MELIADINE GOLD PROJECT

WASTE ROCK and ORE MANAGEMENT PLAN

UNDERGROUND MINERAL EXPLORATION and BULK SAMPLE PROGRAM

August 2010

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Revision
1	10/08/14			Changes made to the extension of the extension of the underground program and building of the all season road between Rankin Inlet and the site

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1.0 Introduction

This Waste Rock and Ore Storage Management Plan is a requirement of the Nunavut Water Board License No. 2BB-MEL0914, clause E6 granted to Agnico-Eagle Mines Limited (AEM) for the Underground Exploration and Bulk Sample Program at the Meliadine Gold Project, including the extension of the underground exploration program. This update is in response to July 8, 2010 letter from the Nunavut Water Board asking this and other plans be updated to include the recent three amendments made to the water licence, including the extension of the underground program.

2.0 Plan Objectives

The objectives of this plan include the following precautionary provisions of the extension of the underground exploration program:

- to provide the geochemistry of the Tiriganiaq waste rock and ore based on static testing;
- to document the physical parameters of the storage pads that will hold development rock and ore from the extension of the underground exploration program;
- to provide an overview of the drainage and water quality of the runoff and leachate from the waste rock pads (this is covered in detail in the August 2010 Water Management Plan);
- to identify limits used to decide what rocks are considered safe for construction;
- to outline waste rock pad inspections; and
- to submit drawings for the ore and waste rock storage plans including a cross section of the waste rock and ore storage berms and base based on the extension.

3.0 Geology and Underground Program

3.1 Geology

The Meliadine area is underlain by a combination of Achaean greenstone called the Rankin Inlet Group. A major break, the Pyke Fault, runs through this regional geological platform from Hudson Bay in the east to Peter Lake, some 40 kilometres inland to the west. Iron rich rock (iron formation) is associated with the Pyke Fault and is also associated with the occurrence of gold. Several gold bearing zones have been identified in the general area of this exploration program. The ore zone in this underground exploration program, the Tiriganiaq gold deposit, is in a shear off of the Pyke Fault. This gold deposit includes a series of mineralized sheets of varying thickness dipping north and plunging east and west. The minerals in the ore zones include both carbonate bearing rock (basic) and sulphide bearing (acidic) rock.

A typical cross section of the stratigraphic sequence in the deposit is as follows:

- The structural hanging wall is comprised of clastic turbidite sediments of variable grey coloured greywacke-siltstone-mudstone beds from the **Sam Formation**, ranging in thickness from centimetres to decimetres. This unit also contains minor amounts of argillite.

• The Sam Formation overlies a diverse package of iron-rich rocks with interbedded magnetite, chert, chloritic mudstone and greywacke from the **Upper Iron Formation**. The top of this unit is marked by a laterally continuous iron formation. Portions of this unit are often mineralized.

• The **Tiriganiaq Formation** is comprised of finely laminated siltstone. It is commonly altered to a yellowish grey colour by iron carbonate and sericite alteration, particularly near the contact with the Lower Fault. Graphitic argillite occurs sporadically near the base of this sequence, and is often coincident with the Lower Fault zone, which demarks the contact with the underlying Wesmeg Formation.

• The **Wesmeg Formation** is comprised of mafic volcaniclastics, comprising the structural footwall of the deposit. These rocks are chlorite-rich near the Lower Fault, and can be highly schistose and sericite-carbonate altered[1].

3.2 Underground Program 2007 – 2008

The bedrock of the area was penetrated by way of a 100 metre access ramp, 1,000 metres of decline and drift and 60 metres of raise in zones of known gold mineralization. The mineral deposit was examined and sampled. As set out in table 1 below the quantity of waste rock and ore extracted were 53,540 and 13,065 loose cubic metres[2], respectively.

