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**To: Emily Koide and Leah Klaassen  
Monitoring Officers  
Nunavut Impact Review Board**

**From: Luis Manzo, Director of Lands, Kivalliq Inuit Association**

Date: June 30, 2023

**Re: Review of Agnico Eagle Mines Limited's Meliadine Gold Mine Project 2022 Annual Report;**  
**NIRB File No.: 11MN034**

## 1. Introduction

The Kivalliq Inuit Association (KivIA) have conducted a review of the Agnico Eagle Mines Ltd. (Agnico Eagle) 2021 Annual Report for the Meliadine Gold Project. Agnico Eagle's submission consisted of the Meliadine Gold Mine 2022 Annual Report (April 2023) supported by 43 appendices (listed in Appendix 1). These documents were submitted by Agnico Eagle to address requirements within the following authorizations:

- NIRB Project Certificate No. 006 (Amendment No.002);
- KivIA Permit KVCA07Q08;
- KivIA Permit KVCA11Q01;
- KivIA Production Lease KVPL11D01; and
- The Meliadine Inuit Impact and Benefit Agreement (IIBA).

KivA has completed this review with the support of the following consultants:

- Aurora Wildlife Research (AWR; Anne Gunn), terrestrial specialist;
- Prairie Scientific Inc. (PSI; Matt McDougall), aquatic environment specialist; and
- GeoVector Management Inc. (GeoVector; Alan Sexton), geoscience specialist.

Full comments and recommendations are provided in Section 2 of this technical memorandum.





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### Recommendation 23-02:

Agnico Eagle should develop options for indicators of sensory disturbance, especially the duration of the return to baseline behaviors measured during the behavioral monitoring. Agnico Eagle should provide these options for TAG to consider during a Terrestrial Environment Management and Monitoring Plan review.

**Comment No. KivA 3: Traffic, convoys, and caribou crossings**

**Reference: S. 12.4.3 Traffic Data.**

**Comment:**

In the context of caribou crossing behavior and the impact of AWAR, the monthly traffic totals (S. 12.4.3.; Table 18) provide only indications of broad changes in traffic throughout the year. Instead, monitoring the duration of gaps in traffic (time between vehicle passages) would support developing predictive models for caribou crossing and more effective mitigation. The remote camera monitoring had three cameras dedicated to traffic monitoring (App.J; S.6.4.) and concluded that “*Observations showed that caribou are willing to cross the road during relatively short pauses in traffic*” but did not provide the data to substantiate the statement about the relatively short pauses.

Understanding traffic frequency relative to gaps in vehicle passage is necessary even when the AWAR is closed in response to the presence of caribou. When the AWAR was closed, disturbances from traffic (trucks, ATVs and convoys) occurred about 50% of the time (S.12.1; App. J; Table 6.4.1.). The annual report should include specific details of the daily frequency of convoys and the daily number of vehicles (or estimates of the duration of each convoy passing a fixed point).

The threshold of 50 or more caribou within 100 m of the AWAR (S.12.4.1.) is an untested threshold and does not include the concept of caribou leadership in road crossing behavior. The KivIA acknowledges that the applicability of the >50 caribou as a group size was discussed at a TAG meeting and will be further considered (App. 35; Table 2) but wishes to ensure that the behavior monitoring and remote cameras data are included to test the concept of leadership and the applicability of the >50 caribou threshold.

**Recommendation 23-03:**

**Agnico Eagle should:**

1. Report daily traffic frequency for the two broad periods when many caribou (post-calving and early summer) or few caribou (the rest of the year) are in the vicinity of the AWAR and mine site.
2. Provide remote camera data to demonstrate the probability of caribou crossing AWAR relative to the duration of gaps in the traffic, and provide data on the duration of the gaps in traffic.
3. Use the behavior and remote camera monitoring data to describe the frequency of group sizes and crossing behavior relative to the concept of leadership in developing options for a group size threshold for TAG.



