Environment Canada Environnement Canada

Canada

Environment Canada's (EC) Presentation to the Nunavut Water Board (NWB) Concerning Agnico Eagle Mines Ltd.'s Meliadine Gold Project Type "A" Water Licence Application

Michael I. Mohammed
Senior Environmental Assessment Coordinator
NWB Technical Meeting and Pre-Hearing Conference
Rankin Inlet, NU
October 14-15, 2015

Overview

- EC's Mandate
- Relevant Legislation
- Recommendations Overview
- Water Management Plan
- Aquatic Effects Monitoring Program (AEMP) Design Plan
- Mine Waste Management Plan
- Other Management Plans
- Conclusions

EC’s Mandate

- *Department of the Environment Act*
  - General responsibility for environmental management and protection.
  - Preserve and enhance water, air and soil quality.
  - Conserve Canada's renewable resources: migratory birds, species at risk, flora and fauna.
  - Conserve and protect Canada's water resources.
  - Provide meteorological information.
  - Coordinate environmental policies and programs.

Relevant Legislation

- The primary relevant legislation and standards administered or adhered to by EC which influenced the content of this submission are:
  - *Department of the Environment Act*
  - *Canadian Environmental Protection Act*
  - *Fisheries Act*
    - Section 36 –Pollution Prevention Provisions.
    - Metal Mining Effluent Regulations (MMER)

EC's Recommendations for the Meliadine Gold Project

EC's recommendations pertained to several of the management plans that accompanied the water licence application:

- Water Management Plan
- Aquatic Effects Monitoring Program (AEMP) Design Plan
- Mine Waste Management Plan
- Other Management Plans

Water Management Plan

- Topic: H17 Dewatering

  Recommendations:

  - Describe the treatment capacity available in pre-operations.
  - Identify what contingencies for treatment and discharge are in place if water from H17 does not meet discharge criteria.

- Topic: Effluent Toxicity Testing

  Recommendations:

  – Provide information on any toxicity test evaluations done to date for simulated effluent or groundwater samples.
  – Describe proposed toxicity testing to be used during operations.

Water Management Plan

- Topic: Management of Saline Groundwater and Mine Water

  Recommendations:

  – Describe the interim surface storage options for saline groundwater, identify factors that will influence decision-making for the management strategy selected, and describe alternative (contingency) actions, including timing, if the interim surface storage options for saline groundwater cannot deal with the volumes encountered.

  – Identify the volumes of saline water anticipated to need management during this period of time.

Water Management Plan

- Topic: Meliadine Site Specific Water Quality Objectives

  Recommendation:

  – Clarify whether the SSWQOs referenced in the Water Management Plan are intended to be applicable to discharges to Meliadine Lake during operations and why they are appropriate for use there. If this is the case then these objectives should be included in the Aquatic Effects Monitoring Program. If this is not the case, please confirm that the CCME guidelines would be used.

Water Management Plan

- Topic: Model Calibration and Adaptive Management

  Recommendation:

  – Water quality for all source waters that report to waterbody CP1 should be monitored. Monitoring data for total metals and other parameters should be used to periodically re-run the water quality model and update predictions in order to inform both operational and closure planning. If monitoring results and model predictions differ substantially from predictions, action will be needed. Thresholds for contaminant levels in CP1 should be identified that would trigger mitigation measures such as source control or implementation of further treatment for CP1 discharges. Thresholds should be included in an adaptive management plan.

Water Management Plan

- Topic: Selected Phosphorus Objective – Edge of Mixing Zone

  Recommendations:

  – The oligotrophic status of that basin of the lake should be maintained and a lower objective of 0.01 mg/L used for Total Phosphorus.

  – Describe the monitoring and adaptive management to be implemented to detect changes and prevent impacts to lake productivity and associated issues.

AEMP Design Plan

- Topic: Meliadine Lake Reference Areas

  Recommendations:

  – Describe the approach that is being taken to establish baseline conditions in Meliadine Lake.

  – Identify how the baseline data that is currently being collected will be used in the AEMP (study design).

  – Describe measures that will be used to ensure that baseline data is representative of pre-mining conditions.

- Topic: Under Ice Water Quality Sampling

  Recommendation:

  – Describe a sampling program that will include reference areas during the under-ice period in order to provide data needed to detect mine-related effects in the receiving environment.

AEMP Design Plan

- Topic: Sampling at Reference Area 2 and Reference Area 3

  Recommendation:

  – Describe the water quality sampling program: clarifying the sampling reference areas, the frequency of sampling for all reference areas, and from which areas water quality results trigger additional sampling at Reference Area 2 and Reference Area 3.