Table 1. Underground Exploration Program Waste Rock and Ore

Underground exploration program	**2007 - 2008**		**2011 - 2013**	
	tonnes	loose m^3	tonnes	loose m^3
Overburden Portal	25,890	19,417	NA	NA
Waste Rock Portal	17,609	9,435	NA	NA
Waste Rock Decline	82,328	44,105	213,190	114,209
Ore	25,521	13,065	22,156	11,460
Total Rock	125,458	66,605	235,346	125,669

The ore was crushed and representative samples of each lode or zone in the gold deposit was submitted to a southern laboratory for assaying and metallurgical testing. The total material shipped south for testing was approximately 2 tonnes.

[1] Strathcona Mineral Services Ltd report to WMC International, 2005.
[2] Loose cubic metres is the total volume of rock extracted multiplied by 1.5. This allowed for voids as the rock is broken and gaps exist in any pile or pad.

3.3 Underground Extension Program 2011 - 2013

After the completion of the initial underground program, diamond drilling in 2008 and 2009 delineated an area of high grade gold mineralization 200 to 400 metres below surface in a part of the Tiriganiaq deposit known as the “western deeps”. This is significantly below what was accessed in the 2007-2008 underground program where the depth below surface did not exceed 120 metres. The extension of the underground exploration program is to confirm the results of the surface drilling through underground drilling and bulk sampling in what is a structurally complex part of the Tiriganiaq deposit.

The proposed extension of the underground exploration program extension has been designed to maximize use of the existing site infrastructure at Meliadine. The program will use the existing portal, site buildings, camp and roads. As shown in figure 1, this also includes an addition to the waste rock and ore pads beside the existing primary containment area. The containment area holds all drainage from the upstream water basin. This includes runoff from the present waste rock pads and ore stockpiled on the pad, and future runoff from the 2011- 2013 waste rock pads and ore stockpiles.

Originally in 2007, the north side of the road along the primary containment and the south side of the sump were lined with a woven polypropylene / polyvinyl liner to contain site runoff. However, a failure in the liner near a culvert in the primary containment allows water to trickle downstream to Lake A54 over the summer. As a result, part of the extension of the underground program would see the culvert pulled out of the road and the road widened so as to better hold water in the primary containment area. The extra width and removal of the culvert will assist in holding the water for a longer time period each spring as permafrost is expected to move up into the road bed over the winter and temporarily act as a dam.

Waste rock designated for construction will be used for site improvements and future road development. However, restrictions on using waste rock are described below in the geochemical risks.

Proposed Primary
Containment Area : 2.9 Ha
Capacity: 21,000 m3 to 67.6 m El
Contours are water depth (m)

Area draining to
Primary Containment - 14.2 Ha
Average Yield - 100 mm,
Estimated Runoff Volume - 14,400 m3

Expanded Operations Pad (Total 3.2 Ha)
Elevation 68 m (0.5 to 1.8 m thick),
sloped into containment

Proposed Waste
Rock Stockpiles (8 m)

Existing
Operations Pad

Proposed Ore
Stockpile (4 m)

Sump

Existing
Contractors
Pad

Portal

Ventilation Raise

Proposed
Bulk Sampling

Existing Underground
Workings

Proposed Underground
Workings (see Figure 6)

Proposed: 5 Additional
TYPE 4 Magazines

10 Existing
TYPE 4 Magazines

Permitted
Fuel Retention
Berm and Bladders

Existing Bulk
Fuel Facility
11 x 50,000 l
Enviro Tanks

A58 A17 A57 A56 A55 A54 A16 A15 A14 A13 A12 A11 A10 A39 A38 A37 Sub basin
Area - 121.6 Ha A9 A37 A35

Receiving Environment
Lake A6

6,988,800 m N
6,988,400 m N
6,989,200 m N
539,600 m E
540,000 m E
540,400 m E
540,800 m E
541,200 m E

