



Meliadine Extension

Response to Information Requests

Submitted to:
Nunavut Impact Review Board

Submitted by:
Agnico Eagle Mines Limited – Meliadine Division

September 26, 2022

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KIVALLIQ INUIT ASSOCIATION

Interested Party:	KivIA	Rec No.:	KivIA-IR-1
Re:	Haul truck traffic for the Discovery Road		

Request Made by Interested Party:

The Proponent should provide estimated daily traffic rates for the Discovery Road presented for haul trucks and non-haul truck vehicles for the projected life of the Extension Project.

Agnico Eagle's Response to Request:

Agnico Eagle is still meeting our 2014 FEIS upper tonnage limit of 2,300 tpd from the Discovery deposit that will be transported to the Meliadine mill. The trucks are currently being evaluated. If the number of trips change, Agnico Eagle will assess if any of our management plans have to be evaluated. During caribou migration, we will comply with the mitigation measures identified in the Terrestrial Environment Management and Monitoring Plan (TEMMP).

Interested Party:	KivIA	Rec No.:	KivIA-IR-2
Re:	Updated assessment of caribou movements in relation to the mine site and AWAR		

Request Made by Interested Party:

The Proponent should provide a definition of ‘deflection’ of caribou relative to approaching and moving through the Meliadine mine and associated infrastructure, including the AWAR.

Agnico Eagle’s Response to Request:

Agnico Eagle is not clear why this is required for this Application as Meliadine Mine does have an existing TEMMP and also has established a Terrestrial Advisory Group (TAG) where these aspects can be discussed. The AWAR is not being evaluated as part of this Application. This application is adding only one new component (i.e., the windfarm) and two alternatives which are the airstrip and the in-pit disposal.

However, Agnico Eagle defines deflection of caribou as those cases where evidence clearly indicates that a caribou or group of caribou had approached the Meliadine Mine and associated infrastructure, including the AWAR, but did not cross during one or more attempts. This definition is consistent with that used by Ballenberghe (1978) for moose interactions with pipelines in Alaska.

References:

Van Ballenberghe V. 1978. Final Report on the Effects of the Trans-Alaska Pipeline on Moose Movements. Special Report Number 23. Joint State/Federal Fish and Wildlife Advisory Team. Anchorage, Alaska. 41 p.

Interested Party:	KivIA	Rec No.:	KivIA-IR-3
Re:	Data integration are lacking to understand current use of the mine site, roads and Extension area by caribou		

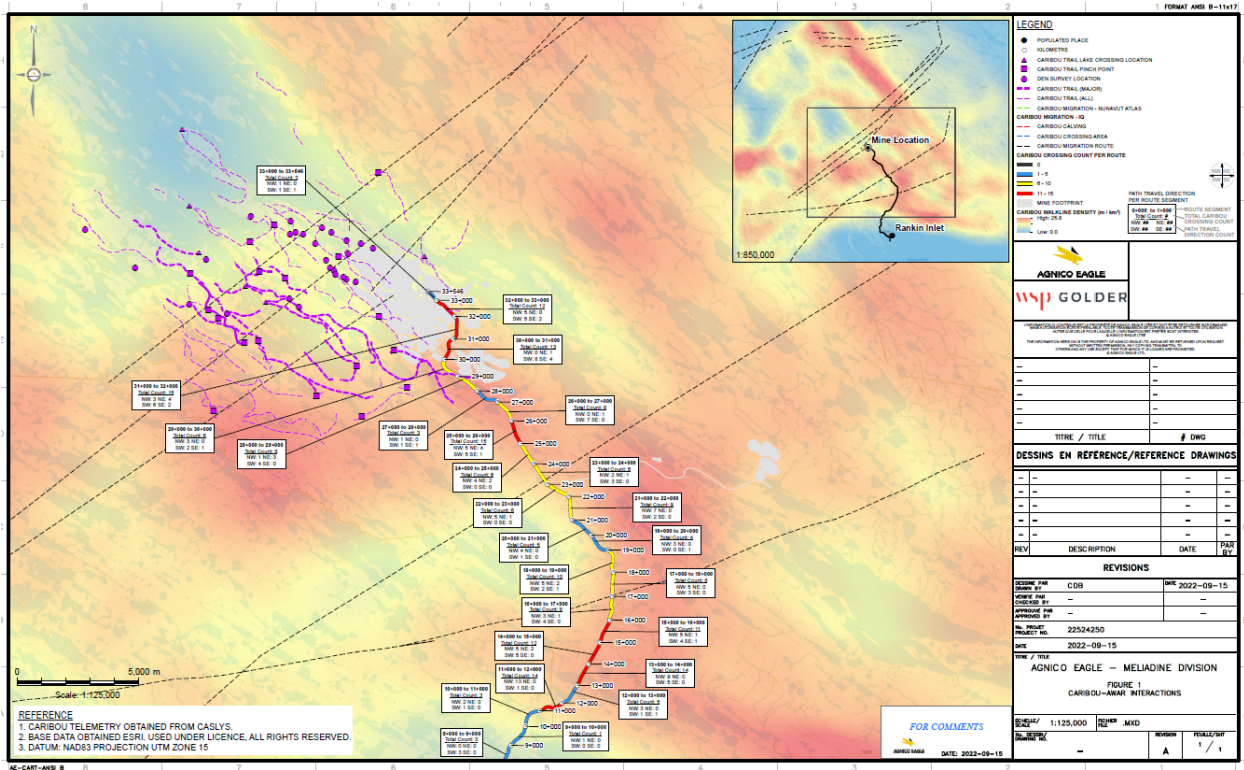
Request Made by Interested Party:

