AGNICO-EAGLE

MELIADINE GOLD PROJECT

BORROW PIT AND QUARRY MANAGEMENT PLAN

for the Phase 1 All-weather Access Road between Rankin Inlet and the Meliadine site

Water Licence 2BW-MEL1215

April 2012

DOCUMENT CONTROL

Version	Date (YMD)	Section	Page	Revision
1	7 Nov 2011			First draft of the Phase 1 AWAR Borrow Pit and Quarry Management Plan
2	26 April 2012			The final quarries and borrow pits to be used are noted as is the quantity of material from each.

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1. Introduction

The All Weather Access Road (AWAR) design includes the use of rock and till materials, from identified borrow pits and quarry locations along the road, to be used for building the road, and for the installation of culverts and bridges. All identified road building material comes from borrow pits and rock quarries and not from existing watercourses; no rock and construction material will be gathered from below the high water mark of any watercourse. Nor will any borrow pit or rock quarry operate within 100 metres of a water body. Figure 1 presents the location of the borrow pits/rock quarries along the AWAR.

Quarry permits are required and applications will be made to Community & Government Services (on behalf of the municipality of Rankin Inlet) and the Kivalliq Inuit Association. These permits will have to be in-hand before any quarry operations can begin. In anticipation of these permits, AEM has surveyed each proposed borrow pit and rock quarry in advance of receiving them. As there will be quarry fees to pay for each cubic metre of material used, an accurate record of the volume used needs to be kept. Once the borrow pits and rock quarries are no longer needed, they will once again be surveyed to determine the exact amount of material extracted from each.

