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August 13, 2015

Nunavut Impact Review Board
Box 1360
Cambridge Bay, NU
X0B 0C0

Re: Amaruq Access Road Type B Water Licence Review

Please find attached a report along with the comment form from the KIA.

If you have any questions or concerns, please don't hesitate to call or write to our office.

Regards,

VConnelley

Veronica Connelly
Lands Administrator



Technical Memorandum

Date: August 12, 2015

To: Luis Manzo, Maria Serra (KIA)

From: Richard Nesbitt, Dennis Gregor, Neil Hutchinson (HESL)

Re: Amaruq Access Road Type B Water Licence Review

1. Introduction

Luis Manzo of the Kivalliq Inuit Association (KIA) requested Richard Nesbitt of Hutchinson Environmental Sciences Ltd. (HESL) on July 29, 2015, to review the Agnico Eagle Mines Ltd. (AEM) Amaruq Exploration Access Road Type B Water Licence application prior to the August 12, 2015 deadline for comments to the Nunavut Impact Review Board (NIRB). We note that the Type B Water Licence (No. 8BC-AEA---) was referred to the NIRB by the Nunavut Water Board (NWB) and has subsequently been distributed to the KIA and other key parties for comment. We further note that our review of this Type B Licence application was completed in part as preparation for a forthcoming consultation meeting between AEM, the KIA and their consultants (including HESL) which was held on August 11, 2015 in Montreal.

The NIRB has specifically requested comments on the following considerations¹:

- *“Whether the inclusion of the additionally proposed component(s) and/or activity(ies) would significantly modify the project;*
- *Whether the project is likely to cause significant adverse impacts on wildlife habitat or Inuit harvest activities; if so, why;*
- *Any additional mitigation measures that are appropriate; and*
- *Any other matter of importance to the Party [(the Kivalliq Inuit Association)] related to the project proposal.”*

The NIRB's request for comments included a form that we have completed as Appendix A. Our technical comments are presented in Section 2 and reflect the NIRB's suggested considerations. The review included the following documents:

- Application for a Type B Licence to Construct the Amaruq Exploration Access Road Main Application Document, dated March 2015;
- Road Management Plan, dated March 2015;

¹ Nunavut Impact Review Board. 2015. Letter regarding: Application Acknowledgement for Agnico Eagle Mines Ltd.'s Requests with the Nunavut Water Board and the Kivalliq Inuit Association for the "Amaruq Exploration Access Road" Project Proposal. Sent to Ryan Vanengen, Environmental Superintendent – Nunavut for Agnico Eagle Mines Ltd.

- Emergency Response and Spill Contingency Plan, dated March 2015;
- Conceptual Closure and Reclamation Plan, dated February 2015.

2. Review of Submitted Documents

The activities and components covered under AEM's Type B application are summarized as¹:

- *"Development and operation of an access road that is 62.5 kilometres (km) long and 6.5 metres wide and include:*
 - *Development of three (3) bridges;*
 - *Development of eight (8) large open bottomed arch culverts;*
 - *Development of twenty eight (28) corrugated round culverts to pass watercourse crossings;*
 - *Development of six (6) short spur roads to access 6 of the 7 eskers to be used for borrow pits;*
 - *Development of pullouts approximately every 400 ± 50 m to accommodate two road [sic] traffic;*
 - *Approximately 40 km of the road would be located on Crown Land;*
- *Use of non-potentially acid generating (NPAG) waste rock from the Vault Pit as a quarry material to construct first 17 km of road;*
- *Use of seven (7) eskers for borrow material to build remainder of road;*
- *Transportation of materials, equipment and fuel for construction activities;*
- *Storage and use of fuel in double-walled tanks along the road to distribute fuel to equipment;*
- *Construction crew to be accommodated at existing and approved AEM facilities;*
- *Additional archaeological studies to be conducted prior to construction of road; and*
- *Winter road not expected to continue to be used once the single lane access road has been developed."*

We present our specific technical comments on the proposal in the following section.