The Proponent should provide an overall assessment of current caribou movement through the mine sites, AWAR, Discovery haul road and main Extension area (wind farm, Tiriganiaq-Wolf mining area and airstrip) using Inuit Knowledge, the mapped visible trails and collar data.

Agnico Eagle’s Response to Request:

It should be noted that the AWAR is not part of this Application. Additional discussions can be completed in the TAG.

The figure noted below highlights activity around the areas that are new to the Application, which is the windfarm location and the alternative airstrip. The broader discussion can be part of the TAG.



Interested Party:	KivIA	Rec No.:	KivIA-IR-4
Re:	Monitoring and management plans for the windfarm		

Request Made by Interested Party:

The Proponent should provide a detailed monitoring and adaptive mitigation plan for caribou in the vicinity of the windfarm for the projected life of the Extension Project.

Agnico Eagle's Response to Request:

The Meliadine Mine has an existing TEMMP that includes mitigation and monitoring and can be applied to the Meliadine Extension including the windfarm. Specific details (e.g., objectives, methods, analysis, and mitigation) of mitigation and monitoring can be addressed through the TAG. There is no need for a separate monitoring and mitigation plan for caribou in the vicinity of the windfarm.

Interested Party:	KivIA	Rec No.:	KivIA-IR-5
Re:	Traffic savings if the on-site airstrip were constructed		

Request Made by Interested Party:

The Proponent should quantify how much would cargo and passenger traffic be reduced along AWAR if the airstrip were to be constructed.

Agnico Eagle's Response to Request:

Should the airstrip be constructed at Meliadine, it is anticipated that traffic along the AWAR would be reduced by two cargo shipments and three passenger vehicles each time there is flight, which is typically four to six times a week.

Interested Party:	KivIA	Rec No.:	KivIA-IR-6
Re:	Caribou soundscape and the windfarm		

Request Made by Interested Party:

The Proponent should:

- A. Provide an explanation for how the model rapidly attenuates the wind turbine noise;
- B. Provide a graph showing measured noise level relative to distance for different wind speeds for the wind turbines and whether the noise is cumulative for more than one turbine;
- C. Explain if and how the modeled wind turbine noise includes Amplitude Modulation; and
- D. Make available Golder 2018b.

Agnico Eagle’s Response to Request:

Response A)

KivIA has expressed concern that the “...*proposed wind turbines are rated at 106 dBA per unit... [b]ut the noise modeling... indicates rapid attenuation as immediately around each turbine the predicted noise is only 50-55 dBA...*”.

Before addressing KivIA’s specific question about noise attenuation, it is important to note the wind turbine noise emissions presented in Table 14 of the Meliadine Extension Noise Modelling report are expressed in terms of sound power levels, while the model outputs presented in Table 16, Table 17, Figure 3, and elsewhere in the Meliadine Extension Noise Modelling report (Appendix H-2 of the Meliadine Extension FEIS Addendum) are expressed as sound pressure levels. Although sound power levels and sound pressure levels are both reported in units of A-weighted decibels (dBA), sound power levels and sound pressure levels represent different physical quantities. The sound power level of a given source represents the total amount of acoustic energy radiated by that source, while the sound pressure level represents the amount of acoustic energy that would be observed at a specific point in the environment. The sound power level is a property of the source itself, while the sound pressure level is a property of both the source and the surrounding environment.

