



NIRB File No. 03MN107

December 7, 2012

Kevin Buck  
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Sent via email: [Kevin.Buck@agnico-eagle.com](mailto:Kevin.Buck@agnico-eagle.com)

**Re: The Nunavut Impact Review Board's 2011 – 2012 Annual Monitoring Report for the Meadowbank Gold Project and Board Recommendations**

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Dear Kevin Buck:

The Nunavut Impact Review Board (NIRB or Board) is hereby releasing its *2011 – 2012 Annual Monitoring Report for Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project* (Monitoring Report). The enclosed Monitoring Report is based on the NIRB's monitoring activities pursuant to the Project Certificate [004] and Sections 12.7.1 and 12.7.2 of the Nunavut Land Claims Agreement. This report provides findings that resulted from the monitoring of this Project that took place from October 2011 to September 2012.

Based upon the Board's review of the monitoring report and other materials related to the Meadowbank Project, the Board has issued the following recommendations in order to assist Agnico-Eagle Mines Ltd. (AEM) in achieving compliance with the Project Certificate [004] and other project-related commitments. The Board requests that for items requiring immediate follow-up action by AEM that a response be provided within 30 days of receiving the recommendations. These items have been marked with an asterisk (\*).

*Appendix D and the Annual Report*

The 2011 Annual Report did not provide a full discussion and summary on the post-environmental assessment monitoring program (PEAMP) for the Project, in accordance with commitments made within the Final Environmental Impact Statement (FEIS), during the Final Hearing as required throughout the Project Certificate [004] and as outlined in Appendix D. Specifically, AEM did not provide a discussion and summary for the evaluation of the accuracy of impacts that were predicted in the FEIS, a summary of conclusions made throughout the reporting period, an evaluation of the effectiveness of mitigation measures employed, and a description of any impacts or effects resulting from exceeded thresholds. This information was

not provided for the aquatic effects monitoring program, groundwater monitoring program, and fish and fish habitat monitoring program. Without these discussions and summaries, it is difficult for the Monitoring Officer to ascertain whether or not impacts are being observed at the mine site and to determine whether any impacts or data are in line with the predictions provided within the FEIS.

**Recommendation 1:** The Board requires AEM to provide a full discussion and summary on the PEAMP for the Project in accordance with commitments made within the FEIS, during the Final Hearing, and as required throughout the Project Certificate (including Appendix D).

#### Terrestrial Wildlife Impact Predictions

AEM indicated in its 2011 Annual Report that no thresholds for bird abundance, richness and diversity were exceeded in 2011 for breeding birds. The same was observed for waterfowl in that the threshold level for breeding success of waterfowl in the area was not exceeded in 2011. AEM also indicated that the mortality thresholds for wildlife along the access road were not exceeded in 2011.

The Monitoring Officer notes that the 2011 Annual Report provided no indication as to whether or not the predicted impact thresholds for other wildlife had been exceeded when considering the results of raptor nest surveys, mine site ground surveys, the hunter harvest surveys and the caribou radio-collaring program.

**Recommendation 2:** The Board requests that AEM provide a full analysis of thresholds against the actual results of surveys conducted in 2011, specifically pertaining to raptor nest surveys, mine site ground surveys, hunter harvest surveys, and the caribou radio-collaring program.\*

#### Compliance with licences and authorizations

In 2010 and 2011, AEM exceeded the total allowable annual water usage limit of 700,000 m<sup>3</sup> as stipulated in the NWB Water Licence (2AM-MEA0815). AEM indicated in correspondence to the NWB (dated September 21, 2012) that an action plan was put in place to minimize the use of freshwater at the mill which comprised the main use of water at the site. AEM indicated that it has investigated different options to increase the usage of reclaim water that would subsequently result in a decrease in the requirements of freshwater. The NWB in correspondence dated September 28, 2012 agreed with AEM that improving the water management practices on-site resulting in a reduction of the freshwater usage would be a sound approach. However, the NWB reminded AEM that the terms and conditions of the Licence still apply and that it awaits an update from AEM on the results of the studies and the direction AEM will pursue once the results are available.

**Recommendation 3:** It is requested that AEM indicate what next steps it would pursue in regards to its on-site water management practices, once the results of its investigations are available.

