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February 18, 2008

Reply via email

Nunavut Water Board
P.O. Box 119
Gjoa Haven, Nunavut
X0B 1J0

Attention: Phyllis Beaulieu
Manager, Licensing

2AM-MEA Agnico- Eagle Mines Limited- Meadowbank Gold Project
Water License Application

The Kivalliq Inuit Association (KIA) and Nunavut Tunngavik Incorporated (NTI) are pleased to submit the following comments regarding the Meadowbank Mining Corporation (MMC), Type "A" Water License Application dated August 2007.

The objective of the technical review was to identify potential technical deficiencies in the project that may have significant adverse effects on the environment and project life. Based on the information provided in the water application and supporting documents the technical review identified five (5) areas of concern.

- Dewatering dike design
- Central dike and tailings area design
- Acid rock drainage, metal leaching in waste rock, tailings and water quality predictions
- Abandonment& Closure Plan
- Landfill disposal

The KIA wishes to thank NWB for including us in the review process. If you have any further questions or concerns please contact the undersigned at your earliest convenience.

Yours truly,

Luis Manzo
Director of Lands

MEADOWBANK GOLD PROJECT

TECHNICAL REVIEW

Of

Meadowbank Mining Corporation

Type "A" Water License Application

February 18, 2008

Prepared By:

NUNAVUT TUNNGAVIK INC.

And

KIVALLIQ INUIT ASSOCIATION

Prepared For:

NUNAVUT WATER BOARD

EXECUTIVE SUMMARY

Nunavut Tunngavik Inc. (NTI) and the Kivalliq Inuit Association (KIA) completed a detailed review of the Meadowbank Mining Corporation Type "A" Water License Application dated August 2007 for the proposed Meadowbank Gold Project. The objective of the technical review was to identify potential technical deficiencies in the project that may have significant adverse effects on the environment and project life. The findings presented below are based on an extensive review completed by GeoVector Management Inc. (GeoVector), NTI and KIA Lands staff

The Meadowbank Gold Project represents an important economic opportunity for the Kivalliq Region and Nunavut. KIA and NTI, on behalf of all Inuit have actively promoted mining development in Nunavut. Nunavummiut stand to benefit from jobs, training, contracting opportunities and from indirect benefits from this project related to economic growth in the region.

While KIA and NTI encourage and support responsible mining development which protects the environment, it also has important responsibilities to all Inuit to balance economic development with environmental protection and Inuit lifestyles. ***KIA will support this project if it is developed in an environmentally responsible manner.***

Outstanding issues identified for the project are presented in the attached technical review submission. In summary, the areas of concern include:

- Dewatering Dike Design
- Central Dike And Tailings Area Design
- Acid Rock Drainage, Metal Leaching, Tailings And Water Quality Predictions
- Landfill Disposal
- Abandonment And Closure Plan

MMC and KIA have successfully signed and are implementing an Inuit Impact and Benefits Agreement (IIBA). Benefits in the form of training and staffing in the short time since the singing of the agreement have positively impacted many of the communities within the Kivalliq Region.

MMC and KIA have successfully negotiated a water compensation agreement pursuant to Article 20 of the Nunavut Land Claims Agreement.

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1.0 Introduction

Nunavut Tunngavik Incorporated (NTI) and the Kivalliq Inuit Assocaition (KIA) are pleased to present findings of its review of the Meadowbank Mining Corporation, Type "A" Water Application. The objective of the review was to identify potential technical deficiencies in the project that may have significant adverse effects on the environment and project life. The findings presented in this report are based on an extensive review completed by GeoVector Management Inc. on behalf of NTI and KIA.

The KIA is the Regional Inuit Association (RIA) for the Kivalliq Region of Nunavut. KIA is responsible for the implementation of those parts of the Nunavut Land Claims Agreement (NCLA) assigned directly to the RIA or assigned by the Board of Directors of NTI to KIA as a Designated Inuit Organization (DIO).

