



**NIRB File No.: 03MN107**  
NWB File No.: 2AM-MEA1525  
DFO File No.: 03-HCAA-CA7-00191

October 23, 2015

Kevin Buck  
Environmental Superintendent – Nunavut  
Agnico Eagle Mines Ltd. – Meadowbank Division  
P.O. Box 540  
Baker Lake, NU X0C 0A0

Sent via email: [kevin.buck@agnicoeagle.com](mailto:kevin.buck@agnicoeagle.com)

**Re: The Nunavut Impact Review Board's 2014-2015 Annual Monitoring Report for the Meadowbank Gold Project and Board's Recommendations**

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Dear Kevin Buck:

The Nunavut Impact Review Board (NIRB or Board) is hereby releasing its *2014-2015 Annual Monitoring Report for Agnico Eagle Mines Ltd.'s Meadowbank Gold Project* (Monitoring Report) along with the 2015 Site Visit Report for the NIRB's monitoring of the Meadowbank Gold Project (NIRB File No. 03MN107; Appendix II within the Monitoring Report). The enclosed Monitoring Report is based on the NIRB's monitoring activities as set out within the Meadowbank Project Certificate [No. 004] and pursuant to Sections 12.7.1 and 12.7.2 of the Nunavut Land Claims Agreement. This report provides findings that resulted from monitoring of this Project that took place from October 2014 to September 2015.

By way of a motion carried during its regular meeting held in October 2015 the Board has issued the following recommendations to assist Agnico Eagle Mines Ltd. (AEM) in achieving compliance with the Meadowbank Gold Mine Project Certificate and to ensure the NIRB has all information necessary to adequately discharge its mandate with respect to provisions within Section 12.7 of the Nunavut Land Claims Agreement as such pertain to the Meadowbank Gold Mine Project.

*Access and Air Traffic Management Plan*

The NIRB notes that the last version of the '*Access and Air Traffic Management Plan*' provided by AEM is dated 2005. The Meadowbank Mine project has significantly changed since 2005 and an updated plan to reflect the current status of the mine would be useful for review by parties.

**Recommendation 1:** The Board request that AEM provide an updated *Access and Air Traffic Management Plan* that reflects the current status of the Meadowbank Mine project. This plan should be provided within 30 days of receipt of the Board's recommendations.

#### Gathering of Traditional Knowledge – Conditions 40

Condition #40 requires that AEM report annually on traditional knowledge (TK) gathered from the local hunters and trappers organization (HTO) and the community of Chesterfield Inlet and report the results to both the Kivalliq Inuit Association (KIA) and the NIRB. No information has been provided in the 2014 Annual Report regarding whether any additional TK has been gathered from the residents of Chesterfield Inlet on marine mammals, cabins, hunting and other local activities in and around the Inlet and this has been an outstanding issues since 2012. In response to the Board's 2014 recommendation, AEM noted that it held an Inuit Qaujimagatuqangit workshop in Chesterfield Inlet on January 26 and 27, 2010. The workshop was reportedly focused on gathering information on traditional use and traditional environmental knowledge of Chesterfield Inlet residents, as well as project-specific effects and mitigation recommendations including search and rescue operations and safety. AEM added that there was no change in the TK reported to AEM during meetings held in 2012 and 2014, and that as a result it concluded that no operational changes were necessary. As AEM did not provide specific TK collected during the 2012 and 2014 meetings, it is difficult for the NIRB to assess the soundness of AEM's conclusion that operational changes were not necessary.

The NIRB notes that TK may change and evolve over time and that as such, it is important that AEM continue to collect and report on TK regarding wildlife and local activities to accurately understand traditional land use and potential impacts of the project on various components of the environment. Considering that the Project is now well into its operations phase and that marine mammals, hunting, and other local activities may have changed throughout the Project life thus far; determining changes to local knowledge and concerns is essential.

The NIRB further notes that a document was provided by the Baker Lake HTO on September 14, 2015 which summarizes comments raised by community members at separate meetings noting traditional knowledge evidence of the Meadowbank Gold Mine marine shipping impacts on marine mammals in Chesterfield Inlet. The summary provides evidence that local activities have changed, TK have evolved and impacts are observed on marine mammals since the Project has been approved.