#### Cyanide Levels in Water Quality Results

Environment Canada (EC) previously noted that cyanide (CN) values were reported by AEM to above the Canadian Council of Ministers of the Environment (CCME) guidelines for samples collected in 2010 in the dewatering effluent, the receiving environment, and the in-lake control

sites. EC suggested that AEM review the source of the high CN values and provide this information in AEM's next annual report. In its 2011 Annual Report, AEM indicated that CN was detected in old empty sampling bottles that had been stored for an extended period of time (> 8 months) and that further testing was ongoing and the results and interpretation would be provided in the 2012 Annual Report. No further discussion was provided by AEM on how it planned to prevent future CN contamination of sampling bottles or what procedures were to be put into place by AEM or the laboratory contracted in order to prevent contamination of these bottles.

**Recommendation 4:** The Board requests that AEM provide a plan of action to ensure future contamination of sampling bottles does not occur. This could include updating site procedures to require the replacement of sampling bottles more frequently in order to avoid CN contamination, and working with the laboratory contracted to determine the source of CN at the mine site.

#### Proposed Pilot Remediation Program

AEM indicated that it may not develop a landfarm on site but instead it is considering the development of a contaminated soil storage/pilot remediation site to remediate hydrocarbon contaminated soil at the mine site.

**Recommendation 5:** The Board requests that AEM keep the NIRB informed on the development of the contaminated soil storage/pilot remediation site and that copies of the revised landfarm management plan or any other related plans be provided to the NIRB.

#### Groundwater monitoring wells – Condition 8

Observations from the Monitoring Officer's 2012 site visit indicated that the groundwater quality monitoring program appeared to only have one operational groundwater well in place. The Board has previously recommended that the defective wells be replaced in order to provide a more robust groundwater quality data and monitoring program. AEM indicated during the 2012 site visit that it plans to re-evaluate the groundwater monitoring program to determine how best to improve the effectiveness of the wells and the collection of groundwater samples.

Further, in the 2011 Annual Report, AEM indicated that groundwater chemistry at one of the wells sampled (MW11-01) had higher values of salinity, dissolved sulphate, hardness and turbidity, some total metals and dissolved metals compared to samples taken from wells in previous years from the same area. AEM suggested that the increased levels could be attributed to naturally occurring brackish water or to some drilling brine remaining in the water; however no discussion was provided by AEM on mitigation measures for the higher concentration levels recorded.

**Recommendation 6:** The Board requests that AEM provide a plan including an estimated date by which the defective wells are expected to be replaced or re-established in order to collect the robust groundwater quality data intended by, and required for the comprehensive monitoring program which resulted from the environmental assessment and subsequent licensing stages of the Project. In addition, the Board requests that AEM provide the NIRB with a summary of the number of wells to be installed, and an updated map showing where the wells would be installed in relation to other project components and in proximity to water bodies.\*

**Recommendation 7:** It is recommended that AEM keep the NIRB informed of the status of the re-evaluation of the groundwater well monitoring program in order to monitor ongoing compliance to the requirements of Condition 8.

**Recommendation 8:** It is recommended that AEM conduct further studies to accurately determine the source of the contamination in the well MW11-01, especially with a focus as to determining whether the increased values are related to the movement of groundwater through the formation within the Goose Island Pit.

**Recommendation 9:** It is recommended that AEM provide the Board with a more detailed discussion regarding the mitigation measures to be put into place in order to address the observed higher values recorded at well MW11-01.\*

*Quality Assurance/Quality Control (QAQC) – Condition 23*

Condition 23 directs the Proponent to conduct QAQC monitoring at locations within the receiving environment and that the monitoring be conducted by an independent contractor and furthermore, that the samples be analyzed by an independent and accredited laboratory. AEM provided a summary of the results of the analyses in the 2011 Annual Report and noted that several parameters at different sampling periods exceeded the confidence levels for the duplicate samples, however no further discussion was provided regarding the noted exceedances.

The Board notes that conducting further studies may help to determine why several parameters exceeded confidence levels for duplicate samples during the analyses of the 2011 results. Understanding why exceedances occurred through additional studies may in turn, help to ensure that these exceedances do not occur in future monitoring periods.

**Recommendation 10:** The Board requests that AEM provide a discussion of the exceedances observed for the duplicate samples, as well as an indication as to whether further studies are planned in order to address the results observed for the QAQC monitoring.

*Wildlife Deterrents – Condition 25*

Condition 25 requires the Proponent to employ legal deterrents to deter carnivores and/or raptors at all landfill and waste storage areas. During the Monitoring Officer's 2012 site visit, AEM indicated that fewer wildlife sightings had been observed around the site since the installation of several deterrents, but that six pairs of falcons had nested at different quarry sites, one pair of falcons had nested at Portage pit and one pair of ravens had nested at the Baker Lake bulk fuel storage facility in 2012.

