅᖅ 1-ᒥᑦ ᐅᑭᐅᖅ 4-ᒧᑦ ᐊᒻᒪᓗ ᐱᐊᓂᒃᐸᓪᓕᐊᓗᑎᒃ 5,500 ᑕᓐᓗᐊᖑᖃᑦᑕᕐᓗᑎᒃ ᖃᐅᑕᒫᒃᑯᑦ ᐃᓯᐊᓂᑦ ᐅᑭᐅᖅ 5 ᑎᑭᓪᓗᒍ ᐅᑭᐅᖅ 7-ᒧᑦ. ᐅᑭᐅᖅ 8-ᒥᑦ, ᑲᑎᑕᐅᓯᒪᔪᑦ ᐊᒻᒪᓗ ᐊᒥᐊᒃᑰᔪᑦ ᐅᔨᕋᒃᑕᖅᑕᐅᔪᑦ ᓯᖃᓪᓕᑎᖅᑕᐅᖃᑦᑕᕐᓂᐊᖅᑐᑦ.

ᐊᒃᑯᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᐃᑦ ᐊᒻᒪᓗ ᐅᖓᑕᐅᑦᑎᔪᑦ ᓄᓇᒃᑰᕈᑎᒃᑯᑦ ᐊᒡᔭᖅᑐᖅᑕᐅᖃᑦᑕᕐᓂᐊᖅᑐᑦ ᐊᒃᑯᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᖕᓄᑦ ᑭᓯᐊᓂ ᐃᓱᓕᑉᐸᑦ ᐅᔨᕋᒃᑕᕆᐊᑉ ᐊᐅᓚᕐᓂᖓ, ᐊᒡᔭᖅᑐᖅᑕᐅᖃᑦᑕᕐᓗᑎᒃ ᒪᓕᒡᓗᒍ ᐊᐅᓚᕐᓂᕐᒧᑦ ᖃᖓᒃᑰᖓᔪᖅ. ᒪᕐᕉᒃ ᐃᓂᐅᔪᑦ ᖃᐅᔨᔭᐅᓚᐅᖅᑐᑦ ᐊᒃᑯᖅᑕᐅᔪᑦ ᐅᔭᖅᖃᓄᑦ ᑐᖅᕐᑯᖅᓯᓯᒪᕝᕕᐅᓗᑎᒃ (WRSF). ᐅᒃᑯᐊᕐᓂᖓᓂᑦ ᐊᒃᑯᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕚᑦ ᐱᒋᐊᕐᓂᐊᖅᑐᖅ ᐊᔪᕐᓇᖅᒋᓕᖅᐸᑦ ᐃᓚᒋᔭᐅᓗᓂ ᐅᑎᖅᑎᑎᕙᓪᓕᐊᓂᕐᒧᑦ. ᐊᒃᑯᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕚᑦ ᖃᓕᖅᑕᐅᔾᔮᖅᒥᑦᑐᑦ ᐊᒻᒪᓗ ᐱᕈᖅᑐᓂᒃ ᐃᓪᓕᕆᔭᐅᖕᒋᓪᓗᑎᒃ ᐊᒻᒪᓗ ᐃᓚᓯᓂᖃᒃᑲᓐᓂᕐᔾᔮᖅᒥᑦᑐᑦ ᒪᓕᒃᑯᒍ ᐅᒃᑯᐊᖅᐸᓪᓕᐊᓂᕐᒧᑦ ᐸᕐᓇᐅᑎ. ᐆᓇᕐᓂᕐᒥᒃ ᖃᐅᔨᓴᐃᔾᔪᑏᑦ ᐃᓕᔭᐅᓂᐊᖅᑐᑦ ᐊᒃᑯᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᓄᑦ ᑐᖅᑲᖅᓯᓯᒪᕝᕕᖕᓄᑦ ᖃᐅᔨᓴᕐᓂᐊᕐᓗᒋᑦ ᕿᐊᖑᐃᓐᓇᐅᔭᖅᑐᓕᐅᕐᓃᑦ.

14.6 ᒥᓕᔮᓐ ᑕᓐ ᕿᒪᒃᑎᑦᑐᓂᑦ, 10.9 ᒥᓕᔮᓐ ᑕᓐ-ᓗᐊᑦ ᓴᓗᒪᐃᔭᐃᔾᔪᑎᖃᖅᑐᑦ ᕿᒪᒃᑎᑦᑐᑦ ᐃᓕᔭᐅᓂᐊᖅᑐᑦ ᕿᒪᒃᑎᑦᑐᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᖕᒧᑦ ᐸᓂᖅᓱᑎᒃ ᑲᑎᓯᒪᔪᑦ ᕿᒪᒃᑎᑦᑐᑐᑦ, ᐊᒥᐊᒃᑯᐃᓪᓕ 3.7 ᒥᓕᔮᓐ ᑕᓐ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᓄᓇᐅᑉ ᐃᓗᐊᓂᑦ ᕿᑯᓕᖅᑕᐅᓗᓂ. ᕿᒪᒃᑎᑦᑐᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᒃ ᒪᕐᕉᖕᓂᕐ ᐃᓂᖃᖅᑐᖅ, ᐊᐅᓚᖅᑎᑕᐅᓂᐊᖅᑐᑦ ᐊᑕᐅᓯᐅᖃᑦᑕᕐᓗᒋᑦ ᐅᒃᑯᐊᖅᐸᓪᓕᐊᓂᐊᕐᓗᓂ ᐅᔨᕋᒃᑕᕆᐊᖅ ᐊᐅᓚᕐᓂᖓᓂᑦ. ᐃᓚᖓ ᖄᓕᒃ ᐅᖓᑕᐅᑦᑎᔪᓂᑦ ᐊᒻᒪᓗ ᐊᒃᑯᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᐃᑦ ᐊᑐᖅᑕᐅᓂᐊᖅᑐᑦ ᕿᒪᒃᑎᑦᑐᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᒃ ᐅᒃᑯᐊᖅᑕᐅᓂᖓᓄᑦ. ᐆᓇᕐᓂᕐᒥᒃ ᖃᐅᔨᓴᐃᔾᔪᑏᑦ ᐃᓕᔭᐅᓂᐊᖅᑐᑦ ᖃᐅᔨᓴᕐᓂᐊᕐᓗᒋᑦ ᕿᐊᒃᑲᓐᓂᖃᑦᑕᕐᓃᑦ ᐊᒻᒪᓗ ᕿᐊᖑᐃᓐᓇᐅᔭᓕᐅᕆᓂᕐᒧᑦ.

ᐊᒃᑯᖅᑕᐅᔪᑦ ᐅᔭᖅᑲᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕚᑦ ᐊᒻᒪᓗ ᕿᒪᒃᑎᑦᑐᓄᑦ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᒃ ᐋᖅᑭᒃᑕᐅᓯᒪᔪᑦ ᐊᒻᒪᓗ ᐊᐅᓚᖅᑎᑕᐅᓗᑎᒃ ᒥᑭᓛᒃᑰᖅᑎᓐᓂᐊᕐᓗᒋᑦ ᐊᕙᑎᒥᒃ ᐊᒃᑐᖅᓯᓃᑦ ᐊᒻᒪᓗ ᐃᓱᒪᒋᑉᓗᒋᑦ ᓄᓇ ᐊᒻᒪᓗ ᓄᓇᒧᑦ ᐃᓚᒋᔭᐅᔪᑦ ᐊᔪᙱᓐᓂᐊᕐᓂᖏᓐᓄᑦ. ᓄᓇᐅᑉ ᖀᖓᓂᑦ ᑯᕕᔪᖅ ᐊᒻᒪᓗ ᐃᒪᕐᒥᑦ ᑯᕕᓂᖅ ᑐᖅᑯᖅᓯᓯᒪᕝᕕᖓᓂᑦ

ᓴᖑᑎᑕᐅᖃᑦᑕᖅᑐᑦ ᓱᐸᓗᓕᒃᑯᑦ ᐊᒻᒪᓗ ᑲᑎᑕᐅᑉᓗᑎᒃ ᐃᒪᕐᒥᑦ ᑲᑎᑦᑎᕝᕕᐅᔪᑦ ᑕᓯᕋᔭᖕᓂᑦ (CP). ᑲᑎᑕᐅᔪᑦ ᐊᒃᑐᖅᑕᐅᓯᒪᔪᖅ ᐃᒪᖅ ᐱᓕᕆᐊᖑᖅᖃᐅᑕᐅᖃᑦᑕᖅᑐᖅ ᑯᕕᑎᑕᐅᓂᐊᓵᕐᓗᓂ ᓯᓚᒧᑦ ᓄᓇᒧᑦ.

EXECUTIVE SUMMARY

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. The mine plan includes open pit and underground mining methods for the development of the Tiriganiaq gold deposit, with two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and one underground mine.

There are four phases to the development of Tiriganiaq: 3.5 years construction (Q4 2015 to Q2 2019), 8.5 years mine operation (Q3 2019 to 2027), 3 years closure (2028 to 2030), and post-closure (Year 2030 forward). Approximately 14.6 million tonnes (Mt) of ore will be produced. The produced ore will be milled over approximately 8 years of mine life at a rate of approximately 4,550 tonnes per day (tpd) in Year 1 to Year 4 and ramp up to 5,500 tpd in end of Year 5 until year 7. In Year 8, the stockpile and remaining ore production will be milled.

Waste rock and overburden will be trucked to the waste rock storage facilities (WRSFs) until the end of mine operation, with distribution according to an operation schedule. Two areas have been identified as the WRSFs. Closure of the WRSFs will begin when practical as part of the progressive reclamation program. The WRSFs will not be covered and vegetated and no additional re-grading activity will be required under the closure plan. Thermistors will be installed within the WRSFs to monitor permafrost development.

Of the 14.6 Mt of tailings produced, about 10.9 Mt of filtered tailings will be placed in the tailings storage facility (TSF) as dry stack tailings, while the remaining 3.7 Mt will be used underground as cemented paste backfill. The TSF consists of two cells, which will be operated one by one to facilitate progressive closure during mine operation. A layer of overburden and waste rock will be used for the TSF closure. Thermistors installed within the facility will monitor freeze-back and permafrost development.

The WRSFs and TSF were designed and will be operated to minimize the impact on the environment and to consider geotechnical and geochemical stability. The surface runoff and seepage water from the storage facilities is diverted via channels and collected in water collection ponds (CPs). The collected contact water is treated prior to being discharged to the receiving environment.