**Recommendation 2:** Based on the evidence provided by the Baker Lake HTO on traditional knowledge evidence of the Meadowbank Gold Mine marine shipping impacts on marine mammals in Chesterfield Inlet, the Board recommends AEM undertake additional workshops in Chesterfield Inlet and Baker Lake to gather Traditional Knowledge from both the community level and the Chesterfield Inlet and Baker Lake HTOs. A response should be provided to the NIRB within 30 days of receipt of the Board's recommendations and any applicable follow-up should be provided within AEM's 2015 Annual Report and future reports.

#### Participation in Surveys – Conditions 51 & 54

AEM noted that the Hunter Harvest Study participants rates remained relatively constant in 2014 (46 participants compared to 49 participants in 2013 and 62 in 2012) while the number of

participants recording caribou harvest have decreased dramatically. AEM suggested that the lower total reported harvest numbers of caribou within five (5) kilometres of the all-weather access road (AWAR) could be a result of participant fatigue and a decrease in participant response rate rather than a decrease in wildlife abundance. AEM further suggested that the overall distribution of harvest has stabilized due to the number of caribou harvested along the AWAR in 2014. AEM did not provide a discussion on how they came to this conclusion as the data collected by AEM from the participants generally underestimate true harvest levels. It is suggested that different methods of surveys be conducted especially as AEM pointed out that there may be participant fatigue with the Hunter Harvest Study.

**Recommendation 3:** The Board requests that AEM provide a discussion on how it came to the conclusion that the overall distribution of harvest of caribou has stabilize based on the number of caribou harvested along the AWAR in 2014 especially since the data collected by AEM from the participants generally underestimate true harvest levels. It is requested that the response be provided to the NIRB within 30 days receipt of the Board's recommendations.

**Recommendation 4:** The Board requests that AEM provide a discussion on different methods of surveys that could be conducted to compensate for the fact that there may be participant fatigue with the Hunter Harvest Study in order to determine the effects on ungulate populations resulting from human access caused by the AWAR. The response should be provided to the NIRB within 30 days receipt of the Board's recommendations.

AEM further noted that the results of creel surveys as presented within its 2014 Annual Report indicated that the study participants decreased compared to the 2013 year; however, the overall fishing effort per participant increased. The assumption made by AEM is that the participants recording creel harvests in 2013 were less willing to travel long distances to catch fish while the participants in 2014 were those who are more likely to fish frequently and successfully. This statement appears to be contradictory.

Further it is noted by the NIRB that no evidence was provided within the 2014 Annual Report on any information regarding AEM's efforts and relevant results on any additional studies conducted to better understand the Projects related effects on caribou and on the creel population within the local study area.

**Recommendation 5:** The Board requests clarification from AEM regarding its statement that the overall fishing efforts per participants increased due to increased fishing by participants in 2014 while in 2013 the lower numbers were due to participants less willing to travel long distances to catch fish. It is requested that the clarification be provided to the NIRB within 30 days receipt of the Board's recommendations.

**Recommendation 6:** The Board requests that AEM provide information regarding AEM's efforts on any additional studies conducted to better understand the Projects related effects on caribou and the creel population within the local study area. The information should include results where feasible. It is requested that the information be provided to the NIRB within 30 days receipt of the Board's recommendations.

### Provision of Updated Information – Condition 56

Condition 56 requires that AEM place maps of updated caribou migration paths in its site offices and upgrade these maps as new information on corridors becomes available. During the NIRB's 2015 site visit to the Meadowbank site, it was noted a map of caribou migration routes was posted near the site offices; however, it appeared that the site mapping was based on 2010 migration paths. It also remains unclear whether or how information collected from consultation with Elders and local HTOs had been incorporated into the development of the maps as the data source on the maps themselves is noted as being based on satellite and GPS [*global positioning system*] survey data. This was a concern that was brought up previously the Board in 2014 and does not appear to have been addressed.