- Topic: Water Quality Sampling in the Peninsula Lakes

  Recommendation:

  – Develop a sampling plan which completes one sampling period during the under ice season as part of the two times per year sampling program for the Peninsula Lakes.

AEMP Design Plan

- Topic: Fish Survey Sampling Areas

  Recommendations:

  – Provide rationale for the selection of sampling sites for the small bodied fish program.

  – For the large bodied fish program, provide the locations where fish sampling is to be conducted and confirm that reference areas are to be sampled during discharge and used as a “control” for the exposure area.

- Topic: Peninsula Lakes Study

  Recommendation:

  – Clarify whether a control-impact (reference lake) design is to be used for the Peninsula Lake study or if it is only a before-after design. If the latter, please describe how the baseline will be established such that any impacts to the lakes from mining activity will be detectable.

AEMP Design Plan

- Topic: Plankton Target Study

  Recommendations:

  – Clarify the study length and provide a rationale for the time frame required to complete the analyses mentioned and for the study to gain maximum information on the pre-operational conditions.

  – The study design should extend to and support ongoing monitoring of primary productivity in Meliadine Lake.

- Topic: Aquatic Response Framework – Low Action Levels

  Recommendation:

  – Develop the Action Levels for the aquatic response framework and include the following:

    - Define ‘persistent’ as referenced in “*persistent sublethal toxic effects on test organisms other than fish in end-of-pipe samples*”.
    - Define the percentages being used for “*percentage of a benchmark*”.

Mine Waste Management Plan

- Topic: Waste Rock

  Recommendation:

  – Describe the process to isolate and appropriately manage any rock unit that shows leachate concentration of arsenic.

- Topic: Overburden

  Recommendation:

  – Describe the process to isolate and appropriately manage the rock unit with the higher concentration of zinc.

- Topic: Tailings

  Recommendation:

  – Describe the process to isolate and appropriately manage the tailings, waste rock, and overburden with higher concentrations of arsenic and/or zinc.

Mine Waste Management Plan

- Topic: Waste Rock Storage Facility 1

  Recommendation:

  – Provide clarification on how climate change and thawing of the active layer will affect the foundation of the waste rock facility that is built over water ponds.

- Topic: Waste Rock Storage Facility 2

  Recommendations

  – Describe geotechnical conditions associated with the presence of ponds that may affect the freezing of the foundation of the waste rock pile.

  – Provide clarification on how climate change and thawing of the active layer will affect the foundation of the waste rock facility that is built over water ponds.

  – Determine whether or not those ponds will be classified as fish-bearing waters in conjunction with Fisheries and Oceans Canada.

Mine Waste Management Plan

- Topic: Waste Rock Storage Facility 3

  Recommendation:

  – Determine whether or not the ponds in waste rock facility three are classified as fish bearing waters in conjunction with Fisheries and Oceans Canada.

- Topic: Monitoring Activities for Waste Rock

  Recommendation:

  – Specify the number of samples per 100,000 tonnes that will be used for monitoring and describe the rationale for the sample number chosen.

Mine Waste Management Plan

- Topic: Ore Stockpile

  Recommendation:

  – Clarify how seepage into the ground below the ore pad will be prevented or managed.

Other Management Plans

- Explosives Management Plan

  Recommendation:

  – Describe in the Explosives Management Plan:
    - The plan to manage and disposal of explosives residue in: emulsion plant wastewater, vehicle wash water, waste rock.
    - The calculation to predict total loading of ammonia/nitrate to the environment due to storage, use, transport, handling, and disposal of explosives and related products.

- Additional Management Plans

  Recommendation:

  – Provide the following management plans for the Nunavut Water Board's approval:
    - Erosion and sediment control management plan.
    - Wastewater treatment plant Operation & Maintenance manual.

Other Management Plans

- Landfarm Management Plan

  Recommendations:

  – Verify the integrity and performance of the liner prior to commissioning of the landfarm.

  – Monitor for liner integrity and leachate containment on a regular basis and provide proper maintenance.

- Landfill and Waste Management Plan

  Recommendation:

  – Reference and use the “Guidelines for Developing a Waste Management Plan (MVLWB, 2011)” in developing the Meliadine Landfill and Waste Management Plan.

Conclusions

- EC thanks the community, the NWB, the other interested parties, and Agnico Eagle Mines Ltd. for this opportunity to present recommendations on the proposed Meliadine Gold Project.
- EC looks forward to continuing to work with Agnico Eagle Mines Ltd. to improve this application.
- Additional information can be found in EC's Technical Review comments to the NWB, dated October 5, 2015.