2.1 Continued use of Meadowbank Reference Lakes

Comment Source:	Kivalliq Inuit Association
Information Number:	KIA-AEA-B-01
Project:	Amaruq Access Road Type B Water Licence
Comment From:	Kivalliq Inuit Association
Comment For:	Agnico Eagle Mines Limited
Reviewer:	Richard A. Nesbitt, Hutchinson Environmental Sciences Ltd.
Subject:	Continued use of Meadowbank Reference Lakes
References:	Main Application Document Section 3.0, 4.2
Issue / Concern or Information	AEM states: "Middle Section (Section 2 in Figure 2.3-1) - is dominated by small and medium-sized watercourses that drain into Pipedream Lake and Innugugayualik Lake,



Deficiency and Rationale:	<p><i>north through the Meadowbank River to the Back River. Arched culverts and bridges will be used, where required, to clear span valued fisheries watercourses, and inset pipe culverts will be used to maintain local drainage and passage for small-bodied fish. Many localized drainage culverts will be required to improve stability of the exploration access road."</i></p> <p>We note that both Pipedream and Innugugayualik lakes are used as spatial reference lakes for the Meadowbank Project. Crossing watercourses and streams that feed these two lakes provides a direct link between the Access Road and the reference sites. Project related impacts along the road have the potential to influence water quality, quantity, flow and fisheries in these waterbodies. We agree most potential environmental risks as indicated in the effects assessment presented in the Main Application Document will be limited to within the local study area. However, spills and other accidents have the potential influence water quality beyond the local study area and would compromise the suitability of these lakes as a reference for the Meadowbank Project.</p> <p>We reference HESL 2015² (Figure 1), which summarizes the historical sample locations used in these two lakes. Samples collected in Innugugayualik Lake are likely too far upstream (~18-20 km) to be impacted by construction activities, spills and other accidents along the preferred Access Road route. However, sites sampled in Pipedream Lake are closer (~1-2 km) to the preferred route and are therefore more vulnerable to contamination, particularly from road dust.</p>
Technical Comment/Information Request:	<p>Please provide a discussion of the proposed Access Road's potential impacts on the continued suitability of Pipedream and Innugugayualik lakes as spatial references for the Meadowbank Project. This discussion should include standard operation of the Access Road and the potential for construction activities, spills and accidents to impact water quality in the reference lakes and present an interpretive framework for BACI comparison of data from Pipedream and Innugugayualik lakes to ensure that road activities are not compromising the validity of reference data from Pipedream Lake.</p>

Figure 1. Water quality stations in Meadowbank regional lakes. Inuggugayualik Lake (INUG) and Pipe Dream Lake (PDL) are located in the Back watershed. Wally Lake (WAL) and Tehek (TE) are located in the Quoich watershed. White lines denote watershed boundaries.



² Hutchinson Environmental Sciences Ltd. 2015. Baker Lake Basin Baseline Report. Prepared for the Kivalliq Inuit Association.