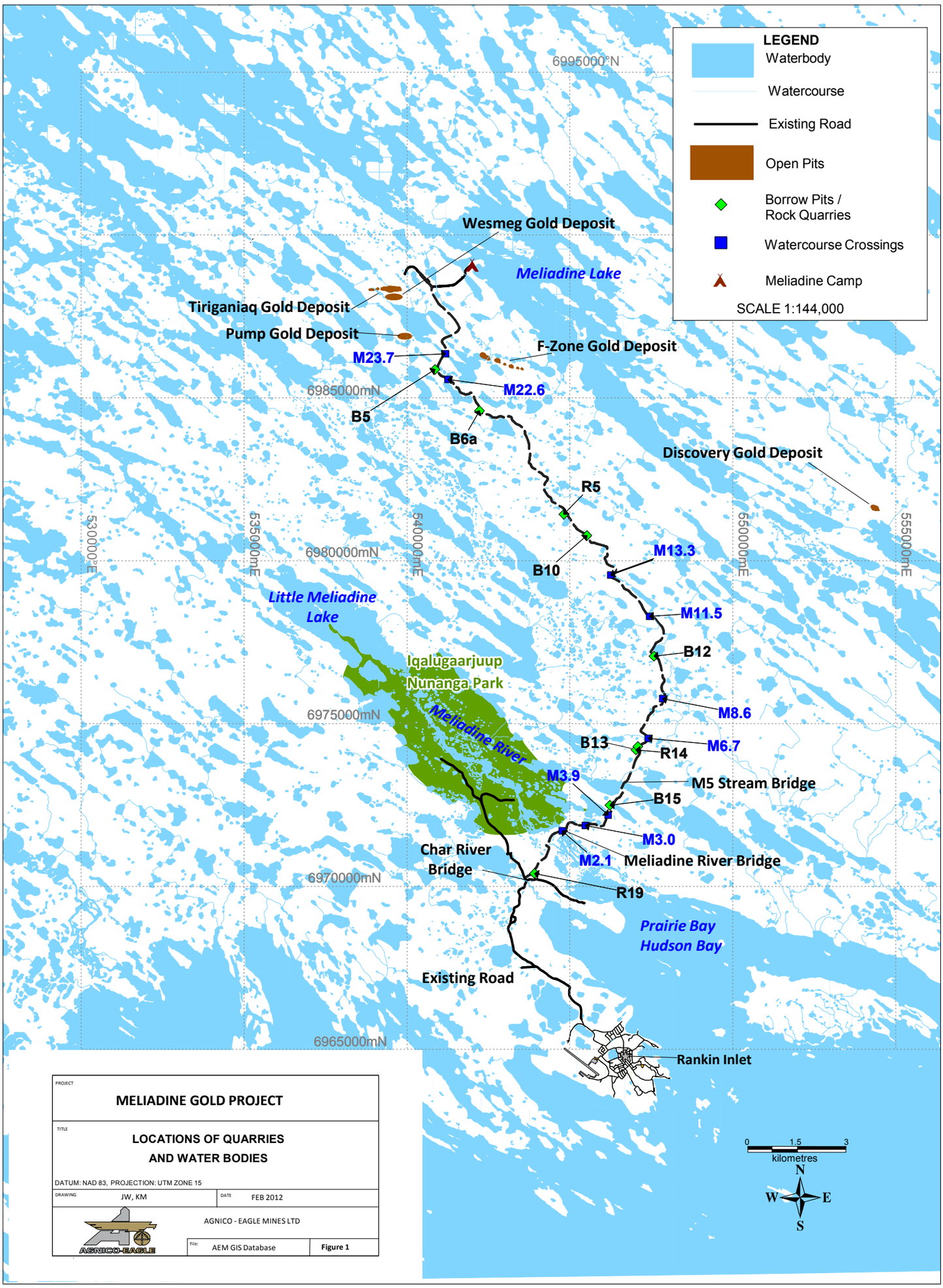
2. Acid Rock Drainage

Initial testing, using static methods to assess the chemical composition of the potential road building material, its potential to generate acid rock draining (ARD), and its potential to leach metals to the receiving environment upon exposure to ambient conditions was completed in 2010[1]. The quarry and borrow pits locations identified for the AWAR show no potential to generate acid drainage. This parallels other geochemical work carried out at the Meliadine site on the same rock types. The low ARD potential stems from the low sulphide content and high buffering capacity in the same material. Sulphide sulphur content ranges from <0.01 to 0.17% (in rock) and 0.07% (in till), and total sulphur ranges from <0.005 to 0.34% (in rock) and 0.09% (in till). Based on the low sulphide sulphur content, samples are classified as non-acid generating.

3. Metal Leaching[1]

The sites chosen for potential quarry and borrow sites along the road alignment were also tested for metal leaching as described in the report listed in the footnote below. The results indicated no acid rock drainage and low metal leaching. Water leach tests yielded chemical concentrations that were less than the Metal Mining Effluent Regulations and were less than the Canadian Water Quality Guidelines for the protection of aquatic life for most parameters except for arsenic, aluminum, copper, and pH. Results from the laboratory testing serve to highlight chemicals of environmental interest and are not necessarily indicative of actual drainage quality because this will depend on the exposure of the materials to ambient conditions, particularly to water and snow melt. Further details are provided in the geochemistry report listed below in the footnote and also in the Project Description and Environmental Assessment for the Phase 1 AWAR.

[1] Please refer to Golder Associates, Geochemical Assessment of Potential Road Construction Material, Meliadine Golder Project, Nunavut, December 2010 for more information on metal leaching and ARD determinations. This report is on the NWB's ftp site.



PROJECT

MELIADINE GOLD PROJECT

TITLE

LOCATIONS OF QUARRIES AND WATER BODIES

DATUM: NAD 83, PROJECTION: UTM ZONE 15

DRAWING	DATE
JW, KM	FEB 2012

AGNICO - EAGLE MINES LTD

File: AEM GIS Database | **Figure 1**

4. Borrow Pits and Rock Quarries

There are five proposed rock quarries and nine proposed borrow pits to be developed and used for road building material. The quantity of material to be extracted and the number of samples collected for additional ARD and metal leaching from each is presented in table 1. Three borrow pits / rock quarries will remain open long term to access material to be used for road maintenance. Initially, a total of approximately 6,000 m^3 of material will be stockpiled in the 3 areas. All other borrow pits and rock quarries will be reclaimed and closed as outlined in the Reclamation and Closure Plan following the construction of the Phase 2 road. This is anticipated to be built in 2014.

Table 1. Quantity of material extracted from each Source & Additional Sampling[2]

ROCK QUARRIES				
ID number	Surface (ha)	Volume (m3)	Final estimated floor elevation	Number of Samples to be collected for ARD testing
R19	1.80	40,000	11.00	10
R14	1.35	30,000	40.50	7
R5	1.75	30,000	85.00	7
Sub -Total (A) :	**4.90**	**100,000**		**24**
GLACIAL MATERIAL - BORROW PITS				
B15	1.60	24,000	26.00	5
B13	1.40	45,000	46.75	7
B12	1.40	26,000	69.00	5
B11A	3.40	50,000	80.50	8
B10	2.05	55,000	0.00	9
B6A	2.00	45,000	67.50	7
B5	1.45	55,000	65.70	9
Sub-Total (B):	**13.30**	**300,000**		**50**
G-Total (A+B)	**15.10**	**400,000**		**74**

[2] Source - Table 8.2, Page 8-8, Prediction Manual for Drainage Chemistry from Sulphidic Geological Materials, Mend Report 1.20.1

Table 8.2 Suggested initial sampling frequency based on tonnage when sampling without prior information (adapted from BCAMDTF, 1989)

Tonnage of Unit (metric tonnes)	Minimum number of samples
<10,000	3
<100,000	8
<1,000,000	26
<10,000,000	80

The closed out quarry wall will have slopes less than of 60° to 70°, and loose rock will be pulled down to the quarry floor. With the Phase 2 of the road anticipated in 2014, the borrow pits and rock quarries will not be closed as additional road building material will be needed to widen the road. In the interim until these slopes can be established, rock berms will be placed 10 metres from the edge of the quarry and above any exposed high walls that are greater than 2 metres in height and where there is a risk of an ATV or snowmobile accidentally going over the edge. Further details on the reclamation of the borrow pits and rock quarries can be found in the Reclamation and Closure Plan for the AWAR.