**Recommendation 11:** The Board requests that AEM provide information on the type of deterrents it plans to use in the future to deter falcons and ravens at the Meadowbank site and at the Baker Lake bulk fuel storage facility, and to provide discussion as to the effectiveness of such deterrents at these sites and any alternatives that may be considered.

*Spills and cleanup – Condition 26*

Condition 26 requires that spills be cleaned up immediately and that the site be kept clean of debris. All spills that occurred at the site and along the access road were immediately cleaned-up by AEM as reported in AEM's 2011 Annual Report. The Board notes that the spill that occurred in October 2010 at kilometre 22 of the access road was still undergoing treatment for

hydrocarbons at the time of the Monitoring Officer's 2012 site visit. AEM indicated that it had installed an oil-water separator to separate hydrocarbons from the water contained in the pits that were created during the excavation of the contaminated soil at kilometre 22 and that ongoing monitoring of this site would continue for an additional 2 years to ensure that no contaminated materials remain at the site. Furthermore, the Board was informed that during the site visit, the Monitoring Officer noted some instances of wind-blown debris scattered around the site.

**Recommendation 12:** The Board requires AEM to provide a monitoring plan for the spill at kilometre 22, requesting specifically, that AEM provide information on what conditions must be met to discontinue monitoring of this area in 2 years.

**Recommendation 13:** The Board requests that AEM develop and put into place an action plan designed to prevent wind-blown debris from the waste piles and/or to establish additional on-site waste management practices.\* The Board also requires AEM to report on the effectiveness of this waste management action plan in its annual reporting to the NIRB.

*All weather private access road – Condition 32(items e through g)*

The Board notes that AEM's 2011 Annual Report did not include information regarding Condition 32(e), 32(f) or 32(g). Condition 32(e) requires that AEM submit information on the consultation that was conducted in 2011 in the hamlet of Baker Lake to explain the usage of the access road. Condition 32(f) directs the Proponent to place notices quarterly on the radio and television to explain to the community that the road is a private road with non-mine use of the road limited to the purposes of carrying out traditional Inuit activities. Condition 32(g) directs the Proponent to record all authorized non-mine use of and report unauthorized non-mine use of the road, and to collect and report this data to the NIRB. AEM indicated in its 2011 Annual Report that no unauthorized ATV use of the road was reported, however the Annual Report did not provide a discussion on whether or not road usage had increased since the development of the access road, whether an increase in harvesting had been observed due to the use of the road, and nor did it discuss the potential socio-economic impacts of the public use of the access road. Monitoring of the current rate of usage of the access road and comparison to usage of previous years would provide valuable information that would assist in determining whether or not the development of the access road has had impact on traditional activities or other parameters in the area.

Finally, the Board notes that AEM's 2011 Annual Report provided results based on the *original* Condition 32 issued December 2006 by the NIRB. Information is required based on the *amended* Condition 32 that was issued by the NIRB on November 20, 2009.

**Recommendation 14:** The Board reminds AEM that its future annual reports are expected to speak to the amended Condition 32. Further, the Board requires that AEM provide information on the compliance status to Condition 32(e) and 32(f) for the 2011 year and provides record of consultation with the community of Baker Lake in 2011 as to the private nature of the access road and the non-mine access that is allowed for traditional Inuit activities.\*

**Recommendation 15:** It is also recommended that AEM provide information on the authorized non-mine use of the road as required under Condition 32(g). The Board request that AEM provide an assessment of the environmental and socio-economic

impacts of the access road as spoken to in Condition 33 [...2. to facilitate monitoring of the environmental and socio-economic impacts of the private road and undertake adaptive management practices as required,...]. The assessment should include a discussion on whether or not road usage had increased since the development of the access road, whether an increase in harvesting has been observed and whether that may be attributed in whole or in part to the use of the road, whether the development of the access road has had an impact on traditional activities in the area, and the potential socio-economic impacts of the public use of the access road.

#### Monitoring of Country Foods – Condition 67

Condition 67 requires that the Proponent develop a program which monitors contaminant levels in country foods and to submit this plan to the NIRB. In 2011, AEM completed a wildlife screening level risk assessment (WSLRA) and a preliminary quantitative risk assessment (PQRA) in order to meet the requirements of Condition 67. Results in the WSLRA report indicated that the operation of the Meadowbank mine did not appear to be contributing excess risk from chemical contaminants to wildlife residing in the area. The author of the PQRA recommended further studies be conducted, specifically for chromium exposure to caribou and chromium concentration in lichen at both reference and mine site locations. At this time, AEM has not provided any indication as to whether these further studies may be conducted.

**Recommendation 16:** The Board invites Health Canada<sup>1</sup> to provide comments on the results of both the WSLRA and PQRA reports as provided by AEM, and to indicate whether or not further information may be required with respect to the monitoring program as outlined in Condition 67.