0 100 200 300
Meters

Scale: 1:6,000

Legend

- Stream - flow direction indicated
- Drainage Basin Boundary

PROJECT	**MELIADINE GOLD PROJECT**
PROJECT DETAIL	TIRIGANIAQ UNDERGROUND PROGRAM
TITLE	**Proposed Surface Infrastructure**
DRAWING	TM, SB
DATE	Feb 2010
PROJECT No.	3.393
	COMAPLEX MINERALS CORP. CALGARY - CANADA
File:	CMF GIS Database
	Figure 1

4.0 Potential Risks, Related Mitigation Measures, and Monitoring

4.1 Geochemical Risk

Static testing carried out by Golder Associates, AEM's geochemistry consultant, found that all waste rock from the Tiriganiaq area is non-acid generating[3]. Otherwise, acid rock drainage from the waste rock is not a problem. The ore zone samples, however, were classified as having an uncertain ARD potential and should be treated as potentially acid generating. The ore from the 2007 – 2008 underground exploration program is presently stored on a waste rock pad and any leachate from the ore passes over or through the pad, thereby providing a measure of safety before reaching water in the primary containment area. The same procedure will be followed in the 2011 – 2013 program where waste rock pads will hold the ore piles.

What is of concern is the arsenic (As) that leaches from the waste rock and ore. Generally, the regional area has elevated As concentrations in the soil and the rock, as much as five times what is typically found in other areas of the world. The closer one gets to the gold deposits, the higher the As content in the soil and rock. This has been documented through numerous soil and rock samples collected over the years, not only by AEM but also by previous owners of the project, and also by the Geological Survey of Canada.

The leachates from static testing frequently had arsenic exceeding the CCME fresh water aquatic life guidelines; however none, save one, exceeded the Metal Mining Effluent Regulations. The report by Golder Associates, *Comaplex Static Test Report May 2010 Final Report* notes:

> *"Exceedances in leachates (CCME Freshwater aquatic life guidelines) from laboratory tests do not necessarily imply non-compliance of mine site contact water quality. The quality of mine drainage water will depend on a number of factors that are difficult to reproduce in static leach tests such as the SFE (Shake Flask Extraction) test, including, but not necessarily limited to, grain size, solution to solid ratio, water:rock contact time, etc. Rather, these results underline the propensity of the Meliadine waste rock to release arsenic at concentrations that warrant site water quality monitoring during and throughout exploration, mine development and operation, and closure."*

The continuing concern remains with the use of the waste rock for construction. The Report provides guidance in saying:

> *"Early mine development rock from the Tiriganiaq deposit (greywacke rock from the shallow open pit and underground development) is being considered for use as construction material. Like other waste rock, this material is non PAG and does not require means to prevent ARD. To minimize potential environmental effects due to arsenic release from exposed rock,*

[3] The final report containing the static testing , "*Comaplex Static Test Report May 2010 Final Report"* can be found on the Nunavut Water Board ftp site at ftp://nunavutwaterboard.org/1%20PRUC/2%20MINING%20MILLING/2B/2BB%20-%20Bulk%20Sampling/2BB-MEL0914/1%20APPLICATION/2010%20Amendment%203/100302%202BB-MEL0914%20Comaplex%20Static%20Report-Part%20A-IMLE.pdf

Kinetic testing is presently underway with the report expected in late 2010 or early 2011.

consideration should be given to restricting construction rock use to greywacke located east of grid line 539475 E[4] and to sampling this rock for total arsenic content ahead of blasting and avoid the use of high arsenic rock for construction."

The 2007 – 2008 underground program was completely east of grid line 539475E. The 2011 – 2013 program, as shown in figure 1 will be both east and west of 539475 E and segregation of the rock will be undertaken so that greywacke rock suitable for construction will be kept separate from other waste rock.

Mitigation Measures

- Rock types that are mined during the underground exploration program, which were not encountered in the course of diamond drilling will be assayed using the shake flask extraction procedure and tested for metal leaching and acid rock drainage potential.
- the greywacke rock east of 539475 E will be kept separate from other rock for construction use on site and for the future construction of an all weather road from the site to Rankin Inlet.
- Runoff from the pads will be contained and the contained water quality monitored prior to release.