KIA is also broadly representative of Inuit beneficiaries of the NCLA in the Kivalliq Region. KIA's Board members include representatives elected from all of the Kivalliq Communities. KIA is involved in land management because it is the RIA responsible for Inuit owned surface lands in the Kivalliq region pursuant to Article 19 and 21 of the NLCA. KIA is also responsible for the protection and management of water in, on or flowing through Inuit owned lands pursuant to Article 20 of the NLCA.

Meadowbank Mining Corporation (MMC) is proposing to develop an open pit gold mine approximately 70 km north of Baker Lake. The Meadowbank Project is located on Inuit Owned Land (IOL) parcel BL-14, with road access intersecting IOL parcel BL-18. The project will include three separate open pits, water retention dikes, tailings storage, bulk fuel storage, a mill, waste rock storage and other supporting infrastructure. The mine is expected to operate for eight to ten years followed by a decommissioning and closure period.

2.0 Comments on Application

Based on the information provided in the water application and supporting documents, the technical review identified five (5) areas of concern. These specific areas of concern are addressed in detail by GeoVector Management Inc. in the attached Technical report. KIA approves and accepts the recommendations in that report and has attached it as Appendix A in its entirety.

The following are outstanding issues of concern:

- Dewatering Dike Design
- Central Dike And Tailings Area Design
- Acid Rock Drainage, Metal Leaching In Waste Rock, Tailings And Water Quality Predictions
- Landfill Disposal
- Abandonment& Closure Plan

2.1 Dewatering Dike Design

MMC proposes to construct the dewatering dikes from available material on-site. Two parallel rockfill embankments, with a till core, cutoff wall and grout curtain are proposed. The reviewers agree with the proposed construction design however additional information on lake bed conditions is required. Lakebed boulders encountered during dike construction could cause significant construction delays. KIA suggests that a more conservative construction schedule be prepared in the event construction delays are encountered.

The quality and source of till material available for dike construction has not been confirmed. KIA suggests existing till sources be re-evaluated and additional till sources identified to ensure desirable materials are available for core construction.

MMC is proposing to construct the dewatering dikes on existing lake bed sediments. The reviewers feel additional geotechnical data needs to be collected from the lake bed sediments to confirm clay thickness and load bearing characteristics.

MMC has calculated seepage flows from 820 m^3/day to 1900m^3/day at the Goose Island Dike. These volumes can create potential for long term degradation of seepage control structures. KIA suggests an independent "dike safety review committee" be formed to monitor all aspects of dike performance during mine life. Any deficiencies found in design, construction material or during operations should be reported to the monitoring committee for review. The benefit of the independent review committee is that members would be able to view broad issues associated with the dikes without being preoccupied by the day to day operational issues.

2.2 Central Dike and Tailings Area Design

MMC proposes to construct the Central Dike utilizing a geo-textile membrane. This addresses potential concerns of horizontal seepage however concerns of contaminate transport along the fault still exist. KIA suggests the above mentioned "dike safety review committee" review the tailings area performance throughout the life of the mine. In addition, KIA suggests a worst case plan be prepared for implementation if monitoring indicates contaminants are being transported outside of the tailing impoundment area.

2.3 Acid Rock Drainage, Metal Leaching in Waste Rock, Tailings and Water Quality Predictions

MMC proposes to re-evaluate the characterization of waste material for ARD, ML and non-metal constituents and re-evaluate waste rock disposal practices within two (2) years of commencing operations

This work will be completed by sampling the waste rock and tailings. Any preventative or control measures required will be incorporated into the Waste Management Plan in order to better manage ARD/ML for the mine waste material.

As part of MMC's plan it will be necessary to closely monitor the thermal characteristics of the mine waste storage areas in order to evaluate the thermal modeling that predicts that the mine waste storage areas will freeze within two (2) years of placement (BGC, 2004). If this thermal modeling is deficient and the waste materials do not freeze then one potential consequence may be an inadequate prediction of the water quality. This could result in a negative effect on the perceived impacts and mitigation plans required for ARD/ML in waste rock and the overall water quality during mining operations and post-closure.

Therefore it is suggested that monitoring for ARD/ML and non-metal constituents and re-evaluation of rock disposal practices commence immediately at start of operation.