**Recommendation 7:** The Board requests that updated caribou migration maps from the 2014 Annual Report be posted at the Meadowbank Mine site. It is further recommended that AEM provide details clarifying whether and how information collected from consultation with Elders and local HTOs had been incorporated into updating the maps. The response should be provided to the NIRB within 30 days receipt of the Board's recommendations.

### Socio-economic Monitoring – Condition 64

Condition 64 requires that the Proponent works with the Government of Nunavut (GN) and Aboriginal Affairs and Northern Development Canada (AANDC) to develop a Meadowbank socio-economic program. In response to the Board's 2014 recommendation, AEM indicated that it has made progress on developing a socio-economic monitoring program as per the requirements of Condition 64 and is collecting data to be submitted as part of the overall socio-economic monitoring committee plan.

**Recommendation 8:** The Board recommends that AEM provide a progress report on the development of the socio-economic monitoring program and if possible provide a summary of the results of the program to date. It is requested that the progress report be provided to the NIRB within 30 days receipt of the Board's recommendations.

### On-site Incinerators – Condition 72

Condition 72 requires that the Proponent conducts annual stack testing of the on-site incinerators to demonstrate that they are operating in compliance with the required standards. In review of AEM's 2012 and 2013 Annual Reports, the NIRB noted that the incinerator temperature in the secondary chamber was below the recommended 1000°C temperature on several occasions. In response to the Board's 2014 recommendation, AEM indicated that corrective actions would be put in place to ensure the temperature set point in the secondary chamber would always reach the average recommended temperature and an alarm on the sites services computer would be set up to notify staff when the temperature of the secondary chamber falls below 1000°C. In review of the available 2014 Incinerator Daily Report Logbook, the NIRB notes that the incinerator temperature in the secondary chamber was below the recommended 1000°C temperature on several occasions following the summer of 2014 when a representative of the burner manufacturer came to site to provide training and maintenance of the burner. Based on the information provided, it appears that the corrective actions put in place for the incinerator for late 2014 is not reaching the goal of ensuring the temperature of the secondary chamber remains above 1000°C.

**Recommendation 9:** The Board request that AEM provide an explanation for the incinerator having not achieved the recommended temperatures in the secondary chamber in the winter of 2014 as required by Environment Canada. It is further recommended that AEM describe any corrective measures employed at the incinerator in addition to the corrective actions set in place in 2014. The response should be provided to the NIRB within 30 days receipt of the Board's recommendations.

AEM further noted that during the 2014 stack testing the incinerator exceeded the Canada-wide Standards (CWS) for mercury emissions with values being three times above the guideline values. Laboratory testing was also completed which confirmed the stack testing results. AEM noted that it conducted an investigation with Meadowbank's site services department to determine the potential sources of the mercury exceedance and revealed that the source may have been significant volumes of batteries disposed of along with regular solid waste destined for the onsite incinerator. As a result, AEM implemented a comprehensive site wide information program to reinforce the requirements of the battery recycling program. Furthermore, AEM committed to conduct additional confirmatory stack testing in the summer of 2015.

**Recommendation 10:** The Board requests that AEM provide a summary of the 2015 stack testing that was completed. It is also requested that AEM provide a description of the comprehensive site wide information program and confirmation that it is working to ensure that batteries are recycled appropriately. The response should be provided to the NIRB within 30 days receipt of the Board's recommendations.

Furthermore, the Board, in 2014, requested that Environment Canada (EC) provide comments on the information contained within AEM's 2013 Incinerator Daily Report Logbook and whether it agreed to the continuation of biennial incinerator stack testing, given the reported instances of lower than optimal secondary chamber burn temperatures and the number of daily log insertions that were missed within AEM's 2013 Incinerator Daily Report Logbook. In its response to the Board, EC noted that the CWS for Dioxins and Furans and the CWS for mercury emissions states that "*where five years' data has been accumulated with all results reported below the Level of Quantification (emission standard), the stack testing frequency may be revised to a biennial schedule*" so long as all subsequent test results remain below the emission standards. Except for noting CWS' requirement, no indication was provided within EC's response on whether it agreed on the continuation of biennial incinerator stack testing given the reported exceedances that was observed in the previous years' stack testing.