2.2 Environmental Impacts and Mitigation Associated with Freshwater Use

Comment Source:	Kivalliq Inuit Association
Information Number:	KIA-AEA-B-02
Project:	Amaruq Access Road Type B Water Licence
Comment From:	Kivalliq Inuit Association
Comment For:	Agnico Eagle Mines Limited
Reviewer:	Richard A. Nesbitt, Hutchinson Environmental Sciences Ltd.
Subject:	Environmental Impacts and Mitigation Associated with Freshwater Use
References:	Main Application Document Section 3.6, Section 4.1.5, Section 4.2
Issue / Concern or Information Deficiency and Rationale:	<p>AEM states: "Based on the projected operational use along the exploration access road, dust suppression is not likely to be required... However, if deemed necessary, Agnico Eagle may use water and water trucks for dust suppression and is therefore requesting 299 m³ /day of water use for dust control. Water sources will be existing large waterbodies proximal to the road (Innugugayulalik Lake and Pipe Dream Lake). The quality and quantity of the water from the existing waterbodies is suitable for dust suppression."</p> <p>We express concern that freshwater withdrawal has not been addressed in the discussion of potential impacts, mitigation and monitoring associated with the proposed Access Road.</p>
Technical Comment/Information Request:	<p>Please provide a discussion of the potential environmental impacts and mitigation measures associated with freshwater withdrawal during both the construction and operations phases. This should include:</p> <ul style="list-style-type: none"> ● the specific locations for water withdrawal, ● the adequacy of the watercourse at each location to accommodate the withdrawal with no impact (i.e. how did AEM determine that the quality and quantity of the water from the existing waterbodies is suitable for dust suppression), and ● any increased potential for spills to reach the receiving environment while pumping water for dust suppression and the safety precautions to be implemented at each location. <p>We recommend AEM set and mark the specific locations for water withdrawal and establish spills prevention and mitigation procedures for those locations.</p> <p>Please also specify that freshwater will only be used for dust suppression and only up to 299 m³/day for dust suppression; days where freshwater is not required should not permit AEM to withdraw greater than 299 m³/day on other days of the year. It is important to ensure this water will only be used for dust suppression and only at the permitted rate of withdrawal. Other uses may carry other environmental impacts that should be discussed and mitigated.</p>



2.3 Location of the Crusher for Construction

Comment Source:	Kivalliq Inuit Association
Information Number:	KIA-AEA-B-03
Project:	Amaruq Access Road Type B Water Licence
Comment From:	Kivalliq Inuit Association
Comment For:	Agnico Eagle Mines Limited
Reviewer:	Richard A. Nesbitt, Hutchinson Environmental Sciences Ltd.
Subject:	Location of the Crusher for Construction
References:	Road Management Plan Section 7.1
Issue / Concern or Information Deficiency and Rationale:	<p>AEM states: <i>"The main source of crush material will be at the Vault Pit. Operations in the Vault open pit use explosives to break the rock. The crusher will be located as far from water as possible and where it is best shielded from the prevailing wind, preferably behind a high wall so as to reduce the quantity of wind-blown dust and have as much dust as possible fall within the bounds of the borrow pit."</i></p> <p>Potential locations for the crusher have not been provided in AEM's application. These should be indicated to allow for third party review ensuring the goals of minimizing potential impacts to water quality and from dust.</p> <p>We are also concerned regarding the explosives used to provide rock for the crusher. Ammonium nitrate/fuel oil (ANFO) explosives are of concern to both aquatic and terrestrial environments.</p>
Technical Comment/Information Request:	<p>Please provide more information regarding placement and operation of the crusher which AEM has presented as an optional source of construction material for road construction. This discussion should include:</p> <ul style="list-style-type: none"> ● potential locations for the crusher should it be required to provide construction material from the Vault Pit's waste rock, ● distance the crusher will be located from water bodies, ● testing to ensure only low rock with little or no ANFO residue are used for construction material, ● potential water management structures that would be required to mitigate potential pathways between the crusher and the aquatic receiving environment, ● potential dust control features for the crusher, ● the time of year the crusher may be operated, ● the maximum speed of wind AEM will permit prior to a self- imposed shut down to avoid excessive dust dispersion. <p>We recommend AEM include dust and water quality monitoring stations associated with the crusher to provide assurance associated risks are monitored and mitigated.</p>



