



MEADOWBANK GOLD PROJECT

Aquatic Effects Management Program

In Accordance with Water License 2AM-MEA0815

Prepared by:
Agnico-Eagle Mines Limited – Meadowbank Division

Version 1
March 2009

EXECUTIVE SUMMARY

The Nunavut Water Board (NWB) has issued Type A Water License 2AM-MEA0815 to Agnico-Eagle Mines Limited (AEM) for the Meadowbank Gold Project site authorizing the use of water and the disposal of waste required by mining and milling and associated uses.

This report documents the revised Aquatic Effects Management Program as specified under Part I, Item 1 of Water License 2AM-MEA0815. All monitoring plans under Fisheries Authorizations, NWB Licence Compliance Monitoring, Environmental Effects Monitoring, Groundwater Monitoring, and Sampling and Analysis Plans, have been included in this revised report.

IMPLEMENTATION SCHEDULE

As required by Water License 2AM-MEA0815, Part B, Item 16, the proposed implementation schedule for this Plan is outlined below.

This Plan will be immediately implemented (March 2009) subject to any modifications proposed by the NWB as a result of the review and approval process.

DISTRIBUTION LIST

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DOCUMENT CONTROL

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1	09/03/31			Comprehensive plan for Meadowbank project

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INTRODUCTION

This report presents the revised Aquatic Effects Management Program. As specified under Part I, Item 1 of Water License 2AM-MEA0815, revisions to the plan shall include:

- a) A detailed monitoring protocol to verify that the Canadian Council of Ministers of Environment Fresh Water Aquatic Life guidelines are met thirty (30) metres from the outfall diffusers;
- b) Annual reporting for more immediate adaptive management;
- c) Mechanisms to measure changes to productivity in the lake as a result of the mine adding nutrients;
- d) Sampling and Analysis Plans; and
- e) Monitoring under Fisheries Authorizations, NWB Licence Compliance Monitoring, Environmental Effects Monitoring, and Groundwater Monitoring.

The report is prepared in sections, with individual monitoring plans included in one of four main areas of interest:

- Aquatic Receiving Environment Monitoring;
- Fish Habitat Compensation Monitoring;
- Monitoring of Mine Related Activities; and
- Other Monitoring Programs.

This framework allows AEM and regulators to review individual monitoring plans as required without the need to modify any or all of the other documents. Also, it is expected that as the mine progresses from construction phase, to operations, to closure and post-closure, these monitoring plans will evolve and change with time. This framework will allow the addition and removal of monitoring plans, while still maintaining a single document in which to locate all relevant aquatic monitoring and management plans for the project.

A summary and the status of each of the individual monitoring plans, per section, is provided below. As monitoring plans are updated, so too will this introduction section, so that the status of each plan is readily available to all regulators and mine operations personnel using the AEMP report. The specific requirements of the license (points a to e above) are addressed within these summaries.

Section 1: Aquatic Receiving Environment Monitoring

This section includes all monitoring plans for studies conducted in the lakes surrounding the Meadowbank Gold Project. The monitoring objectives can be for baseline data collection, or more specific to mining related activities, such as the outfall diffusers. Results of all monitoring activities are reported annually, in the comprehensive annual report due March 31 following the calendar year being reported.

Section 1A: Aquatic Effects Management Program, v1 October 2005

This plan was originally submitted to the Nunavut Impact Review Board in 2005 as part of the Final Environmental Impact Statement (FEIS) for the Meadowbank Gold Project. The document describes the rationale, framework, strategy, methodology and scope of management plans, including mitigation and monitoring, implemented at the Meadowbank Gold Project. The AEMP also recognizes and integrates, when appropriate, monitoring requirements under the No-Net-Loss policy of the Fisheries

Act and the Metal Mining Effluent Regulations (MMER; includes Environmental Effects Monitoring (EEM) for mines). This simplifies and harmonizes monitoring requirements so that an integrated ecosystem approach is taken such that physical, chemical, and biological effects and mitigation and monitoring programs are linked.