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Tables in Text

Figures

DOCUMENT CONTROL

Version	Date	Section	Page	Revision	Author
1	April 2015			First draft version of Mine Waste Management Plan as Supporting Document for Type A Water Licence Application, submitted to Nunavut Water Board for review and approval	Tetra Tech EBA Inc.
2	June 2016	1.1, 1.2, 1.3 3.3 5.5, 6.1, 9.1, 9.2	1-2 12-15 22-24 34-35; 37-38	Update to reflect issuance of the Type A Water Licence. Removal of original Section 1.3 as was specifically linked to the application. Update to reflect receipt of Type A Water Licence The Plan updated to comply with Part B Section 13, and Part F Sections 12, and20 of the Type A Water Licence 2AM-MEL1631 and commitments made during the licensing process.	Golder Associates Ltd.
3	March 2018			Minor revisions	Environment, Engineering Departments
4	December 2018	All 1.3 3.1, 3.2 4.1, 4.3, 4.4 4.2 5.2, 5.4 5.5, 5.6 6.1 7 8.2 9.2 Appendix A	All 11,14 20-23 24, 27-28 29 30-32 33-35 36-38 43 46-47 50-52	Plan update in response to approved TSF Design Report (6515-583-163-REP-001) Update of production timeline Update of tailing quantities Update of closure cover material values Inclusion of temporary waste rock stockpile for construction of saline pond 2 (Figure 4.1.1; Tables 4.1.1, 4.1.2, 4.1.3) Update of TSF design, parameters and schedule Update of tailings placement plan dimensions within each cell of TSF Update of Water Management based on TSF design report (6515-583-163-REP-001) and infrastructure updates Minor dust management revision Updates to closure plan based on approved TSF design report (6515-583-163-REP-001) Monitoring program update based on Type A Water Licence 2AM-MEL1631 requirements and TSF design report (6515-583-163-REP-001) Figs 1.2, 5.1, 5.4 updated. Add Figs 5.2, 5.3	Environment Department
5	March 2019	Table 1.1 Table 4.2, 4.3, 5.1		Updated according to current status Update quantities according to the latest mine plan	Environment Department

Version	Date	Section	Page	Revision	Author
		6.1.1 and 6.1.3		Catchment ponds name changes	
		4.1 T 4.1.3 8.1	26 31 45	Name Change from MMER to MDMER	
6	March 2020	All	All	Update to reflect Meliadine operational status from Project to Mine; Major revisions throughout	Engineering, Environment Departments
7	March 2021	All	All	Update to reflect Meliadine operational status Update quantities according to latest mine plan	Engineering, Environment Departments
8	August 2021	All	All	Update to reflect change in waste management strategy and decommissioning of P-Area	Engineering Department
9	April 2022	All	All	Update to reflect Meliadine operational status Update quantities according to latest mine plan	Engineering, Environment Departments
10	March 2023	All	All	Update to reflect Meliadine operational status Update quantities according to latest mine plan	Engineering Department
11	March 2024	All	All	Update to reflect Meliadine operational status Update quantities according to latest mine plan Added section 5.7 on Temporary Storage Pad for Tailings during caribou migration	Environment Department

ACRONYMS

ABA	Acid Base Accounting
Agnico Eagle	Agnico Eagle Mines Limited
ARD	Acid Rock Drainage
CP	Containment Pond
EWTP	Effluent Water Treatment Plant
GWMP	Groundwater Management Plan
IFC	Issued for Construction
MDMER	Metal and Diamond Mining Effluent Regulation
MEND	Mining Environment Neutral Drainage
Mine or Project	Meliadine Gold Mine
ML	Metal Leaching
MWMP	Mine Waste Management Plan
NIRB	Nunavut Impact Review Board
NML	Non-Metal Leaching
NPAG	Non-Potential Acid Generating
NPR	Net Potential Ratio
NWB	Nunavut Water Board
OP	Ore Storage Pad
PGA	Peak Ground Acceleration
SP	Saline Pond
STP	Sewage Treatment Plant
TSF	Tailings Storage Facility
WMP	Water Management Plan
WRSF	Waste Rock Storage Facility
WTC	Water Treatment Complex

UNITS

%	percent
°C	degrees Celsius
°C/m	degrees Celsius per meter
cm/s	centimetre per second
ha	hectare
kPa	kilopascal
km	kilometre(s)
L	liter(s)
m	metre
mg	milligram
m/s	metre per second
mm	millimetre
mm/h	millimetre per hour
m^2/year	square metre(s) per year
m^3	cubic metre(s)
Mm^3	million cubic metre(s)
t	tonne
t/m^3	tonne per cubic metre
Mt	million tonne(s)
µm	micrometre

SECTION 1 • INTRODUCTION

Agnico Eagle Mines Ltd. (Agnico Eagle) operates the Meliadine Gold Mine (the Mine) located approximately 25 kilometres (km) north of Rankin Inlet (Figure 1.1), Nunavut, and 80 km southwest of Chesterfield Inlet in the Kivalliq Region of Nunavut. The Mine is subject to the terms and conditions of both the amended Project Certificate 006 issued by the Nunavut Impact Review Board (NIRB) on March 2nd, 2022 and the Type A Amended Water Licence No. 2AM-MEL1631 (the Licence) issued by the Nunavut Water Board (NWB) on May 13, 2021 and approved by the Minister of Northern Affairs on June 23rd, 2021.

This document presents an updated version of the Mine Waste Management Plan (MWMP).

1.1 Waste Management Objectives

The waste management objectives are to minimize potential impacts to the environment during all phases of mining. The purpose of the MWMP is to provide information to applicable mine departments (Environment, Engineering, Mine, Energy and Infrastructure, etc.) for sound mine waste management practices, proposed and existing infrastructure, and provide strategies for water management (runoff), dust control and monitoring programs.

Mine waste management structures (tailings storage, waste and overburden storage) are utilized to contain and manage mine waste from areas affected by mining activities. Measures have been implemented for the Mine Construction and Mine Operation phases.

1.2 Management and Execution of the Mine Waste Management Plan

Revisions of the MWMP can be initiated by changes in the Mine Development Plan (Mine Plan), operational performance, personnel or organizational structure, regulatory or social considerations, and/ or design philosophy. The MWMP will be reviewed annually by Agnico Eagle and updated as necessary.

SECTION 2 • BACKGROUND

2.1 Site Conditions

The Mine is located in an area of poorly drained lowlands near the northwest coast of Hudson Bay. The dominant terrain in the area consists of glacial landforms such as drumlins (glacial till), eskers (gravel and sand), and many small lakes. The topography is gently rolling with a mean elevation of 65 metres above sea level (masl) and a maximum relief of 20 meters.

The climate is extreme in the area, with long cold winters and short cool summers, and mean air temperatures of 12°C in July and -31°C in January. The mean annual air temperature at the Mine site is approximately -10.4 °C (Golder, 2012a). Strong winds blow from the north and north-northwest direction more than 30 percent of the time.

The mean annual precipitation in the area is approximately 412 mm and is typically equally split between rainfall and snowfall.

2.1.1 Local Hydrology

The Mine is located within the Meliadine Lake watershed. Meliadine Lake has a water surface area of approximately 107 square kilometres (km^2), a maximum length of 31 km, features a highly convoluted shoreline of 465 km, and has over 200 islands. Unlike most lakes, it has two outflows that drain into Hudson Bay through two separate river systems. It has a drainage area of 560 km^2 upstream of its two outflows. Most drainage occurs via the Meliadine River, which originates at the southwest end of the lake. The Meliadine River flows for a total stream distance of 39 km. The Meliadine River flows through a series of waterbodies, until it reaches Little Meliadine Lake and then continues into Hudson Bay. A second, smaller outflow from the west basin of Meliadine Lake drains into Peter Lake, which discharges into Hudson Bay through the Diana River system (a stream distance of 70 km). At its mouth, the Diana River has a drainage area of 1,460 km^2.

Watersheds in the Mine area are comprised of an extensive network of waterbodies, and interconnecting streams. The hydrology of these watersheds is dominated by lake storage and evaporation.

2.1.2 Ice and Winter Flows

Late-winter ice thicknesses on freshwater lakes in the Mine area range between 1.0 to 2.3 m with an average thickness of 1.7 m. Ice covers usually appear by the end of October and are completely formed in early November. The spring ice melt (freshet) typically begins in mid-June and is complete by early July (Golder, 2012b).

2.1.3 Spring Melt (Freshet) and Freeze-up Conditions

With the exception of the main outlet of Meliadine Lake, which has been observed to flow continuously throughout the year, outlets of waterbodies near the Mine typically start flowing late May or early June, followed by freshet flows in mid-to-late-June. Flows steadily decrease in July and low flows are ongoing from August to the end of October, prior to winter freeze.

2.1.4 Permafrost

The Mine is located in an area of continuous permafrost. The depth of permafrost is estimated to be in the order of 360 to 495 m. The depth of the active layer ranges from about 1 m in areas with shallow overburden, up to 3 m adjacent to the lakes. The typical permafrost ground temperatures at the depths of zero annual amplitude (typically at the depth of below 15 m) are in the range of -5.0 to -7.5 °C in the areas away from lakes and streams. The geothermal gradient ranges from 0.012 to 0.02 °C/m (Golder, 2012b).

2.1.5 Local Hydrogeology

Groundwater characteristics at areas of continuous permafrost that are generally present in the Mine area include the following flow regimes:

- A shallow flow regime located in an active layer (seasonally thawed) near the ground surface and above permafrost; and,
- A deep groundwater flow regime beneath the base of the permafrost.

From late spring to early autumn, when temperatures are above 0˚C, the shallow active layer thaws. Within the active layer, the water table is projected to be a subdued replica of topography. Groundwater in the active layer flows to local depressions and ponds that drain to larger waterbodies. The talik beneath large waterbodies will be open. The open talik will connect to the deep groundwater flow regime beneath the permafrost.

Elongated waterbodies with terraces and a width of 340 to 460 m or greater are expected to have open taliks extending to the deep groundwater flow regime at the Mine. Meliadine Lake and Lake B7 are likely to have open taliks connected to the deep groundwater flow regime (Golder, 2012a). No impact is expected to Lake B7 by mine activities.

2.1.6 Subsurface Conditions

The general subsurface conditions of the various waste facilities are similar. Typically, a thin veneer of organic material overlays ice-rich silty sand or sandy silt, gravely sand and silt, with traces of clay, shells, cobbles and boulders. The overburden thickness ranges between 1.3 m to 13.6 m. Excess ice and ice layers have been observed in many of the boreholes where recovery was possible.

Soil porewater salinity tests (Tetra Tech EBA, 2013a) indicated that the overburden soils at the mine site may have a porewater salinity of 4 to 12 parts per thousand.

Bedrock at the Mine site area consists of a stratigraphic sequence of clastic sediments, oxide iron formation, siltstones, graphitic argillite, and mafic volcanic flows (Snowden, 2008; Golder, 2009a).

2.1.7 Seismic Zone

The mine site is situated in an area of low seismic risk. The peak ground acceleration (PGA) for the area was estimated using seismic hazard calculator from the 2010 National Building Code of Canada website (http://www.earthquakescanada.nrcan.gc.ca/hazard-alea/interpolat/index_2010-eng.php). The estimated PGA is 0.019 g for a 5% in 50-year probability of exceedance (0.001 per annum or 1 in 1,000 year return) and 0.036 g for a 2% in 50-year probability of exceedance (0.000404 per annum or 1 in 2,475 year return) for the area.

SECTION 3 • MINE WASTE DEVELOPMENT

3.1 Mine Development Plan

The Mine Plan and key mine development activities, including water management, are currently used concurrently with the MWMP.

The Mine Plan includes one underground mine (Tiriganiaq Underground Mine) and two open pits (Tiriganiaq Open Pit 1 and Tiriganiaq Open Pit 2) for the development of the Tiriganiaq gold deposit.

The Mine is expected to produce approximately 14.6 million tonnes (Mt) of ore, 35 Mt of waste rock, 8.8 Mt of overburden waste, and 14.6 Mt of tailings. The following phased approach is proposed for the development of the Tiriganiaq gold deposit;

- Phase 1: 3.5 years for Mine Construction (Q4 2015 to Q2 2019);
- Phase 2: 8.5 years for Mine Operations, beginning in 2019 (Q2 2019 to 2027);
- Phase 3: 3 years Mine Closure (2028 to 2030); and;
- Phase 4: Post-Closure (2030 forward).

Mining facilities on surface include a plant site and accommodation buildings, ore stockpiles, a tailings storage facility (TSF), two waste rock storage facilities (WRSFs), a water management system that includes collection ponds, water diversion channels, retention dikes/berms, and water treatment plants. The general mine site layout plan is shown on Figure 3.1, while Table 3.1 provides the key mine development activities and sequence.