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## Reference: 13.0 Hunter Harvest Survey

The KivIA suggests that after only 2 years even a preliminary conclusion is premature, especially as the harvest increased 10-fold within the LSA (S.13.2.: Table 20). The threshold levels for monitoring the effects of the Meliadine mine on caribou harvest distribution will not be established until after 3 years of hunter harvest (App. 27; App. M; S.8). The effect of the AWAR on June-July harvesting is not reported. Caribou were harvested within 5 km of the AWAR only during May to October (App. 27; App. M; Fig. 6.5) which raises a question of how the AWAR is related to any changes in use of ATVs for hunting.

The 2022 HHS did not report on monitoring the extent of hunting relative to the 1 km no-shooting zone on either side of the AWAR (App.27; S. 13.0; App. M) or community comments about if and how AWAR has impacted harvesting. NIRB Project Certificate No. 006 (Amendment 002) Terms and Condition # 46 requires that the Harvest Study address *“The potential effects on caribou populations and on caribou behaviour resulting from increased human access caused by the all-weather access road and associated roads and trails;”*.

The behavior monitoring lists ATVs as one of the types of disturbance (App. 27; App. J; App. B). The importance of how the AWAR is used for hunting is whether ATV-based hunting impacts the responses of caribou to other vehicles.

**Recommendation 23-04:**

**Agnico Eagle should:**

1. Delay conclusions about the impact of Meliadine mine site and AWAR on caribou harvesting until at least 3 years harvest study data are available.
2. Provide more information and the extent of monitoring for caribou harvests relative to ATV use within 1 km of the AWAR relative to the presence of caribou post-calving aggregations.

**Comment No. KivIA 5: Remote camera program**

**Reference:** S. 8.0 Remote camera program

**Comment:**

The KivIA is concerned about how Agnico Eagle has summarized the 3-year remote camera program. Firstly, the statement that *“the highest number of caribou detections events recorded during the three years of this study was recorded in 2022 (150 detections), suggesting no pattern of learned avoidance of the AWAR year to year.”* (App. 27; App. K; S.7) is not based on analyses that considered annual variations in the relative numbers of caribou. Secondly, the statement *“Caribou were observed crossing the AWAR in different group sizes, ranging*





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NIRB Project Certificate No. 006 (Amendment 002) Terms and Condition # 56d requires the use of statistical analyses to support conclusions. The analyses for the remote camera data relative to the objectives were sound, but the KivIA questions the basis for statements about learned avoidance and no strong avoidance without detailed analyses.

Agnico Eagle should provide the analyses that the statements are based on or explain the limitations of the statements about impacts on caribou from the AWAR in the 2022 Annual Report.

## Reference: 9.0 Wildlife Observations

Incidental wildlife sightings and wildlife surveys should not have been combined into annual totals (Table 9; App.27; S. 9.0) as sampling effort is unknown for the incidental sightings. Annual trends should be assessed from the wildlife surveys as sampling effort is known and trends can be determined from the relative sighting rate per survey (which is not but could be calculated in Tables 10 and 11 (App. 27; S.9.1)).

The text does not comment about how the wildlife surveys show that the total number of both Arctic foxes and hares in 2022 was high compared to the two previous years. The remote cameras recorded similar trends: the camera data from along the AWAR recorded 77 foxes compared to 13 and 14 in 2020 and 2021, respectively and Arctic hare observations were 33 in 2022 compared to 4 in 2021 and 2020. (App. 27; App. K; Table 6.2.1). Table 11 (App. 27; S. 9.1) shows the high number of hares and Arctic foxes at the mine site compared to the AWAR in 2022. Integrating the wildlife sightings with the remote camera data suggests the high number of Arctic foxes at the mine site may reflect a regional trend.

The KivIA acknowledges Agnico Eagle took an innovative approach to the den site surveys (including an Unmanned Vehicle) to meet NIRB Project Certificate No. 006 (Amendment 002) Terms and Condition # 53. The 9 Arctic fox dens included 6 within mine site but the subsequent mitigation that was undertaken is unclear (App.27; App. I; S.4) as the text lists what mitigation would be implemented when dens are within 150 m of development activities.