Monitoring

- Rock types not previously encountered in the course of diamond drilling will be assayed, shake flask tested for metal leaching and tested for acid production and neutralization potential.
- Water quality of the contained runoff will be monitored with samples collected as set out in the Water Management Plan, which include collection in the containment areas and in natural water bodies downstream.

4.2 Waste and Ore Storage Risk

The ore storage pads will be constructed of waste rock that has a strong neutralizing potential. It is important that the buffering capacity of this rock is available to any runoff that could originate from exposed ore in storage. The pads will be configured and constructed as shown in figure 2 below. All surfaces will be graded to drain into the primary containment sumps.

Mitigation Measures

- Placement of the ore on the storage pad will allow ample exposure of all runoff to the waste rock, which has a high buffering capacity. A minimum border of 5 metres width of waste rock, as shown in figure 2 will be maintained all around the stored ore to ensure no runoff occurs from the ore directly to the toe of the pad. This border will also allow ample space for equipment to work along the edges of the pad if required.

[4] From the Report, *"Leachate arsenic concentrations tend to decrease eastward within the open pit outline and continue to decrease east of the pit in underground development rock. Within the Tiriganiaq pit outline, a greater number of samples have elevated (more than 0.1 mg/L) leachate arsenic concentration west of grid line 539475 E. The average leachate arsenic concentration of samples collected west of this line is 0.09 mg/L, while it is 0.03 mg/L for samples collected east of this line."*