**Recommendation 11:** The Board recommends that EC<sup>1</sup> provide comments on results of AEM's 2014 Incinerator Daily Report Logbook, the results from the 2014 stack testing and to provide confirmation that it agrees (or disagrees) to the continuation of biennial incinerator stack testing. Comments on these items are requested given the reported instances of exceedances that were observed in the 2014 stack testing and the continued lower than optimal secondary chamber burn temperatures observed in 2014.

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<sup>1</sup> Note that the Board plans to invite Environment 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.

#### Suppression of surface dust – Condition 74

Condition 74 directs the Proponent to employ environmentally protective techniques to suppress any surface road dust. During the 2015 site visit, AEM confirmed that no dust suppressants were currently in use along the AWAR and has not been in used since the inception of the project. However, AEM confirmed that calcium chloride was used as a dust suppressant on the haul roads at the mine site, between the Meadowbank and Exploration Camp sites, and between the Baker Lake Dock Facility and the Gatehouse.

In response to the Board's 2014 recommendation, AEM indicated that it has completed a series of dustfall studies to quantitatively assess the accuracy of the final environmental impact assessment (FEIS) predictions regarding impacts of dust on wildlife and wildlife habitat around the mine site and along the AWAR. AEM noted that the results were consistent with the FEIS predictions and that it will continue to conduct monitoring studies along the AWAR.

AEM further noted that Condition 74 is not specified within the "All Weather Road" section of the Project Certificate, that it believes the *Access and Air Traffic Management Plan* was intended to apply to on-site haul and service roads, and that the *Air Quality and Noise Management Plan* indicated that dust suppressants are to be applied to "haul and service roads during dry weather to mitigate fugitive dust".

The NIRB recognizes the efforts made by AEM to suppress dust around the Meadowbank and Exploration Camp sites, and further recognizes the dustfall monitoring program conducted along the AWAR since 2012; however, the NIRB would like to point out to AEM that Condition 74 is specified within the "Air Quality" section of the Project Certificate which applies to the whole Meadowbank Gold Project including the AWAR and not just specifically to the Meadowbank mine site. In addition, the NIRB would like to remind AEM of commitments made during the environmental assessment review process and the following summary made by the NIRB within the recommendations section of the NIRB's Final Hearing report for the Project:

"The Board also requires Cumberland to carry out the Project in compliance in all material respects with the environmental and socio-economic monitoring and mitigation plans and programs in the FEIS submitted to NIRB, including the associated documents updating the FEIS during the review process. In the event of a conflict between the FEIS and the Terms and Conditions of the Project Certificate or the terms of a regulatory instrument, the Terms and Conditions of the Project Certificate or the regulatory instrument, as the case may be, prevail."

Finally, the NIRB notes that as pursuant to Condition 33 of the Project Certificate, the *Access and Air Traffic Management Plan* should have been updated to include an 'All-weather Private Access Road Management Plan' therefore the NIRB notes that the *Access and Air Traffic Management Plan* applies to the AWAR as well.

AEM has not been in compliance with this condition since the Project entered operations, as no dust suppression measures have been employed along the AWAR from Baker Lake to the mine site.

**Recommendation 12:** Pursuant to Term and Condition 74, the Board requires AEM to apply dust suppression on the all surface roads including the AWAR.

**Recommendation 13:** The Board requests that AEM provide a plan of action for dust suppression along the AWAR during dry periods as required by Condition 74 and how it would meet the requirements of Condition 74 for the remaining years of the Project life. The plan of action should be provided to the NIRB within 30 days receipt of the Board's recommendations.

#### Accidents and Malfunctions – Condition 75

Condition 75 requires that the Proponent provide a complete list of possible accidents and malfunctions for various Project components which includes an assessment of the accident risk and mitigation developed in consultation with Elders and potentially affected communities. In the review of the 2013 and 2014 Annual Reports, the NIRB notes that AEM complied with most of this condition, including the provision of a list of possible accidents and malfunctions, although it is still unclear in the submitted management plans whether and how these were developed in consultation with Elders and potentially affected communities. The NIRB acknowledges that AEM noted it has consulted yearly with Elder representation and yearly meetings are held with the communities at large; however this does not meet the requirements of Condition 75.