Table 3.1: Key Mine Development Activities and Sequence

Mine Year	Mine Development Activities and Sequence
Q4 of Yr -5 (2015)	• Started construction of industrial pad • Developed ramp to Tiriganiaq underground mine • Constructed portion of rock pad for stockpiles to store ore from Tiriganiaq underground ramp development
Yr -4 (2016)	• Continued construction of industrial pad • Constructed and operated the temporary landfill • Started temporary storage of waste rock in the future WRSF2 footprint for construction purposes
Yr -3 (2017)	• Constructed and utilized Type A landfarm • Constructed and began operation of Type A landfill • Erected and closed all main buildings except crusher, paste plant and crushed ore storage • Erected incinerator • Erected and operated effluent water treatment plant (EWTP) • Installed fuel tanks 3 ML and 250 kL at Portal1 • Erected fuel tank 13.5 ML in Rankin
Yr -2 (2018)	• Started construction of Ore Storage Pad 2 (OP2) • Erected and closed crusher paste plant and crushed ore storage buildings • Erected fuel tank 20 ML in Rankin • Erected fuel tanks 6 ML and 250 kL at industrial pad • Started process commissioning at end of Q4

Mine Year	Mine Development Activities and Sequence
Yr -1 (2019)	• Completed industrial pad • Completed construction of OP2 stage 1 • Started to place filtered tailings in Cell 1 of tailings storage facility (TSF) at end of Q1 • Started full capacity ore processing early Q2 • Created temporary waste rock storage area within footprint of Tiriganiaq Pit 2 from construction of Saline Pond 2 (SP2) • Began placement of waste materials from Saline Pond 4 (SP4) in waste rock storage facility 1 (WRSF1)
Yr 1 (2020)	• Place waste rock from temporary storage within footprint of Tiriganiaq Pit 2 to construct haul roads for open pits and to WRSFs • Create temporary waste rock storage area between footprints of Tiriganiaq Pits 1 and 2 from construction of SP4 • Start to mine Tiriganiaq Pit 2 • Begin placement of waste rock and overburden from Tiriganiaq Pit 2 within WRSF3 • Place overburden from Tiriganiaq Pit 1 in WRSF1
Yr 2 (2021)	• Start to mine Tiriganiaq Pit 1 • Begin placement of waste rock and overburden from Tiriganiaq Pit 1 in WRSF1 • Continue placement of waste rock and overburden from Tiriganiaq Pit 2 in WRSF1 • Pause mining of Tiriganiaq Pit 2
Yr 3 (2022)	• Continue placement of waste rock and overburden from Tiriganiaq Pit 1 in WRSF1 • Begin placement of overburden from Tiriganiaq Pit 1 into WRSF3 • Start Construction of OP2 stage 2 • Start placement of marginal material on OP2 stage 2
Yr 4 (2023)	• Start to place filtered tailings in Cell 2 of TSF
Yr 5 (2024)	• Place final closure cover on top of tailings surface in Cell 1 of TSF • Stockpile selected overburden for closure • Stop placement of overburden in WRSF3 • Stop placement of waste rock in WRSF1 when design capacity reached
Yr 6 (2025)	• Continue placement of waste rock in WRSF3
Yr 7 (2026)	• Stop mining of Tiriganiaq Pit 1 when the open pit reaches design elevation
Yr 8 (2027)	• Stop Tiriganiaq underground operation when underground mine reaches design elevation • Stop placing waste rock in WRSF3 when design capacity reached • Process the ore from OP2 until all stored ore is processed • Continue mining of Tiriganiaq Pit 2

3.2 Mine Waste Development Plan

3.2.1 Mine Waste Designation and Destination

Three mine waste streams will be produced: waste rock, tailings, and overburden material.

The term “waste rock” designates all fragmented rock mass that has no economic value and needs to be stored separately. Waste rock is also commonly referred to as “mine rock” in the mining industry. Typically, waste rock is produced during the initial stripping and the subsequent development of open pits and underground workings.

The term “overburden” designates all soils above the bedrock that need to be stripped at surface prior to developing the open pits. Generally, the overburden at the site consists of a thin layer of organic material overlying a layer of non-cohesive soil with variable amounts of silt, sand, and gravel.

Tailings are the processed material by-product of the gold recovery process and generally comprise of sand, silt, and clay sized particles.

The overall usage or destination of the three mine waste materials is presented in Table 3.2, while Figure 3.2 provides a graphical representation of the mine waste management flow sheet.

Table 3.2: Summary of Mine Waste Tonnage and Destination

Mine Waste Stream	Estimated Quantities		Waste Destination
Overburden	8.8 Mt		Temporary stockpile of Overburden or other suitable material ~ 0.1 Mt for reclamation of TSF
			Closure and site reclamation for the TSF
			Co-disposed with waste rock within WRSFs
Waste Rock	35 Mt		Infrastructure construction (surface and underground)
			WRSFs
			Closure and site reclamation for the TSF
Tailings	14.6 Mt	10.9 Mt	As dry stack tailings placed in the TSF
		3.7 Mt	Used in underground mine as cemented paste backfill

3.2.2 Tiriganiaq Development Schedule and Quantities

The Tiriganiaq gold deposit will be developed using traditional open-pit and underground mining methods. Two open pits (Tiriganiaq Pit 1 and Tiriganiaq Pit 2) and an underground mine (Tiriganiaq Underground) will be developed.

The following mining development sequence is planned:

- Tiriganiaq underground will be developed and operated from Year -5 to Year 8;
- Tiriganiaq Pit 2 will be mined from Year 1 to Year 2; and Year 8
- Tiriganiaq Pit 1 will be mined from Year 2 to Year 7.

Table 3.3 summarizes the schedule and quantities of mine waste to be mined from the open pit and underground mining operations.

Table 3.3: Summary of Mine Waste Production Schedule and Bank Quantities (V19)

Year	Mine Year	Mine Waste from Underground (t)	Mine Waste from Tiriganiaq Pit 1 (t)		Mine Waste from Tiriganiaq Pit 2 (t)	
		Waste Rock	Overburden	Waste Rock	Overburden	Waste Rock
2019*	Yr-1	482,736	392,974[a]		77,301	236,219
2020*	Yr1	608,134	104,717	853,138	781,894	2,542,260
2021*	Yr2	653,096	3,253,785	3,211,951		1,216,825
2022*	Yr3	682,237	1,828,976	2,942,941		
2023*	Yr4	760,507	1,924,273	3,358,879		
2024	Yr5	861,443	460,672	5,135,734		
2025	Yr6	783,882		5,235,756		
2026	Yr7	613,350		3,339,795		
2027	Yr8	456,947				1,088,671
Total (t)		**5,902,331**	**7,965,396**	**24,078,194**	**859,195**	**5,083,975**

* *As-built Quantities from 2019 through 2023 updated based on latest available data*

[a] *Includes approximately 142,446t of overburden from various excavation work constructed 2016-2018 (CP3, CP4, SP2 etc.)*

SECTION 4 • WASTE ROCK AND OVERBURDEN MANAGEMENT

Overburden and waste rock will be co-disposed within the same facilities, with the overburden being encapsulated within the rock to increase overall stability. Geochemically, both materials are similar in that neither requires a means to prevent oxidation. Waste material from underground and the open pits will be trucked to the designated storage facilities, end-dumped and spread into lifts.

4.1 Expected Waste Rock and Overburden Quantities and Distribution

4.1.1 Waste Rock Quantities and Distribution

Approximately 35 Mt of waste rock will be mined from the open pits and underground mine operations, with the majority of the waste rock produced (about 24 Mt) to be placed and stored within the designated WRSFs. The remaining 11 Mt of waste rock will be used for other purposes, including about 3.1 Mt backfilled to the underground mine, 5.2 Mt of waste rock will be used for construction activities (including thermal protection and aggregate production to support the open pits), and 2.4 Mt of waste rock will be used as TSF closure cover material.

The production schedule, quantities, and distribution of waste rock by year is presented in Table 4.1.

Table 4.1: Schedule, Quantities, and Distribution of Waste Rock by Year

fftabl Year	Mine Year	Total Waste Rock from Mine Operation (t)	Utilization of Waste Rock (t)			Waste Rock to be Placed in WRSFs(t)	
			Surface Construction/ Thermal Protection	Rockfill for Underground Backfill	TSF Closure Cover	WRSF1	WRSF3
2019*	Yr-1	718,955	355,753	90,024	141,154		
2020*	Yr 1	4,003,532	275,813	316,982	162,246	293,985	2,954,506
2021*	Yr 2	5,081,872	1,839,140	387,891	250,407	2,575,006	29,428
2022*	Yr 3	3,625,178	1,145,345	421,116	250,645	1,223,993	584,078
2023*	Yr 4	4,119,386	941,697	458,630	175,564	1,674,569	868,927
2024	Yr 5	5,997,177	210,820	379,517	515,011	1,384,951	3,506,878
2025	Yr 6	6,019,638	208,556	335,068	282,000		5,194,013
2026	Yr 7	3,953,145	125,798	343,608	231,240		3,252,500
2027	Yr 8	1,545,617	125,798	351,694	432,738		635,386
2028	Yr 9						
	Total (t)	**35,064,500**	**5,228,720**	**3,084,531**	**2,441,005**	**7,152,503**	**17,025,717**
	Volume (m^3)	**18,651,330**	**2,781,234**	**1,640,708**	**1,298,407**	**3,804,523**	**9,056,232**

**As-built Quantities from 2019 through 2023 updated based on latest available data*

4.1.2 Overburden Quantities and Distribution

Approximately 8.8 Mt of overburden will be produced, with about 8.7 Mt of overburden being co-disposed within the WRSFs. The remaining, approximately 0.1 Mt, may be stored in a temporary overburden stockpile that will be used as cover material for progressive closure and reclamation of the TSF area. The approximate quantities and proposed placement location of the overburden is presented in Table 4.2.

Table 4.2: Schedule, Quantities, and Distribution of Overburden by Year

Year	Mine Year	Total Overburden from Mine Operation (t)	Overburden Stockpile for TSF Closure Cover (t)	Overburden to be Placed in WRSFs (t)	
				WRSF1	WRSF3
2019*	Yr-1	470,275		470,275	
2020*	Yr 1	886,611		104,717	781,894
2021*	Yr 2	3,253,785		3,253,785	
2022*	Yr 3	1,828,976			1,828,976
2023*	Yr 4	2,223,091			1,924,273
2024	Yr 5	460,672	106,191		354,481
2025	Yr 6				
2026	Yr 7				
2027	Yr 8				
2028	Yr 9				
Total (t)		**8,824,592**	106,191	**3,828,776**	**4,889,624**
Volume (m³)		**5,447,279**	**65,550**	**2,363,442**	**3,018,287**

** As-built Quantities from 2019 through 2023 updated based on latest available data*

4.2 Waste Rock Storage Facility Locations

The design locations of the WRSFs took into consideration the environmental, social, economic, and technical aspects of waste rock management, including maintaining minimum distances between the toe of the WRSFs and the open pits, haul and access roads and adjacent lakes.

To achieve the above considerations, two areas were identified for the combined storage of waste rock and overburden material as shown in Figure 3.1. These areas can be described as follows:

- WRSF1: located north of Tiriganiaq Pit 1; and
- WRSF3: located north of Tiriganiaq Pit 2.

In addition to the permanent WRSFs, a temporary waste rock storage pad was constructed around Saline Pond 4 (between the Tiriganiaq Pits 1 and 2 footprints). The material from this temporary facility was used for construction of haul roads, access roads and thermal protection of the saline ponds and open pits. Details of the temporary facilities are provided in Section 4.2.4 of this plan.

4.2.1 Waste Rock Storage Facility 1

WRSF1 will occupy an area of approximately 30.7 ha and is located to the north of Tiriganiaq Pit 1. One small shallow pond (Pond A17) was located within the footprint of WRSF1 and was covered by the facility.

A portion of overburden and waste rock from the SP4 excavation (within Tiriganiaq Pit 1 footprint) and waste rock from underground was placed in WRSF1 in Year -1 and Year 1. The majority of WRSF1 construction however, will occur from Year 2 to Year 5, when the facility will accommodate some of the overburden from Tiriganiaq Pit 1 and a portion of the waste rock. WRSF1 is expected to reach its design capacity in Year 5.

The detailed design report and issued for construction (IFC) construction drawings for WRSF1 (Agnico Eagle, 2019) were approved by the NWB in February 2020. The waste rock volumes in the MWMP have been updated to reflect the detailed design volumes.