2.4 Wildlife Habitat at Borrow Sites

Comment Source:	Kivalliq Inuit Association
Information Number:	KIA-AEA-B-04
Project:	Amaruq Access Road Type B Water Licence
Comment From:	Kivalliq Inuit Association
Comment For:	Agnico Eagle Mines Limited
Reviewer:	Richard A. Nesbitt, Hutchinson Environmental Sciences Ltd.
Subject:	Wildlife Habitat at Borrow Sites
References:	Main Application Document Section 4.3; Road Management Plan Section 11
Issue / Concern or Information Deficiency and Rationale:	<p>AEM has outlined mitigation measures to limit habitat losses and sensory disturbances associated with road use. The Terrestrial Baseline Characterization Report (TBCR) as summarized in the Main Application Document indicates a focus on caribou migration along the road route and wildlife found at the Amaruq Exploration Camp. However, AEM's application does not specifically indicate how borrow sites along the esker will be selected to avoid disturbance of denning habitat or other wildlife habitat features.</p> <p>Eskers are preferred denning habitat for wolves and foxes; evidence of wildlife denning or other habitat features at potential borrow sites should be considered grounds for excluding a given potential borrow site for use as a construction material source.</p>
Technical Comment/Information Request:	Please confirm that the selected borrow sites along the preferred access road route do not show evidence of being used by wildlife. If evidence of denning or other wildlife habitat features are indicated at a borrow site, AEM should consider an alternative location or provide and enforce minimum setback distances between borrow pits and dens.



3. Conclusions

Our review of the materials provided does not indicate that the proposed Amaruq Exploration Access Road is likely to result in significant adverse impacts to the environment. However, we recommend that AEM fill the information gaps identified and appropriately implements additional monitoring and mitigation measures to manage identified risks. HESL's key concern with the project – the continued use of Innugugayulalik and Pipedream lakes as reference lakes for the Meadowbank Project and the any need for implementation of additional monitoring sites – should be addressed prior to approval of the project through demonstration that receiving aquatic and terrestrial environment will not be affected by the construction or operation of the road. We recommend that the KIA consider supporting the project if AEM provides the required information and the responses to our technical comments adequately address the concerns identified.

We hope this technical memorandum meet your current needs. Should you have any questions, please do not hesitate to contact the undersigned. We would be happy to answer any questions you may have.

Sincerely,
per: Hutchinson Environmental Sciences Ltd.



Richard Nesbitt, M.Sc.
Richard.Nesbitt@environmentalsciences.ca



Appendix A: Comment form for NIRB Screenings



Hutchinson Environmental Sciences Ltd.

M150812_J150057_Amaruq Access Road Type B WL Review

Project Proposal Title:	Amaruq Exploration Access Road	
Proponent:	Agnico Eagle Mines Ltd	
Location:	Kivalliq Region	
Comments Due By:	August 12, 2015	NIRB #:
	11EN010	

Indicate your concerns about the project proposal below:

<input type="checkbox"/> no concerns	<input type="checkbox"/> traditional uses of land
<input checked="" type="checkbox"/> water quality	<input type="checkbox"/> Inuit harvesting activities
<input type="checkbox"/> terrain	<input type="checkbox"/> community involvement and consultation
<input type="checkbox"/> air quality	<input type="checkbox"/> local development in the area
<input type="checkbox"/> wildlife and their habitat	<input type="checkbox"/> tourism in the area
<input type="checkbox"/> marine mammals and their habitat	<input type="checkbox"/> human health issues
<input type="checkbox"/> birds and their habitat	<input type="checkbox"/> other: _____
<input checked="" type="checkbox"/> fish and their habitat	_____
<input type="checkbox"/> heritage resources in area	_____

Please describe the concerns indicated above:

See Section 2: Review of Submitted Documents

Do you have any suggestions or recommendations for this application?

See Section 2: Review of Submitted Documents

Do you support the project proposal? Yes No Any additional comments?

See Section 3: Conclusions

Name of person commenting:	Richard A. Nesbitt	of	Hutchinson Environmental Sciences Ltd.
Position:	Aquatic Scientist	Organization:	On behalf of the Kivalliq Inuit Association
Signature:			
	Date: August 12, 2015		



Hutchinson Environmental Sciences Ltd.