The Meadowbank monitoring strategy has a core monitoring program, which outlines a general strategy to monitor water and sediment quality, periphyton, benthic invertebrates, and fish based on the mine construction, operation, and infrastructure. In addition, specific targeted studies have been designed to address specific questions related to particular components of mine development during construction or operation.

The water quality sampling stations included in this program were identified based on the proposed effluent discharge strategy for the mine. Consequently, Sections 7.1 and 7.2 of the AEMP specifically address the outfall diffusers and the requirement to meet CCME water quality guidelines 30 metres from the outfall diffusers.

Mechanisms to measure changes to productivity in the lakes as a result of the addition of nutrients are also addressed in the AEMP. Sections 7.4 and 7.5 outline the monitoring plans for periphyton and phytoplankton, respectively. Both of these organisms are indicators of lake productivity.

A comprehensive review and redesign of the Aquatic Effect Management Program is currently underway. This will include a full analysis of the statistical power (ability to detect change) of all components of the program. Additional water samples are being collected during the 2009 field season to assist with this statistical review.

To alleviate the confusion of having two documents with the same title (i.e. this AEMP document is one of many plans in the larger AEMP report), this AEMP will be re-named “*Receiving Environment Monitoring and Management Plan*” at the time of the next review.

Section 1B: Standard Operating Procedures for Receiving Environment Sampling, v1 May 2008

Standard Operating Procedures for the receiving environment monitoring program are included in this section. These procedures cover water and phytoplankton sampling, benthos and sediment sampling, and periphyton sampling.

Section 1C: Metal Mining Effluent Regulations Plan, v1 October 2005

This plan was originally submitted to the Nunavut Impact Review Board in 2005 as part of the Final Environmental Impact Statement (FEIS) for the Meadowbank Gold Project. The MMER were developed under the federal *Fisheries Act* and registered in the Canada Gazette Part II (Vol. 136, No. 13) on 6 June 2002. The regulations apply to all “mines,” “mines under development,” or “recognized closed mines” that:

- discharge an effluent containing deleterious substances with a flow rate that exceeds 50 m³/day, based on effluent deposited from all the final discharge points of the mine; and
- deposit a deleterious substance in such a way that it enters or can enter any water that is frequented by fish.

The plan includes all routine effluent monitoring and Environmental Effects Monitoring (EEM). To date, MMER has not been applicable for the Meadowbank Gold Project, as there have been no effluent discharges.

Section 2: Fish Habitat Compensation Monitoring

The No-Net-Loss-Plan (NNLP, 2006) and NNLP Addendum (2007) describe several specific types of habitat compensation features that will be created at the Meadowbank Gold Project. These features serve as compensation for project-related effects to fish habitat; they include dike faces, finger dikes, habitat mounts and shoals, reefs and boulder gardens. This section includes all monitoring plans related to these habitat compensation features. Results of all monitoring activities are reported annually, in the comprehensive annual report due March 31 following the calendar year being reported.

Section 2A: Habitat Compensation Monitoring Plan – Mine, v1 May 2008

This plan provides the detailed monitoring strategies of the habitat compensation features built for the Meadowbank Gold Project, as stipulated in DFO Authorization NU-03-0191. Physical design components of the habitat compensation feature will be monitored in addition to ecological components; ecological monitoring may include interstitial water, toxicity testing, in situ biological studies, periphyton community and fish use.

Section 2B: Habitat Compensation Monitoring Plan – Western Channel Temporary Crossing, v1 May 2008

This plan provides the detailed monitoring strategies of the habitat compensation feature built specifically for the Western Channel Temporary Crossing, as stipulated in DFO Authorization NU-08-0013.

Section 2C: Tier 2 and 3 Habitat Compensation Monitoring Plan, v1 March 2009

The monitoring strategy for the habitat compensation features is tiered, in that the results from one level of monitoring dictate the need, or not, for the next level of monitoring. This plan provides further details of the Tier 2 and Tier 3 monitoring strategy for the habitat compensation features created for the Meadowbank Gold Project

The Tier 2 and 3 Habitat Compensation Monitoring Plan, v1 March 2009, was recently submitted to the Department of Fisheries and Oceans Canada for review and approval.