Section 9.0 does not comment on the high number of Arctic fox sightings in 2022 and the proximity of dens to the mine site as predictable factors in the high number of Arctic fox incidents (App. 27; S. 9.5). Between January and May, 20 foxes were killed and a further 16 foxes from October to December (App. 27; S. 9.5) mostly in reference to the incinerator area. The number of foxes killed later in the year does not suggest mitigation (tool box meetings and waste segregation surveys; App. 26) were effective as required by NIRB Project Certificate No. 006 (Amendment 002) Terms and Condition # 55. The annual report notes that the 37 foxes killed was under GN



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**Recommendation 23-06:**

1. Provide details of the mitigation undertaken in 2022 for fox dens at the mine site.
2. Work with GN to explain specifically how the monitoring and mitigation can be improved to prevent attractants and resulting Arctic fox deaths.
3. Provide options for a TAG discussion on how wildlife sightings from the different types of monitoring can be integrated to describe an indicator during the year to trigger when adaptive mitigation will be required to reduce the probability of wildlife incidents.

**Reference: S. 11.0 Muskoxen**

Similar to the 2021 Annual Report, Agnico Eagle reported that GN had not requested in-kind contributions to muskox surveys, but Agnico Eagle did not report any information on a habitat assessment for muskoxen (NIRB Project Certificate No. 006 (Amendment 002) Terms and Condition # 52).

**Agnico Eagle should clarify the status of a muskox habitat assessment.**



## 2.2 Aquatic Environment Technical Comments

<b>Comment No. KivIA 8: Water Quality in Meliadine Lake</b>
<b>Reference:</b> Appendix 19- AEMP
<p><b>Comment:</b></p> <p>The AEMP report highlights general increases through the Kivalliq in metals concentrations based on temporal trends in Pipedream Lake (PDL) and Inuggugayualik (INUG) by comparing increases from 2013 to 2022 (Table 3-4). Trends are often more useful than percent increase from an arbitrary start date for evaluating mine-related impacts vs. normal fluctuations. Uranium is used as an example of metals broadly increasing across the region, but Meliadine Lake does not show the same trend. Uranium in INUG decreased 11% over 2021-2022, PDL decreased 3%, while Meliadine increased 19% in the same time frame (site MEL1). Both arsenic and strontium show sharp concentration increases in 2019-2020, which is absent in PDL and INUG. Further, the magnitude of increase over historical data is much greater for Meliadine lake.</p> <p>Chlorophyll-a concentrations in Meliadine Lake also continue to rise year over year, and while the average Total Phosphorus concentrations have slightly decreased from 2021, several individual samples exceed the AEMP action level of 0.0075 mg/L, as shown in Fig 3-16. Near Field MEL1 concentrations remain significantly higher than at reference areas MEL4 and MEL 5.</p> <p><b>Recommendation:</b></p> <ol style="list-style-type: none"> <li>1. Once the saline waterline is operational, the Proponent should adopt changes from the WBWQM update submitted to the Nunavut Water Board (Jan 2023) to prioritize discharge of contact water containing higher concentrations of nutrients and metals, such as waste rock runoff, tailings runoff, and camp waste, to Itivia Harbour. Until this time, if feasible, water from the STP, CP3, CP4, and CP5 should be redirected to TIR02 for storage.</li> <li>2. The Proponent should ensure that the capacity of the planned waterline is sufficient to allow the possibility of eliminating discharge to Meliadine Lake, alleviating mine-related impacts to this culturally sensitive area.</li> </ol>
<b>Comment No. KivIA 9: Operational Capacity of the Dual Waterline</b>
<b>Reference:</b> Annual Report, S 3.2.2.2
<p><b>Comment:</b></p> <p>Operational capacity of the dual waterline is assumed to be 70% due to planned or unplanned shutdowns and required maintenance, decreasing the nominal capacity of the waterline to 14,000 m<sup>3</sup> per day. Does this</p>





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**Recommendation:**

The Proponent should clarify the assumptions leading to a 70% uptime of the planned waterline. As the 70% is stated to be conservative, the Proponent should provide a realistic uptime for the planned waterline based on similar infrastructure on site.







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