4.2.2 Waste Rock Storage Facility 2

WRSF2 will no longer be constructed as a waste rock storage facility, instead material will be placed within its footprint and the area will be used for laydown space and ore storage (OP2 ext.). The footprint of the former WRSF2 is located to the southwest of CP1 (previously Pond H17). Five small ponds (Ponds A58, H8, H9, H10, and H11) were located within the footprint.

Pond A58 has been used since 2016 as the P-Area. The P-Area has been decommissioned by covering the area with waste rock from the underground mine and open pits between Q3 2020 and Q3 2021 to promote permafrost aggradation and will be used as a laydown storage area going forward.

Most of P1 was backfilled with waste rock, with a small portion of P1 in the northwest corner continuing to be used as a snow cell. P2 was fully backfilled with waste rock and is being used as a laydown. P3 remains active and captures surface contact water runoff from the areas adjacent to Portal 1 and former P2 footprint. Additional details are provided in the Water Management Plan (WMP).

4.2.3 Waste Rock Storage Facility 3

WRSF3 is located to the north of Tiriganiaq Pit 2, and its footprint fully covers former Pond H20 and partially covers former Pond H19 with an approximate surface area of 52.6 ha as shown in Figure 4.3. The runoff water from WRSF3 is collected within Pond CP2 and CP6 (former Pond H19). Maximum water depths for former Ponds H19 and H20 were 1.4 m and 1.6 m, respectively. No fish species were found in these two ponds and both were partially dewatered in the fall of 2019 to begin permafrost aggradation.

WRSF3 received all waste material from Tiriganiaq Pit 2 in Year 1 and will accommodate the remaining waste rock and overburden from Tiriganiaq Pit 1 from Year 3 and onward until capacity is reached.

The detailed design report and IFC construction drawings for WRSF3 (Agnico Eagle, 2020a) were submitted to the NWB for approval in Q1 2020. The updated design and IFC construction drawings were prepared and submitted to the NWB in November 2021 and approved in January 2022.

4.2.4 Temporary Waste Rock Stockpiles (Saline Pond 2 and Saline Pond 4)

Based on adaptive management strategies, the mine recognized the requirement for additional surface saline contact water storage ponds in 2019. Additional details are provided in the WMP and Groundwater Management Plan (GWMP).

SP4 is temporary in nature and allowed for the dewatering of SP2 to facilitate construction of Tiriganiaq Pit 2 while providing additional storage for saline contact water from the underground mine. SP4 was constructed in bedrock within the footprint of Tiriganiaq Pit 1. A bank total of 249,708 m^3 of overburden was removed during construction, with this material being transported and placed within WRSF1. The haul roads to accommodate this phase of SP4 construction, as well as the thermal rockfill covering to protect the overburden excavation, were built using the temporary stockpile of SP2 waste rock. The remainder of the SP2 waste rock stockpile was utilized to construct access to the CP6 and WRSF3 areas, as well as complete the road access from the open pits to the primary crusher.

In addition to overburden, the excavation of SP4 generated approximately 305,393 m^3 (bank volume) of waste rock, a portion of which was temporarily stockpiled between the footprints of Tiriganiaq Pit 1 and Tiriganiaq Pit 2. This material was used as thermal protection of the overburden slopes of Tiriganiaq Pit 2. The temporary stockpile from SP4 will be monitored for seepage and/or runoff and the excavated waste rock is being sampled and tested for acid rock drainage / metal leaching (ARD/ML) potential. In 2023, the majority of the material stored in the temporary stockpile by SP4 was removed and used for construction purposes or placed in the WRSFs.

SP4 was dewatered (to Tiriganiaq Pit 2) and incorporated into Tiriganiaq Pit 1 in late 2022.

4.3 Waste Rock Storage Facility Design Parameters

Table 4.3 summarizes some of the key physical parameters used for the design of WRSF1 and WRSF3. Each WRSF will be constructed in a similar fashion, with material placed in controlled lifts. The side slopes of each lift of material will be at the angle of repose, while the overall side slopes of each facility will be determined by stepping in each lift of material. Figure 4.1 shows the general evolution over time of the WRSF3 expansion design, while a typical cross section of WRSF1 is provided in Figure 4.2.

Table 4.3: Waste Rock Storage Facility Design Parameters		
Design Parameters	**WRSF1**	**WRSF3**
Maximum height of each overburden and waste rock bench (m)	5	5
Side slope of each lift of waste rock	Angle of repose (approximately 1.2H:1V)	
Typical width of the horizontal offset between adjacent waste rock lifts (m)	16.5	16.5
Average overall side slopes of each WRSFs (from bottom toe of first lift to top crest of final lift)	3(H):1(V)	4H:1V (north side slope) or 3H:1V (south/east/west side slopes)
Side slope for each lift of overburden	Angle of repose (approximately 1.8H:1V)	
Typical width of horizontal offset between adjacent overburden lifts (m)	20.5	N/A
Internal overburden setback distance from toe of WRSF for the first lift (m)	40	40
Maximum crest elevation above the sea level (masl)	112.0	97.0
Assumed waste rock in place bulk density (t/m^3)	1.88	
Assumed overburden in place bulk density (t/m^3)	1.62	

Based on the above design criteria, the WRSFs will provide a 5.6 Mm^3 and 12.5 Mm^3 design capacity for WRSF1 and WRSF3.

In parallel, Agnico Eagle will utilize an adaptive, performance-based management system of the WRSFs. Opportunities to increase the capacity of the facilities may present themselves dependent on the mining sequence.

4.4 Anticipated Design Performance of WRSFs

Updated slope stability analyses for WRSF1 and WRSF3 was conducted during the detailed design of these facilities. Using the geometric parameters presented in Section 4.3, the results of the stability analysis indicates that the calculated minimum factors of safety for the WRSFs meet or exceed the industry and Agnico Eagle acceptable factors of safety.

Thermal analyses were also updated to estimate the thermal regime of the WRSFs and foundations during mine operations and after closure. Although the results for both facilities indicate that material placed in the winter period will likely stay in a frozen condition while the material placed in the summer period will eventually freeze back, the stability of both facilities is closely linked to the temperatures of the underlying ground.

4.5 Waste Rock and Overburden Deposition

The general construction sequence of the WRSFs will be as follows:

- A topographical survey of the original ground will be conducted, and stakes placed to mark the dumping limits;

- Overburden and/or waste rock will be hauled and end-dumped to its designated location. The material will be spread after dumping with a dozer and track-packed. Side slopes of each lift will be the natural angle of repose.

Various strategies to promote freeze-back and permafrost development will be deployed, including:

- Snow/ice removal prior to material placement over either original ground or an existing lift;
- Overburden placement of first couple lifts restricted to 2.5 m maximum height and will only be placed when underlying ground is frozen.

Temperatures within the waste and the underlying ground will be closely monitored throughout the operational lifespan of the facilities and will be discussed in further detail in Section 9.0. An adaptive, performance-based management approach will be applied to the WRSFs and opportunities to increase the capacities may present themselves depending on the mining sequence and foundation temperatures.

4.6 Additional Waste Material Placed in WRSFs

Although the WRSFs were designed to accommodate mine waste material, additional waste matter may also be periodically deposited within the facilities. Placement of the additional waste must be approved by the Responsible Person, who will assess any potential thermal or stability risk. Additional waste matter may include:

- Solid Sewage Treatment Plant (STP) material. Agnico Eagle invested in a screw press technology in 2019 to remove approximately 85% of the water from the treated sewage. The remaining semi-solid product will be placed and covered with overburden/waste rock in the WRSFs under Section 3.2 of the STP Upgrade Operation and Maintenance Manual (Agnico Eagle, 2021c). The volume of sewage material will be recorded on a monthly basis, pursuant to Part I Item 8h of the Licence.
- Sewage contaminated snow may be disposed of in the WRSF upon approval of the Responsible Person.

SECTION 5 • TAILINGS MANAGEMENT

Tailings generated by mill production at Meliadine will be dewatered by pressure filtration to a solids content of approximately 85% by weight. The filtered tailings will have the consistency of damp, sandy silt and will be transported by haul truck to either the paste plant for use underground as backfill or for placement and storage in the TSF in a process conventionally referred to as "dry stacking".

5.1 Expected Quantities and Distribution

5.1.1 Tailings Quantities and Distribution

Commissioning of the process plant started near the end of Q4 2018 and actual production commenced in early Q2 2019. Approximately 14.6 Mt of tailings will be produced over an 8.5-year period. Approximately 10.9 Mt or 75% of the tailings will be deposited within the TSF and the remaining 3.7 Mt or 25% will be used as underground cemented paste backfill.

The current production schedule, quantities, and distribution of tailings by year are presented in Table 5.1.

Table 5.1: Schedule, Quantities, and Distribution of Tailings by Year (V19)

Year	Mine Year	Tailings Solids from Mill (t)	Tailings Solids to be Used as Underground Backfill (t)	Tailings Solids to be Placed in Dry Stacked TSF (t)
2019*	Yr -1	976,706	113,892	862,814
2020*	Yr 1	1,393,722	301,469	1,092,253
2021*	Yr 2	1,714,892	351,037	1,363,855
2022*	Yr 3	1,756,971	445,558	1,311,413
2023*	Yr 4	1,918,143	348,648	1,569,495
2024	Yr 5	1,919,550	531,451	1,388,099
2025	Yr 6	2,007,500	421,030	1,586,470
2026	Yr 7	2,007,500	550,000	1,457,500
2027	Yr 8	938,227	650,000	288,227
Total (t)		**14,633,211**	**3,713,085**	**10,920,126**

* *As-built Quantities from 2019 through 2023 updated based on latest available data*

5.1.2 Waste Rock Quantities and Distribution

The expected quantities of waste rock to be placed at the TSF as progressive cover material and yearly distribution are provided in Sections 4.1.1 and 8.2.

5.1.3 Overburden Quantities and Distribution

The expected quantities of overburden to be placed as closure cover and distribution are provided in Sections 4.1.2 and 8.2.

5.2 Tailings Storage Facility Location

The TSF is located on high ground west of the mill and east of Lake B7, as shown in Figure 3.1. The direct distance from the mill to the tailings stack ranges from 400 to 800 m. The minimum setback distance from the edge of Lake B7 is approximately 200 m.

5.3 Tailings Storage Facility Design Parameters

Detailed design of the TSF (Agnico Eagle, 2018) utilizes tailings placement in a two (2)-cell system (Figure 5.1). The two-cell system (Cell 1 and Cell 2) is designed to limit dust generation, control tailings surface erosion, and to facilitate the progressive reclamation and closure of the TSF. As the tailings reach final elevation, the tailings will be progressively encapsulated with either waste rock or a layered combination of waste rock and overburden. A typical cross section is shown in Figure 5.2.

Table 5.2 summarizes some of the key physical parameters used for the design of the TSF.

Table 5.2: Design Parameters for the Tailings Storage Facility

Parameters	Value
Average height of TSF over original ground surface	33 m
Side slope for lower placed tailings (or below elevation 80.2 m)	4H:1V
Side slope for upper placed tailings (or above elevation 80.2 m)	3H:1V
Slope of the final tailings surface at crest	4%
Final top tailings surface area (Cell 1)	46,359 m^2
Final bottom tailings surface area (Cell 1)	179,741 m^2
Final top tailings surface area (Cell 2)	84,655 m^2
Final bottom tailings surface area (Cell 2)	149,632 m^2
Assumed moisture content of tailings to TSF	17.6%
Minimum target dry density of compacted tailings	1.65 t/m^3

Based on the above design criteria, the TSF has a capacity for 6.62 Mm^3 (10.9 Mt) of filtered tailings.

5.4 Anticipated Design Performance of TSF

The TSF is designed to minimize the impact to the environment and the design does not rely on freeze-back of the tailings to meet the design intent of the structure. However, the freeze-back of the TSF and the foundations will provide additional benefits such as increasing stability and minimizing seepage from the TSF during operation and closure of TSF.