**Recommendation 14:** The Board requests that AEM provide within its 2015 annual report further discussion as to how various management plans relating to accidents and risk have been developed in consultation with Elders and potentially affected communities.

#### Appendix D, the Annual Report and the PEAMP

The NIRB notes that AEM's 2014 Annual Report provided a detailed analysis of results from its 2014 monitoring program and that it compared observed impacts noted in 2014 to predictions made within the FEIS. AEM's evaluation focused on the valued ecosystemic components (VECs) that had been identified in the FEIS, including the aquatic environment, terrestrial and wildlife environment, noise quality, air quality, permafrost and socio-economics. The NIRB acknowledges that AEM has improved upon its reporting of findings within its post-environmental assessment monitoring program (PEAMP) and notes the general clarity of the presentation of information in its tables of potential impacts, potential cause(s), proposed monitoring, monitoring conducted for the year, predicted values and measured values/observed impacts. However, the NIRB found that the discussion and analysis within the PEAMP could be expanded upon especially with respect to trends that may be observed. As an example, AEM reported that there appeared to be no apparent trends towards increasing air quality concerns at the Meadowbank site in its 2014 Annual Report; however no discussion was provided in the actual report comparing current data to historical data making it difficult to determine if a trend is or is not being observed in the air quality being monitored around the Meadowbank site.

Further, it was noted by AANDC in its review of the pit water quantity and quality information in the 2014 Annual Report that only a comparison of predicted pit water quantity and quality was compared to the 2014 measured values. AANDC suggested that a year to year comparison would have been useful to help identify trends in this data.

The overall lack of reference to baseline data or to data from previous years makes it difficult to quantify or measure the relevant effects of the project. While comparison between monitoring as proposed in the FEIS and monitoring undertaken in 2014 was helpful, rationale for why these

were different was not always clearly presented. The NIRB also found that some of the sections within the PEAMP provided more clarity than others and suggest a consistent approach across VECs which would be helpful in future annual reports.

**Recommendation 15:** The Board recommends that AEM provide a full discussion and summary on the PEAMP for the Project as required by Appendix D. This must include a discussion that references the baseline and previous years' monitoring data and further indicate whether any trends have been observed at the mine site for each VEC. The discussion should include whether the trends of effects over time are potentially indicating impacts from or associated with the Meadowbank Project. It is requested that the response be provided to the NIRB within 30 days receipt of the Board's recommendations.

### Noise Quality Monitoring

The Board 2014 recommendation encouraged AEM and the GN to work together to investigate mine related noise disturbance on caribou and wildlife and report back to the NIRB on the progress of these discussions. In response to this recommendation, AEM noted that it would be having further communications with the GN in 2015 to better understand the GN's concerns regarding mine related noise disturbance on caribou and wildlife. To date, no information has been provided by AEM regarding any communications it may have had with the GN with respect to this recommendation.

**Recommendation 16:** The Board requests that AEM provide a summary of the communications AEM has had with the GN in 2015 regarding mine related noise disturbance on caribou and wildlife and whether any changes have been recommended to the Noise Monitoring and Abatement Plan. It is requested that this information be provided to the NIRB within 30 days' receipt of the Board's recommendations.

In review of the noise monitoring data and the sound levels as presented by AEM in the 2014 Noise Monitoring Report, it was unclear to the NIRB why the 2014 reported sound levels at station R5 were elevated compared to the sound levels in 2013 especially since the exploration camp and the AWAR have been in operation during both these years. Furthermore, from the NIRB's review of the 2012 Noise Monitoring Report, it appeared that noise levels were higher in 2012 at both the R1 and R5 stations for calculated daytime and night-time values as compared to previous monitoring years. There appears to be a trend developing at these two stations that was not discussed by AEM.