2.4 Landfill Disposal

MMC proposes two (2) landfills for the disposal of non-salvageable, non-hazardous solid waste, plus the option of in-pit disposal for industrial metal waste (primary crusher, ore storage building, mill complex etc.) upon closure. Landfill#1 will be located to the north of the tailings facility and will serve as the solid waste disposal facility for the first 6-7 years of mine life.

Landfill#2 will be located in a depression on top of the Portage Rock Storage Facility. MMC proposes the landfill be progressively filled untilled year 9 then caped at closure. A landfarm for the treatment of hydrocarbon contaminated soil is also proposed.

KIA is in agreement with the landfill disposal techniques for the life of the mine however at this time, KIA does not support the placement of industrial waste (primary crusher, ore storage building, mill complex etc.) in the excavated pits following decommissioning.

2.5 Abandonment& Closure Plan

MMC has presented an abandonment and restoration plan based on existing data and design information. Additional design changes and "adaptive engineering" will be required and implemented during construction as monitoring information becomes available. The reviewers feel the existing plan is sufficient, however it is suggested that MMC provide an annual revised abandonment and restoration plan for each year of operation. This updated plan would incorporate design changes and monitoring results collected over the life of the mine to reflect actual site conditions.

3.0 Reclamation and Security

KIA submits that the Nunavut Water Board has the jurisdiction to address security for both land and water which may be affected by the Project. The security deposit to be paid by MMC should not be divided between land and water, but should be comprised of one sum. KIA, as the owner of Inuit Owned Lands upon which the Project will be constructed, is entitled to hold security to protect against the possible need to undertake reclamation, should MMC fail in its duty to fully remediate on IOL. KIA acknowledges the Crown's right to security as well. However, MMC should not be exposed to possible duplication of security.

The security deposit could, with an acceptable agreement between INAC and KIA, be held by INAC and, if necessary, applied in accordance with the principles to be set out in the agreement. KIA is prepared to negotiate such an agreement with INAC. Only if KIA is unable to reach agreement with INAC would we wish to have a security deposit held directly by KIA.

Appendix A
GeoVector Report

Report of Technical Review of the Type A Water License Application for Meadowbank Mining Corporation, Meadowbank Gold Project
NWB Reference: 2AM-MEA

December 13, 2007

J. Campbell, P.Geo.
A. Sexton, P. Geo.

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1.0 INTRODUCTION

This review is related to the Type A Water License Application submitted to the Nunavut Water Board (NWB) by Meadowbank Mining Corp. (MMC) for the Meadowbank Gold Project. This review was completed by GeoVector Management Inc. (GeoVector) on behalf of the Kivalliq Inuit Association (KivIA).

GeoVector's approach to this review was to compare MMC's plans in the Water License Application against the recommendations and conditions made by NIRB in their project approval of the FEIS to ensure that MMC is compliant with NIRB's ruling. The format of this report follows the significant issues raised by GeoVector in its review of the FEIS, and our determination as to whether the modified designs in the Application recognizes information gaps and/or engineering issues identified in the FEIS review.

GeoVector is pleased to report that most of the issues raised by GeoVector during the FEIS, or identified as conditions to NIRB's approval, have been addressed. With that said, this report outlines a few significant issues that could be improved before, or during construction and operation. GeoVector does not feel it has the authority to recommend design changes or operating procedure changes to NWB for the Water License Application, but we offer alternative suggestions for resolving perceived shortcomings that KIA may want to bring to NWB's attention.

2.0 SPECIFIC ISSUES

There are 4 areas of outstanding issues that are discussed in detail on the following pages:

1. Dewatering Dike Design
2. Central Dike (Tailings) and Tailings Area Design
3. ARD/ML in Waste Rock, Tailings and Water Quality Predictions
4. Abandonment & Closure

2.1 Dewatering Dike Design

The dewatering dike design is reasonably conservative but more details on the proposed actual construction need to be presented, in particular:

2.1.1 **Lake Bed Sediments** - The dewatering dikes are proposed to be built on lakebed sediment which have unknown load-bearing characteristics and are not frozen. The data collected on lakebed sediments indicate that they are weak and of limited thickness. It is projected that these sediments will be displaced and/or incorporated into the dike rockfill. However, some of the data from borehole's indicates a stiff clay layer on the lakebed which may affect rock berm stability on a local basis. MMC's expert reviewer suggests that during construction there may be a need to flatten the design slopes due to the variability of lakebed conditions. This reviewer also suggests, and GeoVector concurs, that additional boreholes be used to more accurately determine the distribution and thickness of this stiff clay layer in order to better determine the extent of change to the dewatering dike design.