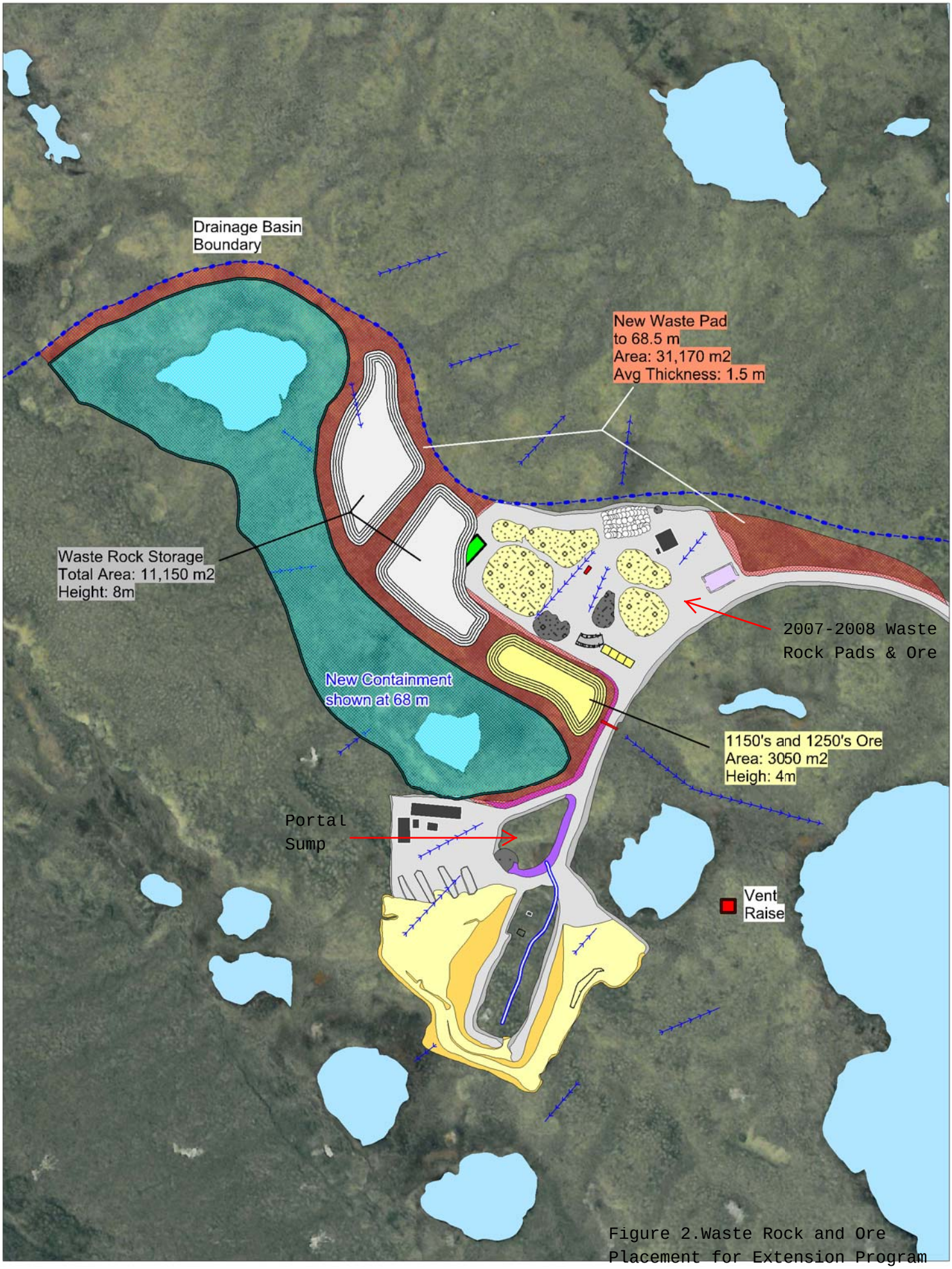

Figure 2.Waste Rock and Ore Placement for Extension Program

Monitoring

- Water captured in the primary containment area receives runoff from the area of the waste rock and ore storage pads. This water will be monitored at sampling location P1 and also in natural water bodies downstream as set out in the Water Management Plan, August 2010; and
- The pads will be inspected for slumping caused by the possible degradation of the permafrost underneath, and that the ore remains 5 metres from the edges of the pads.

4.3 Contaminated Water Risk

The risk from contaminated water is addressed in the Water Management Plan. It provides for containment of runoff from the waste rock pads and ore piles in the spring. It also provides for treatment, if necessary.

Mitigation measures

- Keep the potential runoff from the pads to a minimum by pushing as much accumulated snow from the pads as possible before spring snow melt.
- Keep water use for drilling and mining underground to a minimum.

Monitoring

- Water quality in the area of the rock and ore storage pads will be monitored as set out in the Water Management Plan.

4.4 Long Term Risk of Waste Rock and Ore Storage

The ultimate objective of the underground exploration and bulk sample program is to demonstrate the feasibility of a profitable gold mine at the Meliadine Gold Project. In that case, all ore at the surface would be processed and the tails disposed of in the approved tailings management area. If profitability is not demonstrated, most of the ore will be returned underground with the reminder placed in the ventilation rise and the box cut leading to the portal. The placement of the ore is described in the Interim Abandonment and Restoration Plan, August, 2010.

Assessing the feasibility of a mine involves kinetic testing of ore and any potentially problematic waste rock that may occur in the volume of rock to be mined over the life of proposed operations. The kinetic testing results are expected in late 2010 or early 2011, in advance of the extension of the underground program.

Mitigation measures

- Assay and test all rock types for potential contaminants.
- Keep detailed records of where rock with potential contaminants is placed.
- The greywacke east of 539475 E will be set aside for site improvements and for the future construction of the road from site to Rankin Inlet.

Monitoring

• Water quality in the primary containment area and natural water bodies downstream will be monitored as set out in the Water Management Plan, and as specified in future permits and licences.

5.0 Waste Rock and Ore Geochemistry Monitoring Results

Analytical results for kinetic testing, and continuing shake flask tests for metal leaching and ARD potential will be added to the geochemistry data base.