**Recommendation 17:** The Board requests that AEM provide a trend analysis of the noise monitoring data collected to date as required by the PEAMP and further outline and provide a discussion on any trends observed.

### Aquatic Environment

In Table 8.42 of the 2014 Annual Report, AEM identified stressor variables for sediment toxicants, water borne toxicants and other physical stressors; however it was not clear from the review of the table by the NIRB which areas of the mine site were impacted based on these stressors. The discussion in the Annual Report noted that elevated levels of chromium (increased by 50%) were observed in sediment core sampled during the Core Receiving Environment Monitoring Program (CREMP) in 2014. AEM further noted that there were some



apparent mine-related changes in conventional parameters relative to baseline/reference conditions at one or more of the near-field areas. AEM indicated that follow-up studies were recommended and will be conducted in 2015. The PEAMP section of the 2014 Annual Report did not provide any discussion on the apparent mine-related changes observed at the near-field stations, the changes observed over time at these stations since operations commenced, and what the cause may be for the changes observed at these stations. As noted previously, a year over year comparison would have been useful to help identify trends in the data collected for the aquatic environment, specifically for the water quality and sediment quality data.

**Recommendation 18:** The Board recommends that AEM provide a full trend analyses and discussion on the aquatic environment based on the data collected to date under the CREMP and indicate whether any impacts are being observed from the Project and whether the analyses meets or exceeds the predictions made within the FEIS. It is requested that this information be provided within 30 days' receipt of the Board's recommendations.

**Recommendation 19:** The Board requests that AEM provide a discussion on the apparent mine-related changes observed at the near-field stations, the changes observed over time at these stations since operations commenced, and what the cause may be for the changes observed at these stations. It is requested that this information be provided within 30 days' receipt of the Board's recommendations.

#### Water Management and Monitoring of the Culverts at the Vault Road

In review of the 2014 Geotechnical Inspection Report, it was noted by the NIRB that the consultant recommended to AEM to continue to monitor the performance of the three culverts installed on Vault Road at freshet as these culverts were partially collapsed in the middle and showed signs of erosion. No action except ongoing monitoring was recommended by the consultant as it appeared that the culverts were stable and seemed to perform well during freshet. Further, in review of the 2014 Water Management Report and Plan submitted by AEM, it is noted by the NIRB that the plan only provided a discussion on the monitoring and mitigation measures at these culverts during the freshet season (May period). The plan did not discuss the potential monitoring issues associated with the culverts being collapsed, the potential that fish passage might be compromised, or the potential need to repair or replace the culverts.

**Recommendation 20:** The Board requests that AEM provide a discussion on the potential monitoring issues associated with the three culverts being collapsed at the Vault Road, the potential that fish passage may be compromised from the collapsed culverts and whether AEM is considering repairing or replacing the culverts. This information should be provided to the NIRB within 30 days' receipt of the Board's recommendations.

#### Comments from Parties on the 2014 Annual Report

Parties were requested to provide comments on AEM's 2014 Annual Report. Comments were received from Government of Nunavut, Aboriginal Affairs and Northern Development Canada, Fisheries and Oceans Canada, Environment Canada, and Transport Canada, on or before July 3, 2015.

**Recommendation 21:** The NIRB completed a review of the comments received and the Board requests that AEM review all submissions and provide the NIRB with a response

to the questions or requests for clarification as part of its package to the Board's recommendations.

The Board respectfully requests that for items requiring follow-up action by AEM that a response be provided within the timeline as requested for each of the 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 November 18, 2015.

If you have any questions or require further clarification regarding these recommendations in particular or relating to the NIRB's monitoring program for the Meadowbank project, please contact the undersigned directly at (867) 857-2052 or [sgranchinho@nirb.ca](mailto:sgranchinho@nirb.ca).

Sincerely,



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

cc: Jeffrey Pratt, Agnico Eagle Mines Ltd.  
Ryan Vanengen, Agnico Eagle Mines Ltd.  
Meadowbank Distribution List

Enclosure (1): The Nunavut Impact Review Board's *2014-2015 Annual Monitoring Report for the Meadowbank Gold Project*