2.1.2 **Boulder Distribution** - The boulder distribution within the till below the dewatering dikes is unknown and can only reasonable be determined once excavation and dike construction is undertaken. A higher than planned boulder distribution will affect the construction schedule in that it may take longer to construct certain sections of the cut-off wall. GeoVector suggest that a more conservative worst case construction schedule be presented with implications of its cascading effects on other work schedules.

2.1.3 **Till Source and Quality** - The quality and source of the almost 600,000 m3 of till that is required for the till cores of the dewatering dikes. In terms of quality the data collected from site confirms that the till is of variable hydraulic conductivity and cannot be relied upon as an impervious layer for cut-off wall construction. This was in evidence for work completed on the runway extension where the near surface soil and till flowed when thawed. The till could have a higher moisture content than is considered optimal. GeoVector suggests that additional consolidation testing for the wet till is required to determine the magnitude of potential problems with till settlement and consolidation rates. For the source of till it is stated that there will be sufficient till available from the pre-stripping of the North Portage and Third Portage deposits. GeoVector would like to see more detail on the location of these till sources, specifically map locations with expected volumes and quality of till, and a quarrying schedule of the various till types to achieved the desired homogenous dyke core quality material.

2.1.4 **Dike Seepage** - Seepage volumes are predicted to range from 820 m3/day (East Dike) to 1900 m3/day (Goose Island Dike). These volumes can create potential for long term degradation of the seepage controls that are being put in place. A program to delineate and mitigate increased dike seepage over time has been tabled by MMC. GeoVector recommends that an independent "dike safety review committee" should be formed to monitor all aspects of dike construction and performance during operational life. Any deficiencies found in design, construction materials, or during operations should be reported to the monitoring committee. This committee would have the authority to recommend changes to rectify deficiencies. The value of this committee is that the members would be able to view the broad issues associated with the dikes without being burdened by day to day operational issues that sometimes mask problems or delay response.

Documents Reviewed:

1) Final Report of Technical Review of the Final Environmental Impact Statement for Cumberland Resources Meadowbank Gold Project, GeoVector Management Inc., March 8, 2006. 1 volume
2) Detailed Design of Dewatering Dikes, Meadowbank Gold Project, Golders Associated Ltd., March 13, 2007. 3 volumes
3) Expert Review of Meadowbank Tailings and Dewatering Dike Designs, Letter from Norbert R. Morgenstern, March 30, 2007. 9 pages.
4) Meadowbank Gold Project, Type A Water License Application, Meadowbank Mining Corporation, August, 2007, 123 pages.
5) Meadowbank Gold Project, Operational ARD/ML Sampling and Testing Plan, Meadowbank Mining Corporation, August, 2007, 23 pages.
6) Meadowbank Gold Project, Mitigative Measures for Potential Seepage from Tailings Facility, Golder Associates, August 23, 2007, 11 pages.

2.2 Central (Tailings) Dike Design and Tailings Area Design

The Central Dike design has been changed such that it does not rely on a processed till core, but on impervious geo-textile materials. This addresses one of the greatest potential concerns from seepage of contaminated water during mine operation and after closure.

A potential issue still exists with the Central Dike and with the bottom of the tailings area leaking due to incomplete freezing of the bottom of the tailings area. The dike is being constructed on a known fault the extends through the entire length of the tailings area, and that fault has hydraulic connection to surrounding lakes. During operations this fault could conduct tailings contamination into the pits under the bottom of the tailings dike, and on closure into the rehabilitated lakes either through the dyke or through the bottom of the tailings due to the higher elevation of the tailings area (147m) in relation to lake level (132m).