The stability analysis of the TSF indicates that the calculated minimum factors of safety meet or exceed the acceptable factors of safety. Thermal analysis predicts that the majority of tailings will be frozen after the closure cover is placed and will remain frozen for many years after mine closure.

5.5 Tailings Deposition

Generally, deposition at the TSF consists of the following sequence:

- Tailings placement started from Cell 1 in the first quarter of Year -1. The filtered tailings are hauled to the TSF Cell 1 with haul trucks, end dumped, and bladed into lifts of maximum height 0.3 m using a dozer. Each tailings lift is then compacted using a vibratory drum roller. This compaction is intended to promote runoff, reduce the potential for oxygen ingress and water infiltration, and maintain geotechnical stability.
- A starter waste rock berm was initially placed along the outside perimeter to contain the initial lifts of the tailings; the berm will become a part of the closure cover. Additional lifts of compacted waste rock (with a maximum lift thickness of 1 m) are placed as the tailings surface is brought up as erosion and thermal protection. Safety berms are placed on each lift of the waste rock that also help to reduce dust generation from the tailings surface.
- Surface water or excess snow/ice is removed from the natural ground within the footprint prior to tailings placement.

Table 5.3 presents the yearly schedule of deposition per cell, as well as the average height of tailings placed in each cell.

Table 5.3: Tailings Placement Schedule and Estimated Tailings Heights (V19)

Year	Mine Year	Tailing Solids to be Placed in Dry Stack TSF (t)		Estimated Avg. Height of Tailings Placed Per Cell (m)		Planned Tailings Placement Period	
		Cell 1	Cell 2	Cell 1	Cell 2	Cell 1	Cell 2
2019*	Yr -1	862,814		3.2		Jan to Dec	
2020*	Yr 1	1,092,253		7.0		Jan to Dec	
2021*	Yr 2	1,363,855		13.5		Jan to Dec	
2022*	Yr 3	1,197,941	113,473	20.5	1.0	Jan to Dec	Sept to Dec
2023*	Yr 4	777,741	791,753	26.5	4.0	Jan to May	Jun to Dec
2024	Yr 5	196,371	1,191,728	33.0	10.0	Jan to May	Jun to Dec
2025	Yr 6		1,586,470		18.0		Jan to Dec
2026	Yr 7		1,457,500		32.0		Jan to Dec
2027	Yr 8		288,227		33.0		Jan to May
Total		**5,490,975**	**5,429,152**				

* *As-built Quantities from 2019 through 2023 updated based on latest available data*

In order to promote freeze-back, the initial lift of tailings over original ground has been placed during winter conditions. An adaptive, performance-based management approach has been used at the TSF to adapt the yearly deposition strategy to actual mill and paste plant production quantities.

Ground temperatures are closely monitored throughout the year to measure freeze-back of the facility. Temperature data indicates that despite an increase in the estimated average yearly height of tailings placed in each cell from design assumptions for the first two years of operations, freeze-back of the facility is occurring and no performance-related issues have been observed to date.

5.6 Additional Waste Materials Placed in TSF

Due to the design specifications regarding placement of the tailings and waste rock at the facility, generally no other waste materials will be placed in the TSF during its operational life. Exceptions must be approved by the Responsible Person and include:

- Used filter cloths from the Mill. These cloths are collected from the process plant and brought periodically to the TSF for placement. Each cloth is unrolled and placed flat on the tailings surface before backfilling with tailings material as per specified; and
- Limited volume of STP sludge. A temporary decantation pond was constructed and used for storage of STP sludge in Cell 2 during 2019. This pond was decommissioned in Q2 2020 by covering with waste rock. Tailings placement continued over the decommissioned pond as per the deposition plan. No additional STP sludge will be placed in the TSF.

5.7 Temporary Storage Pad for Tailings

During the caribou migration period only, a temporary storage pad for tailings may be used to provide additional storage for dry tailings for operational flexibility. The temporary storage pad is located on the existing Meliadine Mine industrial pad, between the Process Plant and the TSF and is surrounded by a seacan wall. The pad consists of a layer of geotextile overlaid with a granular pad. If the pad is used, tailings temporarily stored on the pad will be transferred to the TSF whenever possible during the caribou migration, according to the applicable caribou migration work suspension protocol. The pad is temporary in nature and once the tailings have been transferred to the TSF, the pad will be removed and placed in the TSF as soon as practical following the caribou migration.

Runoff from the temporary storage pad is captured within the site’s water management infrastructures and eventually reports to CP1. As for dust suppression measures, they will be applied as necessary (e.g., spraying water), and the seacan wall will also mitigate dust transport from temporarily stored tailings.

SECTION 6 • WATER MANAGEMENT ASSOCIATED WITH MINE WASTE MANAGEMENT

The water management objectives for the Mine are to minimize potential impacts to the quantity and quality of surface water at the Mine and surrounding waterbodies. Seepage and runoff water from the waste management facilities are managed with water diversion channels, water retention dikes/berms, and water collection ponds.

Additional details regarding the water management systems and infrastructures are provided in the WMP.

6.1 Water Management Associated with WRSFs

As shown in Figure 3.1, WRSF1 straddles three catchment areas (catchment of CP1, CP5 and CP4). WRSF3 is located within the catchment area of CP2 and CP6.

Seepage and runoff from the WRSFs during construction and operation phases will be managed using the water management system described below:

- Seepage and runoff from WRSF1 within the catchment of CP1 will be diverted to CP1 via Channels 1, 7 and 8;
- Seepage and runoff from WRSF1 within the catchment of CP5 will be diverted to CP5 via Channel 5;
- Seepage and runoff from WRSF1 within the catchment of CP4 will be diverted and collected in CP4 via Channel 4;
- Seepage and runoff from WRSF3 will directed to CP6 and CP2; and
- Final contact water collection location for water collected in CP2, CP4, CP5 and CP6 is CP1. Surface contact water in CP1 is treated at the EWTP (housed within the Water Treatment Complex; WTC) prior to discharge to Meliadine Lake.

6.2 Water Management Associated with TSF

The TSF is located within the catchment of CP3 with a small portion straddling the water catchment of CP1, as shown in Figure 3.1. Water sources from the TSF during construction and operation will be managed as follows:

- Seepage and runoff from the placed filtered tailings within the CP1 catchment will stream through Culverts 1, 18, 2 and 3 towards CP1;
- Seepage and runoff within the CP3 catchment will be collected in CP3 either directly or via Channel 3. CP3 water quality is monitored; and
- Water within CP3 will be pumped to Culvert 2 where it will flow to CP1.

SECTION 7 • DUST MANAGEMENT ASSOCIATED WITH MINE WASTE MANAGEMENT

The possible sources of dust related to the waste rock, overburden, and filtered tailings management during construction, operation, and closure include:

- Site preparation prior to placement of waste materials i.e., stripping, excavation and/or placement of foundation pad;
- Wind erosion of fine particles from the WRSFs and TSF surface;
- Vehicle traffic dislodging fine particles from the surface of WRSFs and TSF, and associated service and haul roads to WRSFs and TSF;
- Waste rock, overburden, and filtered tailings handling and transfer - loading, hauling, unloading, placement and compaction; and
- Placement of closure and capping layers.

Dust suppression measures, which are considered to be typical of the current mine practices (i.e. Meadowbank Complex) and consistent with best management practices, will be considered through design, operation and closure phases to control the dust.

Dust is expected to be a minor issue during the operation of the WRSFs as the waste rock produced at the mine generally comprises large pieces of rock that is not be susceptible to wind erosion. Although overburden contains material that is fine-grained and thus more susceptible to wind erosion, the plan is to store the majority of the overburden materials within the core of the WRSFs. Dust from the overburden materials is therefore not expected to be a concern.

The surface compaction of the filtered tailings lifts and limiting traffic over the compacted surface will significantly reduce the potential for wind erosion of the tailings surface. Dust related to TSF operation during the winter season will be further managed by limiting the exposed surface area of the tailings. Other control measures considered in the design of TSF to minimize dust generation include:

- Placement of waste rock cover over the final perimeter tailings slope surface as soon as possible. Safety berms around the perimeter of the waste rock slopes are expected to both trap dust from leaving the TSF and cut exposure of the tailings surface to wind erosion;
- TSF will be operated by cells to limit the tailings surface area exposed to wind and facilitate progressive closure;
- Consideration of prevailing north-northwest wind direction by development of the southern portion of Cell 1 first and progression northward;
- Tailings surface will be covered progressively once it reaches the design elevation; and
- Flat side slope of 4(H):1(V) for the TSF was adopted to minimize the erosion potential and maintain overall stability of the tailings stack;
- Using snow, thin ice surface, or other materials to cover inactive surface of TSF to reduce exposed tailings surface area;

- Potential usage of approved chemical dust suppressant.

Dust generated from vehicles travelling on the surface of the associated access roads will be controlled principally by spraying water on the traffic area, and potentially by applying an approved chemical dust suppressant to the area which will be carried out regularly by mine services during dry periods in the summer. Watering the haul and access roads is only possible when temperatures are above freezing. When the temperature is below freezing, dust suppression using water or chemicals will pose a safety hazard for travel; therefore, reducing the speed limit will be the principal way of controlling dust during these periods. More details on the dust management for traffic are described in the Roads Management Plan and Dust Management Plan.

Other control measures considered in design and operation related to dust generation by vehicles travelling include:

- Roads will be designed as narrow and short as possible while maintaining safe construction and operation practices;
- Coarse size rock will be used as much as possible for road construction;
- Roads will be regularly graded to mix the fines found on the road surface with coarser material located deeper in the roadbed; and
- As required, roads and travel areas will be topped with additional aggregate.

Dust from material handling is not expected to be problematic on site. Long end dumps, which can generate significant amounts of dust, will not occur since waste rock, overburden and filtered tailings will be dumped in lifts and spread with a dozer. Where possible, multiple handlings of materials that have the potential to generate dust will be avoided. However, should dust related to material handling occur on site, specific control measures will be evaluated and applied, as required.

At closure, the TSF will be fully covered to prevent further wind erosion of the tailings. The proposed closure cover includes a layer of 0.5 m thick overburden followed by a layer of 2.5 m thick waste rock on the top of the facility. The TSF closure slopes cover includes a 4.0 m to 4.5 m thick waste rock layer depending on the elevation. The overburden will be surrounded by waste rock in the WRSFs; therefore, dusting is not expected to be an issue. The need for dust control at closure will be further evaluated during closure activities.

SECTION 8 • RECLAMATION AND CLOSURE OF THE WRSFs AND TSF

Detailed mine closure and reclamation activities are provided in the Interim Closure and Reclamation Plan (SNC-Lavalin, 2022).

Key mine development activities during the closure process are summarized in Table 8.1.

Table 8.1: Key Mine Development Activities and Sequence during Closure

Mine Year	Mine Development Activities and Sequence
Yrs 9-11 (2028 to 2030)	• Place final closure cover on top of tailings surface in Cell 2 (Yr 9) • Decommission non-essential mine infrastructure and support buildings (Yrs 9 and 10) • Start monitoring and maintenance (Yr 9)
Post Closure	• Continue monitoring and maintenance until Yr 18 (2037)

Progressive reclamation includes closure activities that take place prior to permanent closure in areas or at facilities that are no longer actively required for current or future mining operations. Reclamation activities can be done during operations with the available equipment and resources to reduce future reclamation costs, minimize the duration of environmental exposure, and enhance environmental protection. Progressive reclamation may shorten the time for achieving reclamation objectives and may provide valuable experience on the effectiveness of certain measures that might be implemented during permanent closure. The WRSFs and TSF will be operated to facilitate progressive reclamation. Closure and reclamation activities of these facilities will use currently accepted management practices and appropriate mine closure techniques that will comply with accepted protocols and standards.