5. Road Construction

The potential impacts on the physical terrain due to the construction, operation, and reclamation of the road will include processes associated with permafrost degradation that are common to construction practices in the north, and which may include thaw-induced settlement. Typically, thaw-induced settlement can be associated with construction across poorly drained, ice-rich soils. This will be mitigated by appropriate road design, the use of appropriate construction materials, and the use of appropriate construction practices. The construction methods and trafficking on road construction materials may initially result in some degree of permafrost degradation along the road alignment until a sufficient thickness of road cross-section is developed to insulate the underlying permafrost. The road thickness is designed so that once the road has been completed; permafrost will aggrade, or rise, back into the road fill materials so that the permafrost active layer (the layer of annual freeze and thaw) will be maintained within the coarse, free draining road base materials. This will limit the degree to which thaw-induced settlement may occur. Furthermore, the AWAR alignment has been selected to avoid, where possible, the placement of fill materials across areas of poorly drained thaw-susceptible soils.

Therefore, it is anticipated that the majority of potential terrain impacts on the surficial soils and bedrock along the AWAR will occur at the quarries, culverts locations, and bridge crossings. To the greatest extent possible, the construction of the AWAR will be carried out during winter months. Initially, a rough trail would be advanced at the full base width of the Phase 1 AWAR from the southern end of the proposed road to the Meliadine West Advanced Exploration site so that the base of the road is laid down under winter frozen ground conditions, thus keeping this activity outside of the migratory bird nesting season. Under the *Migratory Birds Convention Act*, the road construction cannot disturb or destroy any active migratory bird nests.

While material from the borrow pits will be accessed by ripping the surface to loosen the till, the rock quarries will require blasting. After that the material will be loaded into standard dump trucks and taken to the end of the road where it will be dumped and pushed into place by a dozer. What exact road building equipment will be used is dependent on the contractor.

6. Additional Monitoring of Borrow Pits and Rock Quarries

Visual examinations of the quarry material for sulphur species and additional testing for acid rock drainage/metal leaching from each quarry and borrow will be conducted during construction. All material used at the watercourse crossings will be non-acid generating; however, this will be verified

through testing of the rock fill material and through monitoring of water quality in the watercourse or in standing water during and after construction.

The additional samples collected from each borrow pit / rock quarry will be dependent on the quantity of material to be extracted. For every 10,000 m^3 of material removed from a borrow pit or rock quarry a sample will be collected for static testing – ARD and metal leaching. The results will be presented in a report three months following receipt of the analytical results. Table 1 above outlines the quantity of material to be extracted and the anticipated number of samples that will be collected for static testing.

7. Surface Water Drainage from Borrow Pits and Rock Quarries[3]

The AWAR Project design includes the use of road building materials that are shown to be non-acid generating. Materials for road building will be extracted from identified quarry locations along the AWAR. Although the intent is to contour the quarries to have positive drainage, there may still be some ponding of water in the quarries, which will eventually drain to the land and possibly to surface waters. Water within the quarries will be in contact with rock material that may or may not have the potential to leach metals as well as blasting residuals (i.e. compounds high in nitrogen). Based on results from Meadowbank Gold Project, elevated concentrations of ammonia and metals are expected in quarries and pools of standing water. Water release from the quarries will have a fixed source of nitrogen but a potential long-term source of metals. If all drainage from the quarries is directed away from surface water, there is no potential impact, however if some drainage from the quarries enters surface water, there is the potential for impact and change in downstream water quality

Using environmental design features and best practices, water from the quarries, which would be located at least 100 m from any water body, should not drain directly to water bodies and thus there should be negligible effects to water quality; however, water quality will still be monitored. Quarries will be inspected on a regular basis to identify any areas of water ponding that could eventually flow to a water body, particularly during spring freshet.

If there is noticeable flow from a quarry that could enter a water body, a water quality sample will be collected as described in the Monitoring Plan for the All Weather Access Road. Water quality samples for monitoring will be collected in the quarry and in the watercourse upstream and downstream of the point source impact. Samples will be analyzed for physical parameters, nutrients (i.e., phosphorus and nitrogen), and trace metals. Results will be reported to the NWB.

[3] Further details on water monitoring is provided in the Monitoring Plan for the AWAR