GeoVector suggests that the proposed program by MMC to delineate and mitigate increased dike seepage should include the independent dike safety review committee, again with authority to recommend changes to rectify deficiencies. GeoVector also suggests that a "worst case" plan be prepared for implementation if monitoring indicates the possibility of incomplete freezing of the tailings area on closure.

Documents Reviewed:

1) Final Report of Technical Review of the Final Environmental Impact Statement for Cumberland Resources Meadowbank Gold Project, GeoVector Management Inc., March 8, 2006. 1 volume
2) Detailed Design of Central Dike, Meadowbank Gold Project, Golders Associated Ltd., March 16, 2007. 3 volumes
3) Expert Review of Meadowbank Tailings and Dewatering Dike Designs, Letter from Norbert R. Morgenstern, March 30, 2007. 9 pages.
4) Meadowbank Gold Project, Type A Water License Application, Meadowbank Mining Corporation, August, 2007, 123 pages.
5) Meadowbank Gold Project, Mitigative Measures for Potential Seepage from Tailings Facility, Golder Associates, August 23, 2007, 11 pages.
6) Meadowbank Gold Project, Fault Testing and Monitoring Plan, Meadowbank Mining Corporation, August, 2007, 9 pages.

2.3 ARD/ML in Waste Rock, Tailings and Water Quality Predictions

MMC has committed to re-evaluate the characterization of all mine waste materials for ARD, ML and non-metal constituents and re-evaluate rock disposal practices within two (2) years of commencing operations. This work will be completed by sampling of the waste rock and tailings. Any preventive or control measures required will be incorporated into the Waste Management Plan in order to better manage ARD/ML for the mine waste materials.

As part of MMC's plan it will be necessary to closely monitor the thermal characteristics of the mine waste storage areas in order to evaluate the thermal modeling that predicts that the mine waste storage areas will freeze within two (2) years of placement (BGC, 2004). If this thermal modeling is deficient and the waste materials do not freeze then one of the potential consequences may be an inadequate prediction of the water quality. This could result in a negative effect on the perceived impacts and mitigation plans required for ARD/ML in waste rock and the overall water quality during mining operations and post-closure.

Therefore, it GeoVector suggests that rather than waiting 2 years that monitoring should for ARD, ML and non-metal constituents and re-evaluation of rock disposal practices commence immediately at start of operations.

Documents Reviewed:

1) Final Report of Technical Review of the Final Environmental Impact Statement for Cumberland Resources Meadowbank Gold Project, GeoVector Management Inc., March 8, 2006. 1 volume.
2) Meadowbank Gold Project, Type A Water License Application, Meadowbank Mining Corporation, August, 2007, 123 pages,.
3) Meadowbank Gold Project, Mitigative Measures for Potential Seepage from Tailings Facility, Golder Associates, August 23, 2007, 11 pages.
4) Meadowbank Gold Project, Operational ARD/ML Sampling and Testing Plan, Meadowbank Mining Corporation, August, 2007, 23 pages.
5) Meadowbank Gold Project, Water Quality and Flow Monitoring Plan, Meadowbank Mining Corporation, August, 2007, 58 pages.

2.4 Abandonment & Closure

GeoVector feels MMC has put together a plausible outline of an abandonment plan based on current knowledge. With that said it is difficult, given the possible "adaptive engineering changes", to firmly define an abandonment plan at this time. It is suggested that MMC should provide an annually revised abandonment plan during operational life. This plan would reflect the growing knowledge of the challenges abandonment will face. These annual plans should then be reviewed by an independent committee, preferably made up of at least some members of the dike reviewing committee, as they will be familiar with the most important issues. This committee would have authority to direct further study into problematic issues and/or offer alternative solutions to these problems.

Documents Reviewed:

1) Final Report of Technical Review of the Final Environmental Impact Statement for Cumberland Resources Meadowbank Gold Project, GeoVector Management Inc., March 8, 2006. 1 volume.
2) Meadowbank Gold Project, Type A Water License Application, Meadowbank Mining Corporation, August, 2007, 123 pages,.
3) Meadowbank Gold Project, Preliminary Closure & Reclaimation Plan, Meadowbank Minng Corporation, August, 2007, 77 pages.