Monitoring will be carried out during all stages of the mine life to demonstrate geotechnical stability and the safe environmental performance of the facilities (Section 9). If any non-compliant conditions are identified, then maintenance and planning for corrective measures will be completed in a timely manner to ensure successful completion of the Mine Closure and Reclamation Plan.

8.1 Closure and Reclamation of WRSFs

Geochemical testing indicates that the waste rock and overburden from the Tiriganiaq area is non-potentially acid generating (NPAG) and non-metal leaching (NML). Kinetic tests completed on all waste rock types and at various scales show that drainage water quality is expected to meet the Metal and Diamond Mining Effluent Regulation (MDMER) monthly mean effluent limits, including results for arsenic. Therefore, a closure cover system is not proposed for the WRSFs.

The WRSFs were designed for long-term stability and no additional re-grading will be required at closure. It is anticipated that the native lichen community will naturally re-vegetate the surface of the WRSFs over time.

8.2 Closure and Reclamation of the TSF

Results of geochemical characterization indicates that most of the tailings produced to-date at the mine fall under the “uncertain” category, while ML has not been observed to be an issue. Despite this classification, the TSF is not considered to pose an ARD risk due to the placement methodology used, assumption of freeze-back within the facility and progressive reclamation cover placement.

Specifically, the closure plan for the TSF is to progressively place an engineered cover over the tailings surface. The current closure cover design includes the following:

- A minimum thickness of 4.5 m waste rock cover over the lower toe of the final tailings side slopes and a minimum thickness of 4.0 m waste rock cover over the upper side slopes; and
- A minimum thickness of 2.5 m waste rock cover over 0.5 m thick select overburden till fill over the top surface of final tailings. The top closure cover material will be placed when each cell reaches its operational capacity and sloped 4% to discourage ponding and surface infiltration.

Waste rock cover will consist of 600 mm minus NPAG waste rock. Select overburden till will be placed and compacted in an unfrozen condition over the top surface of the tailings. The till material is intended to reduce surface infiltration and will consist of inorganic, sandy silt or silty sand with a fines content of 20% to 60% and maximum particle size of 300 mm.

The expected quantities and schedule of TSF cover materials is presented in Table 8.2.

Table 8.2: Summary of TSF Cover Material Quantities during Mine Operations (V19)

Year	Mine Year	Volume of Waste Rock Placed on Side Slopes (m^3)	Volume of Waste Rock Placed on Final Top Surface (m^3)	Total Volume of Waste Rock Placed as Closure Cover (m^3)	Total Volume of Overburden Placed on Top Surface (m^3)
2019*	-1	75,082		75,082	
2020*	1	86,301		86,301	
2021*	2	133,195		133,195	
2022*	3	133,322		110,124	
2023*	4	93,385		93,385	
2024	5	150,000	123,942	273,942	22,940
2025	6	150,000		150,000	
2026	7	123,000		123,000	
2027	8		230,180	230,180	42,610
Total		921,087	354,122	1,275,125	65,550

** As-built Quantities from 2019 through 2023 updated based on latest available data*

An adaptive closure strategy has been adopted for the Project. The preliminary closure cover design adopted for the TSF at this stage will be further evaluated and updated based on the TSF performance monitoring, water quality monitoring and evaluation, and the overall mine closure plan. The final closure cover design for the TSF will be developed before mine closure.

8.3 Closure and Reclamation of Mine Waste Water Management Systems

The contact water management systems for the WRSFs and TSF will remain in place until mine closure activities are completed and monitoring results demonstrate that water quality conditions are acceptable for the discharge of all contact water to the environment with no further treatment required. Once the water quality meets the discharge criteria established through the water licensing process, the water management infrastructures will be decommissioned to allow the water to naturally flow to the receiving environment.

SECTION 9 • MONITORING PROGRAM

This section presents a summary of the monitoring programs that will be carried out during construction and operation related to mine waste storage management. The monitoring programs presented here include stability and deformation, ground temperature and annual inspections per the Licence. Surface contact water monitoring is described in the WMP and in the Water Quality and Flow Monitoring Plan. General monitoring is subject to change as directed by an Inspector, or by the Licensee, subject to approval by the NWB.

9.1 Monitoring Activities for WRSFs

Table 9.1 summarizes the monitoring activities for the WRSFs and incorporates the latest design reports.

Table 9.1: Waste Rock Storage Facilities Monitoring Activities

Monitoring Component		Monitoring Frequency	Reporting
Verification Monitoring	Quantities of waste rock produced	Monthly	Monitoring data will be used by Agnico Eagle internally.
	Routine visual inspections of WRSFs	Daily during active rock placement, Monthly to semi-annually after placement	
	Elevation and geometry survey	Annually	
	Waste rock and overburden sampling	On as-needed basis	
	Seepage collection and monitoring	Monthly over the open water season	
General Monitoring	Quantities of waste rock placed into facilities	Monthly	Monitoring data will be reported to the Regulators in the Annual Report or Annual Inspection Report
	Geochemical monitoring	Approximately eight samples per 100,000 tonnes of mined material as per Mining Environment Neutral Drainage (MEND) (2009) recommendations	
	Thermal and freeze-back monitoring	Monthly during first year; then quarterly	
	Dust monitoring related to WRSFs	Governed by Air Quality Monitoring Plan	
	Geotechnical inspection by qualified Geotechnical Engineer	Annually or more frequent at the request of an Inspector	

9.1.1 Verification Monitoring Program for WRSF

Verification monitoring data will be used by Agnico Eagle for the management of waste rock and overburden. The following verification monitoring data will be collected, compiled, and managed internally:

- Each WRSF was designed to store a specific volume of waste rock and overburden material during mine operations. Monthly quantities of the waste rock and overburden produced and placed during mine operation will be recorded.
- During the active development of each WRSF, daily visual inspections will be carried out in relation to the performance and condition of each structure as per Mine Act requirements. When placement activity ceases on an interim or seasonal basis, the inspection frequency will shift to monthly. Following the completion of a WRSF, inspections will continue on a semi-annual basis until closure. The purpose of these inspections is to identify and document any potential hazards or risks to the facility, such as deformations, unusual seepage, slumping, local failure, etc.
- The maximum heights of the WRSFs are estimated to be approximately 40 m. During operations, an annual elevation survey of the WRSFs will be performed to estimate the overall volume placed, determine the reclamation progress, and provide input information to the operation plan.
- Surface runoff and seepage from the WRSFs will be monitored during the construction and operation phases by visual inspection during the ice-free season. Additional inspections will be carried out after rainfall events and during the freshet period. The detailed information on the monitoring of surface runoff and seepage from the WRSFs is described in the WMP.

9.1.2 General Monitoring Program for WRSF

The following general monitoring data will be reported to the NWB through either the Annual Report or an Annual Inspection Report:

- Monthly quantities of the waste rock and overburden placed into the WRSFs during mine operation will be recorded. Samples will be taken as per MEND (2009) recommendations.
- The placed waste rock and overburden are expected to freeze-back and permafrost is likely to develop within the WRSFs with time. Thermistors will be installed in each WRSF to monitor the rate of freeze-back and permafrost development progress in the facilities during closure. Temperature readings will be taken monthly during the first year after installation and then quarterly to track permafrost development within the WRSFs.
- Dust related to waste rock and overburden management is not expected to be an issue by employing the dust suppression measures presented in Section 7.0 through design, operation, and closure phases. Air quality at the mine site will be monitored during construction, operation, and closure through air quality monitoring stations and reported annually.
- The performance of the WRSFs will be inspected and assessed during the annual geotechnical site inspection by a geotechnical or civil engineer registered in Nunavut. The visual assessment and recommended actions to be taken related to the WRSFs will be summarized in the Annual Inspection Report. Inspections may occur more frequently at the request of the Inspector. Records of all inspections will be maintained for the review of the Inspector upon request.

The results from the general monitoring program related to waste rock and overburden management will be reported to the Regulators in the Annual report or in the Annual Geotechnical Inspection Report.

9.2 Monitoring Activities for the TSF

Table 9.2 summarizes the monitoring activities for the TSF. The TSF Detailed Design Report was approved by the NWB in December 2018. A more detailed monitoring plan was included in the report and has been incorporated in the following tables.

Table 9.2: Tailings Storage Facility Monitoring Activities

Monitoring Component		Monitoring Frequency	Reporting
Verification Monitoring	Tailings production rate and solid content	Continuous	Monitoring data will be used by Agnico Eagle internally, and will be reported to the Regulators upon request
	Design verification of placed tailings (moisture content, maximum dry unit weight, particle size, in-situ density)	Quarterly/Bi-annually	
	Routine visual geotechnical inspections of TSF	Weekly	
	Elevation and geometry survey	Annually	
	Water quality monitoring of CP3	Monthly over the open water season or when water is present	
General Monitoring	Quantities of tailings placed into facilities	Monthly	Monitoring data will be reported to the Regulators in Annual Report or Annual Inspection Report
	Thermal and freeze-back monitoring	Monthly during first year and quarterly thereafter	
	Dust monitoring related to TSF	Daily during operation phase	
	Geochemical monitoring	Bi-monthly	
	Geotechnical inspection by qualified Geotechnical Engineer	Annually or more frequent at the request of an Inspector	

9.2.1 Verification Monitoring Program for TSF

A summary of the verification monitoring program for the TSF is presented below.

- The tailings production rate at the mill and solid content will be continuously monitored during mine operation.
- Off-site geotechnical testing of tailings properties (maximum dry unit weight, moisture content and particle size) tailings will be carried out quarterly to ensure that the placed tailings meet the design criteria. Bi-annual testing of in-situ density and moisture contents will be conducted by a third-party geotechnical firm.
- Visual inspections and monitoring can provide early warning of many conditions that can contribute to structure failures and incidents. Pursuant Part F Item 21 of the Licence, Agnico

Eagle will undertake weekly visual inspections of the TSF and note areas of seepage, unusual settlement or deformation, cracking or other signs of instability. Records of all inspections will be maintained.
- The average final height of the TSF will be approximately 33 m. An annual elevation survey of the TSF will be performed to estimate the overall volume placed, determine the reclamation progress, and provide input information to the operation plan.
- The runoff and seepage monitoring procedures and protocols for the WRSFs during mine operation will also apply to the TSF. Specifically, CP3 water quality will be monitored at a monthly frequency or when water is present in accordance with Part I Item 5 of the Licence.

9.2.2 General Monitoring Program for TSF

A summary of the general monitoring program for the TSF is presented below.

- The monthly quantities of tailings placed into the TSF will be recorded.
- In accordance with Part I Item 12 of the Licence, a TSF thermal monitoring regime will be implemented. This will include a minimum of eight (8) thermistor cables being installed in the TSF to monitor the permafrost development within the facility during operation and closure. The planned locations of these thermistors are shown in Figure 5.1. The temperature readings are taken quarterly (i.e. 4 times per year) to verify thermal conditions and assumptions (and were taken monthly during Year -1). The monitoring schedule will be reviewed and modified as necessary. The measured temperatures within the TSF will also provide the background information for the study of permafrost development.
- Dust suppression measures presented in Section 7 will be employed to mitigate dust related to tailings management through design, operation, and closure phases. Air quality at the mine site will be monitored during construction, operation, and closure through air quality monitoring stations.
- Filtered tailings samples will be taken from the mill bi-monthly and analyzed for the percentage of sulphur and carbon. The results from these analyses will be used to differentiate NPAG and PAG based on the derived Net Potential Ratio (NPR). The collected samples will be sent to an accredited commercial laboratory with specialization in ARD/ML for acid-base accounting (ABA) and elemental analysis.
- Pursuant Part I Item 13 of the Licence, the performance of the TSF will be inspected and assessed during the annual geotechnical site inspection by a geotechnical or civil engineer registered in Nunavut. The visual assessment and recommended actions to be taken related to the TSF will be summarized in the Annual Inspection Report. Inspections may occur more frequently at the request of the Inspector. Records of all inspections will be maintained for the review of the Inspector upon request.