Section 2D: Monitoring Plan for AWPARG HADD Crossings, v1 June 2007

This plan provides the monitoring strategies for the All Weather Private Access Road HADD (harmful alteration, disturbance or destruction) crossings and the compensation area created at bridge crossing R02, as stipulated in DFO Authorization NU-03-0190. Monitoring is conducted to ensure the continued use of the water bodies along the AWPARG for adult fish migrations and the stability and utilization of the habitat compensation area.

Section 3: Monitoring of Mine Related Activities

This section includes the plans for water quality and flow monitoring activities around the minesite. Results are reported annually, in the comprehensive annual report due March 31 following the calendar year being reported.

Section 3A: Water Quality and Flow Monitoring Plan, v1 August 2008

This monitoring plan includes all water quality and flow sampling around the mine site, in accordance with the conditions of Type A water license 2AM-MEA0815 for the Meadowbank Gold Project. Details of the specific sampling locations, and parameters measured at each, are presented. In addition, the adaptive management program for water quality sampling data is outlined; this program is designed to evaluate the monitoring data and provide a framework for action, if necessary, to ensure environment protection objectives are met.

The Water Quality and Flow Monitoring plan was recently reviewed by Environment Canada, Indian and Northern Affairs, and the Nunavut Water Board; a letter of approval, with conditions, was sent to AEM on March 6, 2009. An update of this plan will be completed to incorporate the regulator's comments, and, as required by the water license, resubmitted to the NWB.

Section 3B: Groundwater Monitoring Plan, v2 March 2009

This monitoring plan includes the location of each of the groundwater wells (installed and operational as of the end of the 2008 field season), design characteristics of each of the wells, and the groundwater sampling methodology used to recover water samples for chemical analysis. Standard Operational Procedures for the collection of groundwater samples are included in the monitoring plan.

The Groundwater Monitoring Plan for the Meadowbank Gold Project was updated in March 2009 (version 2) and is being submitted to the NWB for review. The plan was updated to incorporate the well installations in the 2008 field season.

Section 3C: Water Quality Monitoring Plan for Dike Construction and Dewatering, v2 March 2009

This plan provides the details of water quality monitoring and management actions specifically related to the dike construction and dewatering activities for the Meadowbank Gold Project. Water quality monitoring includes several parameters (e.g., nutrients and metals), but TSS (total suspended sediments) and turbidity (primarily as a surrogate for TSS) are the major drivers of management actions during dike construction and dewatering. Standard Operations Procedures for the collection of water quality data are included in the monitoring plan. An adaptive management plan is also incorporated into the plan to ensure environment protection measures are met.

The Water Quality Monitoring Plan for Dike Construction and Dewatering was updated in March 2009 (version 2) and is being submitted to the NWB for review. The plan was updated to comply with conditions of the Type A water license and include the new silt curtain deployment procedures for the Bay Goose dike and South camp dikes scheduled for construction in the 2009 field season.

Section 3D: QAQC Plan, v1 January 2009

This plan documents the water quality QA/QC program for the Meadowbank Project. It was developed in accordance with the Indian and Northern Affairs Canada (INAC) 1996 '*Guidelines For Use By Class "A" Licensees in Meeting SNP Requirements And For Submission Of A QA/QC Plan*'.

The QA/QC Plan sets out standard procedures for sample and data collection with respect to surface water and groundwater sampling, including field sample collection and handling, external and internal laboratory requirements, data verification procedures, and regulatory reporting requirements.

Section 4: Other Monitoring Programs

This section includes plans for programs at the Meadowbank Gold Project not pertinent to the general topics in Sections 1 to 3 above.

Section 4A: Fish Out Program, v1 May 2008

This plan provides the details of the fish-out program for the northwest arm of Second Portage Lake. The fish-out program was guided by the draft document "*General Fish-out Protocol for Lakes to be Lost Due to Mining Development*", provided by DFO in January 2008. This plan will be updated prior to the fish out programs conducted in Third Portage Lake (the Bay Goose dike impoundment area) and Vault Lake impoundment area.