**Recommendation 17:** It is recommended that AEM notify the NIRB of any plans for follow-up studies that may be conducted as a result of the PQRA report recommendations.

#### Dust and Air Monitoring – Condition 71

This condition has been included as a recommendation by the Board in each of its annually issued recommendations to the Proponent since 2008. In 2011, AEM installed four air monitoring stations in late October 2011 and dust monitoring commenced in November 2011. The results from the initial samples collected in 2011 indicated that two of the four stations exceeded the maximum allowable concentrations of total fixed dust fall. AEM suggested that it would conduct further consultation with EC to determine a more suitable and representative location for the dust monitoring in 2012. It further suggested the implementation of a more rigorous on-site dust control watering procedure for mine site haul roads.

It is unclear why AEM would be looking at new stations for the 2012 program when only one data set was collected in 2011 for dust monitoring. Also, it is unclear why high levels of dust were observed in the month of December, at a time when the mine roads would be expected to be usually covered with snow.

**Recommendation 18:** Based on the information and results provided from the 2011 dust monitoring program and given the limited amount of data collected, it is recommended that the monitoring stations be kept in place until more data is collected, and prior to new

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<sup>1</sup> Note that the Board plans to invite Health Canada to comment via correspondence issued under separate cover, and that AEM is not responsible for a response to this recommendation. It has been included here for information only.

locations being selected by AEM. If AEM, in consultation with EC, determines that a more suitable location for dust monitoring have been located, the Board requires that the Proponent provide a description of the new location for the atmospheric monitoring station, including an updated map showing where the station would be installed in relation to other project components (including roads) and in proximity to water bodies.

**Recommendation 19:** The Board requests that AEM provide a discussion and rationale as to why the two out of the four stations monitored exceeded the maximum allowable concentrations of total fixed dust fall during the months of November/December.\*

*On-site incinerators – Condition 72*

Condition 72 requires that the Proponent conducts annual stack testing of the on-site incinerators to demonstrate that it is operating in compliance with the required standards. EC, in its review of AEM's 2010 Annual Report indicated that annual testing of the incinerator is not required as the results show that the incinerator is in compliance with the required standards. Therefore, no incinerator stack testing was completed in 2011. However, in its review of AEM's 2010 Annual Report, EC requested that AEM explain why the incinerator did not achieve sufficiently high enough temperatures in the secondary chamber on a few occasions to ensure complete combustion and to minimize the formation and release of contaminants. Further, EC requested that any corrective measures employed be identified and described in future annual reports. The 2011 Annual Report did not provide any information in response to either of EC's requests.

**Recommendation 20:** The Board requests that AEM provide the information as requested by EC.\*

*Suppression of surface dust – Condition 74*

Condition 74 directs the Proponent to employ environmentally protective techniques to suppress any surface road dust. The Monitoring Officer noted during the site visit in 2012 that no dust suppressant techniques were applied to the access road from Baker Lake to the Meadowbank site but that the Proponent had been actively using calcium chloride and water as a dust suppression technique at the site itself. AEM has indicated that on-going studies are being performed to determine the best options to deal with the dust created at the mine site and that plans are in place to conduct future dust monitoring studies along the access road to determine the best options to deal with the dust created along the road. This condition has been included as a subject of recommendation by the Board in each of its annually issued recommendations to the Proponent since 2008.

**Recommendation 21:** The Board requires that AEM address the dust control issue for the access road.\*

**Recommendation 22:** It is recommended that AEM to provide a plan which details the future dust monitoring studies that would be conducted along the access road including a discussion of potential adaptive management strategies that may result from these studies.\*

Again, the Board respectfully requests that for items requiring follow-up action by the Proponent that a response be provided within 30 days of receiving these recommendations. Where no timeline has been stipulated for a response, the Board requests that AEM submit a plan of action for addressing these items prior to February 1, 2013. If you have any questions or require further

clarification related to the NIRB's monitoring of the Meadowbank project, please do not hesitate to contact me directly at (867) 793-4633 or [sgranchinho@nirb.ca](mailto:sgranchinho@nirb.ca).

Sincerely,



Sophia Granchinho, M.Sc., EP  
Technical Advisor & Meadowbank Project Monitoring Officer  
Nunavut Impact Review Board

cc: Stéphane Robert, Agnico-Eagle Mines Ltd.  
Meadowbank Distribution List

Enclosure: The Nunavut Impact Review Board's *2011 – 2012 Annual Monitoring Report for Agnico-Eagle Mines Ltd.'s Meadowbank Gold Project*