The results from general monitoring program related to tailings management will be reported to the Regulators in the Annual Report or in the Annual Geotechnical Inspection Report.

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Tetra Tech (Tetra Tech Canada Inc.), 2021 Design Report for CP2, CP2 Thermal Berm, Channel9, and Channel10, Meliadine Project, Nunavut. Submitted to Agnico Eagle Mines Limited by Tetra Tech Canada Inc., Tetra Tech File: ENG.EARC03140-24, October 2021.

APPENDIX A • FIGURES

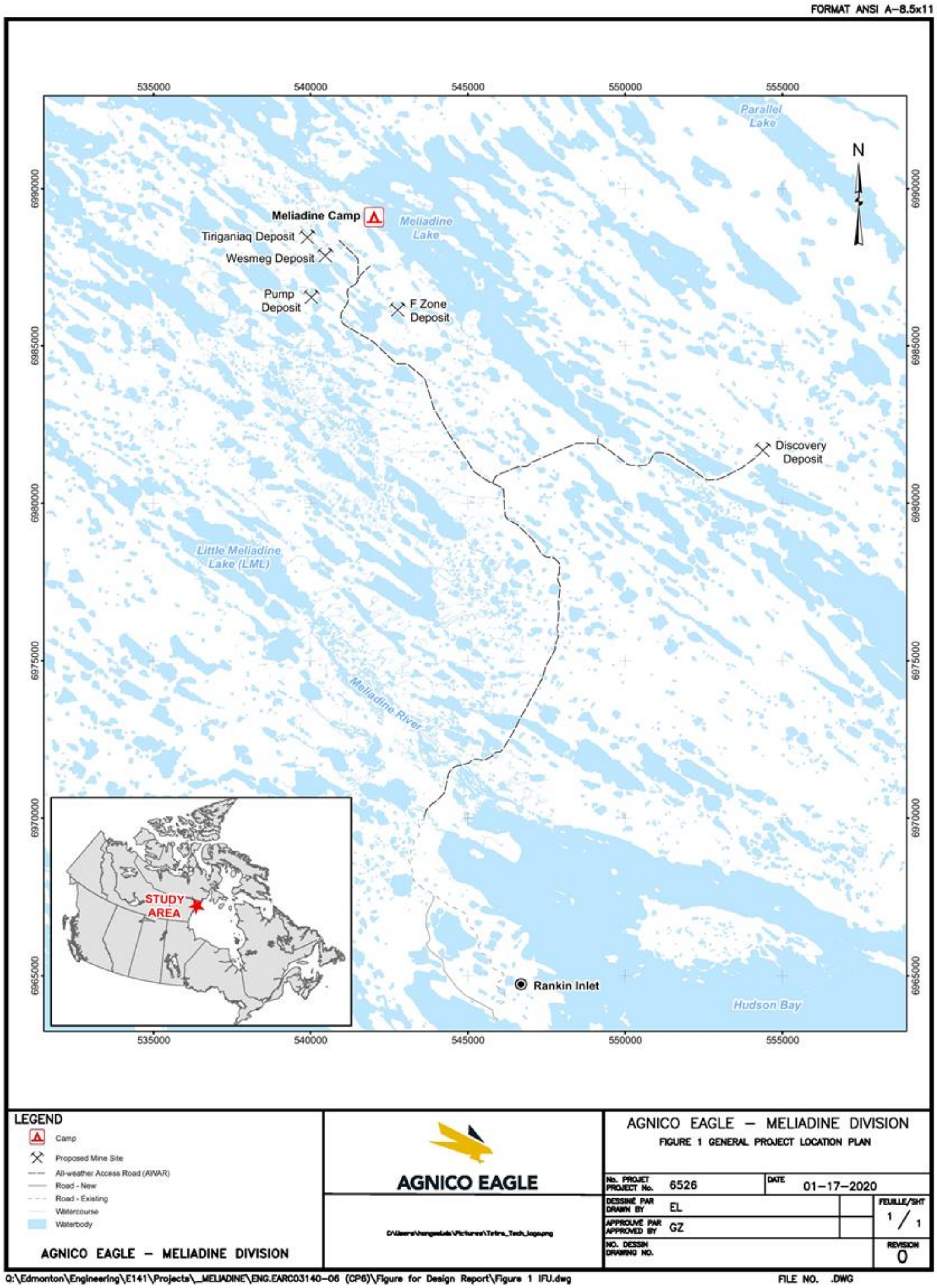

Figure 1.1: General Mine Site Location Plan

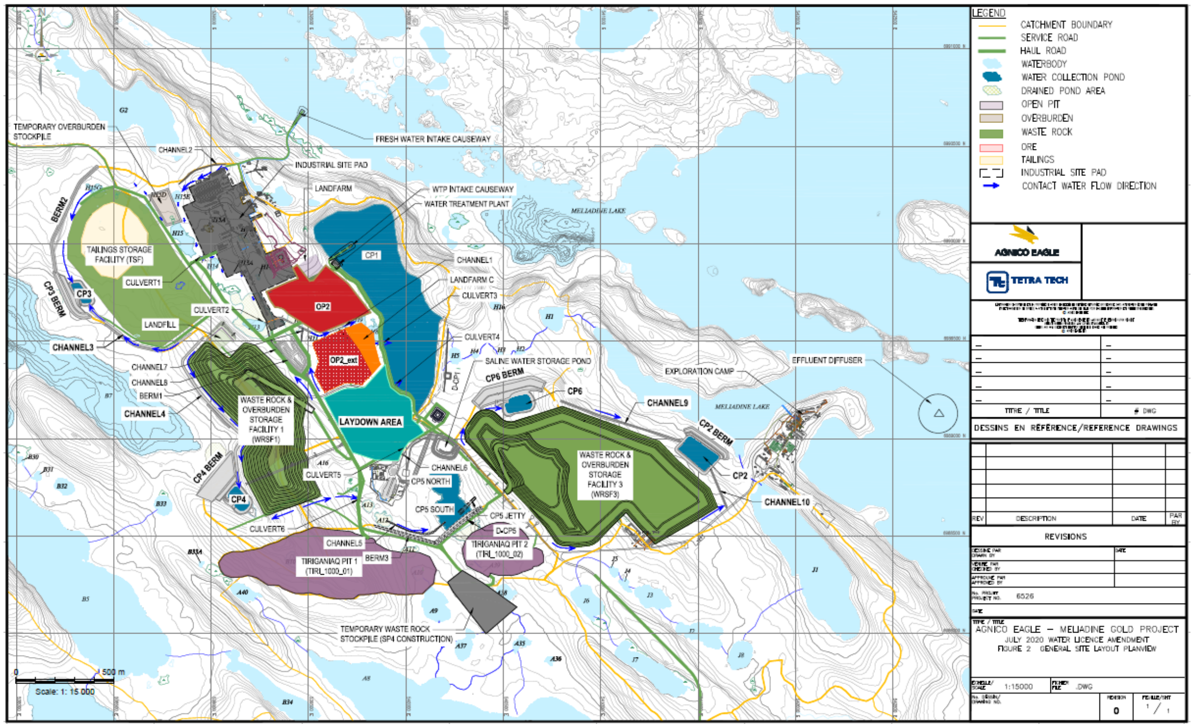

Figure 3.1: General Site Layout Plan

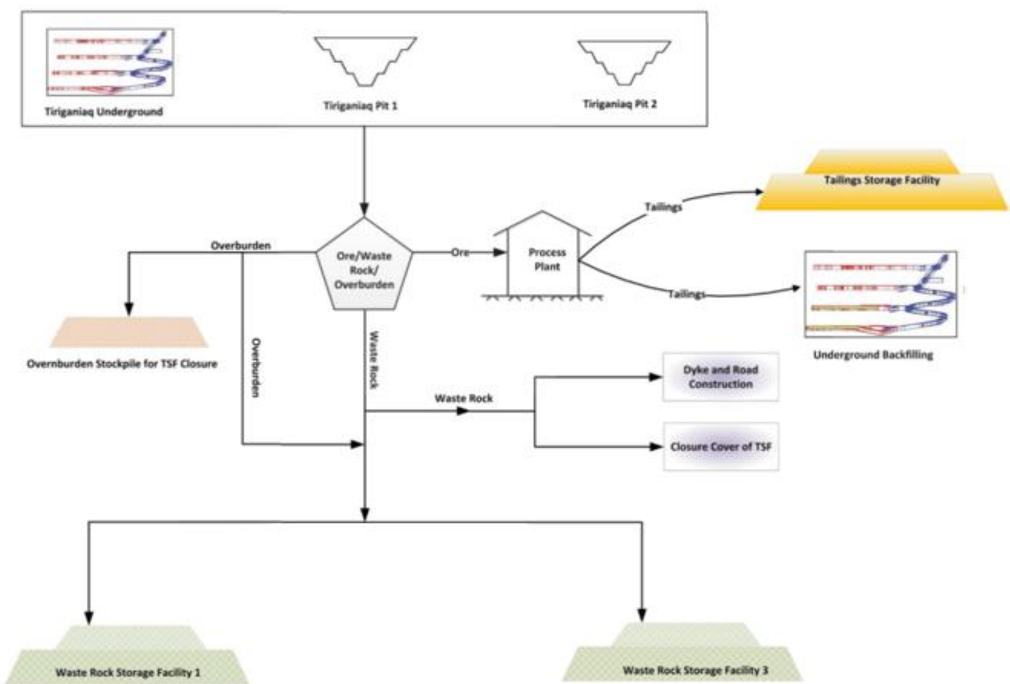

Figure 3.2: Mine Waste Management Flow Diagram

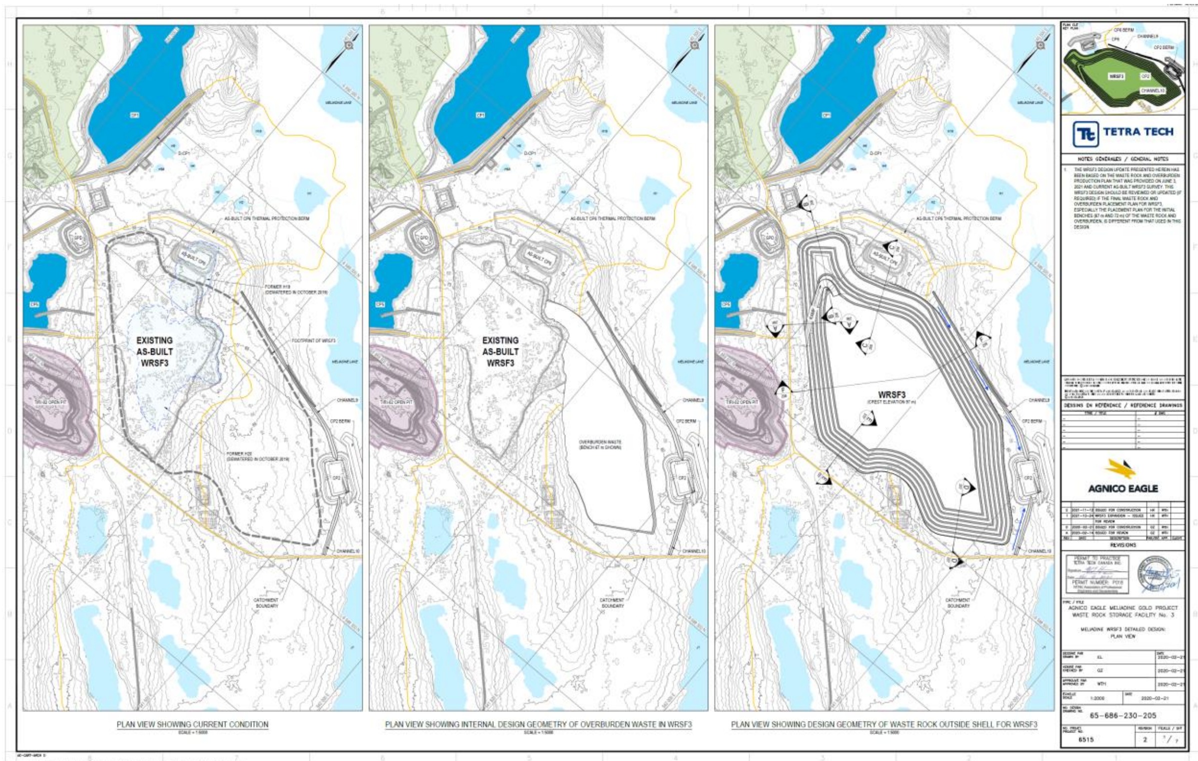

Figure 4.1: WRSF3 Detailed Design Plan View

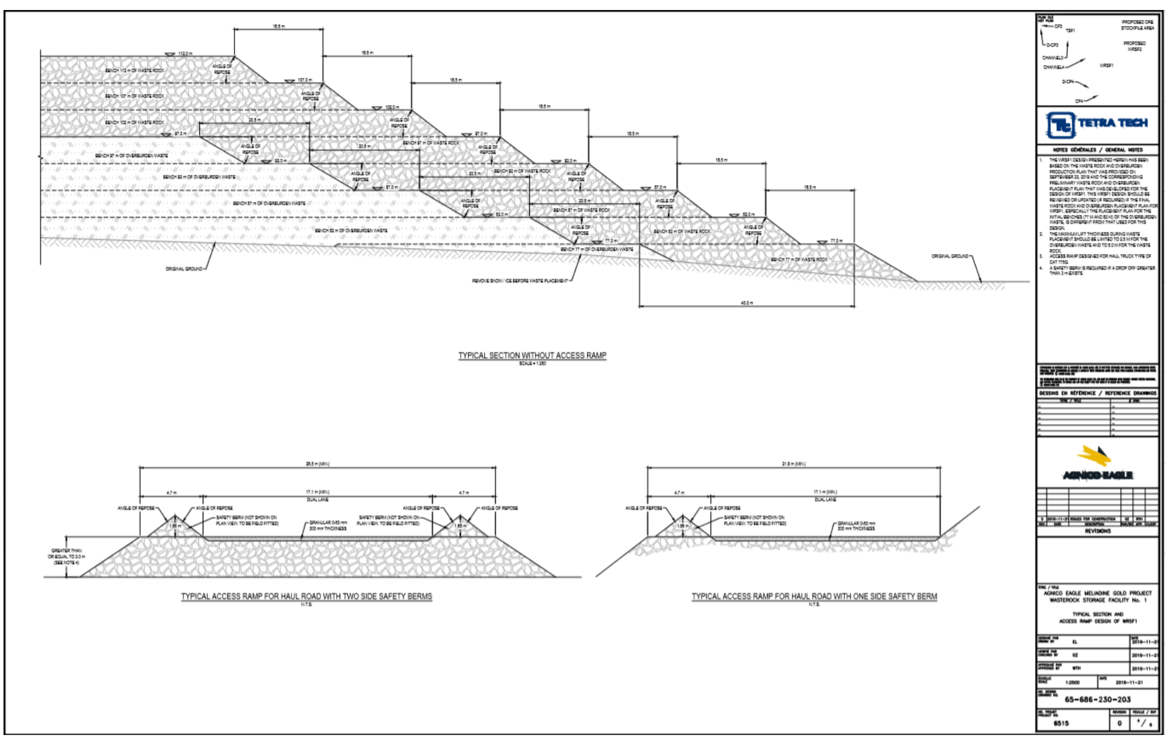

Figure 4.2: WRSF1 Typical Section

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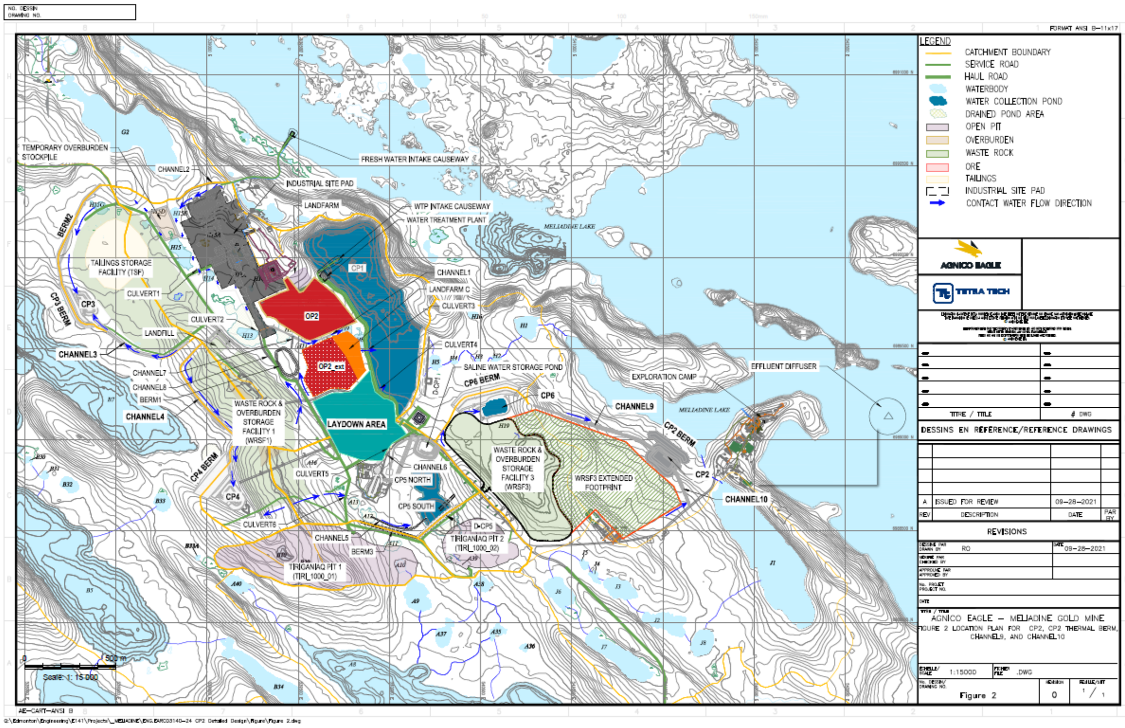

Figure 4.3: Mine Site Infrastructure, waterbodies and catchment boundaries

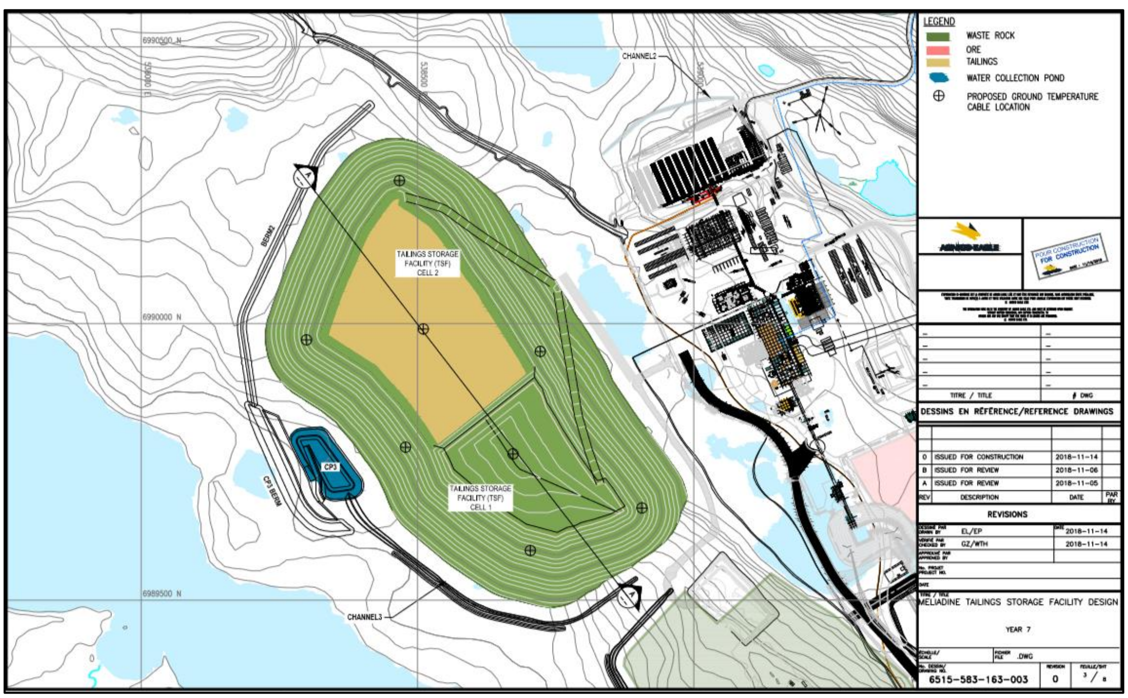

Figure 5.1: Tailings Placement Plan in Cells – Year 7

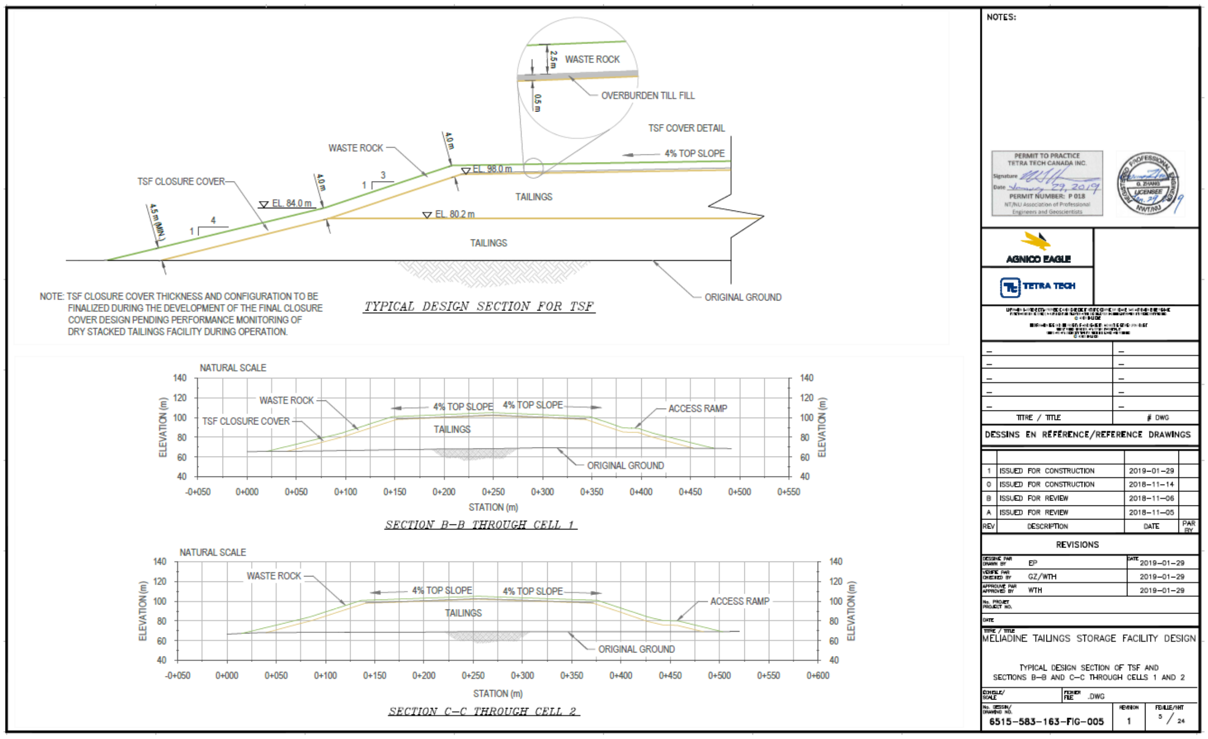

Figure 5.2: Typical Design Cross-Section for TSF