The sound power level of the wind turbines considered in the Meliadine Extension Noise Modelling report (Appendix H-2 of the Meliadine Extension FEIS Addendum) is 106.0 dBA, but this does not mean the turbines will produce a sound pressure level of 106.0 dBA at any point in the surrounding environment. For context, the primary crusher at the processing plant was modelled with a sound power level of 124.5 dBA (see Table 7 of the Meliadine Extension Noise Modelling report; Appendix H-2) and the production drill at the Pump mining area was modelled with a sound power level of 118.5 dBA (see Table 9 of the Meliadine Extension Noise Modelling report; Appendix H-2), but sound pressure levels are predicted to attenuate rapidly below 70 dBA in proximity to the processing plant and Pump mining area (see Figure 2 of the Meliadine Extension Noise Modelling report Appendix H-2).

Computer modelling for the Meliadine Extension Noise Modelling report was based on the ISO 9613-2 technical standard (Acoustics – Attenuation of sound during propagation outdoors – Part 2: General method of calculation). When simulating noise propagation into the environment, the ISO 9613-2 algorithm considers four attenuation mechanisms: geometric divergence, atmospheric absorption, ground absorption, and screening by barriers. Geometric divergence accounts for the fact that acoustic energy radiated by a source will spread out (i.e., diverge) as it propagates into environment. Atmospheric absorption accounts for the fact that acoustic energy radiated by a source is absorbed by air molecules as it propagates into the environment. Ground absorption accounts for the fact that acoustic energy radiated by a source is absorbed by the ground as it propagates into the environment. Screening by barriers accounts for the fact that a physical barrier placed between a source and receptor will disrupt propagation of acoustic energy. Each of these four attenuation mechanisms is described in more detail in Section 3.4 of the Meliadine Extension Noise Modelling report. Each of the four ISO 9613-2 attenuation mechanisms were applied when modelling the wind turbines and all other sources associated with the Meliadine Extension.

Because wind turbines are an elevated source (e.g., the wind turbines in the Meliadine Extension Noise Modelling report were modelled with a hub height of 87 m above ground), acoustic energy emitted by the turbines must propagate farther to reach ground level receptors than the acoustic energy emitted by a source located close to the ground. For example, a ground-based receptor at the foot of the wind turbine is located 87 m from the hub noise, while a ground-based receptor at the exhaust pipe of a pickup truck is effectively 0 m from the exhaust noise. The “extra” propagation distance associated with elevated noise sources effectively increases geometric divergence and atmospheric absorption and, therefore, can affect noise levels in immediate proximity to the source. However, the “extra” propagation distance becomes less relevant as horizontal separation increases. Table KivIA-6-1 compares the effective propagation distance between a receptor 1.5 m above ground and sources 87 m and 1.5 m above ground, as the horizontal separation between receptor and source increases.

Table KivIA-6-1: Comparison of the Effective Propagation Distance

Horizontal Separation Between Receptor and Source [m]	Effective Propagation Distance [m]		“Extra” Propagation Distance for Elevated Source [m]
	Source Height 87 m	Source Height 1.5 m	
100	131.6	100	31.6
200	217.5	200	17.5
500	507.3	500	7.3
1000	1003.6	1000	3.6
1500	1502.4	1500	2.4
2000	2001.8	2000	1.8
5000	5000.7	5000	0.7

Response B)

According to the manufacturer, the sound power level of the Enercon E-115 EP3 wind turbines being considered for the Meliadine Extension ranges from 87.6 dBA to 106.0 dBA, depending on wind speed. In particular, the sound power level increases with wind speed. The Meliadine Extension Noise Modelling report modelled all wind turbines with maximum sound power level (i.e., 106.0 dBA) 100% of the time. In other words, noise modelling assumed all turbines are always operating with maximum noise emissions and considered cumulative effects from simultaneous operation of all 11 turbines. This is a conservative approach to assessing potential noise effects from the Meliadine Extension since there will be times when one or more turbines is operating with less than maximum noise emissions (e.g., periods when the wind speed is low).

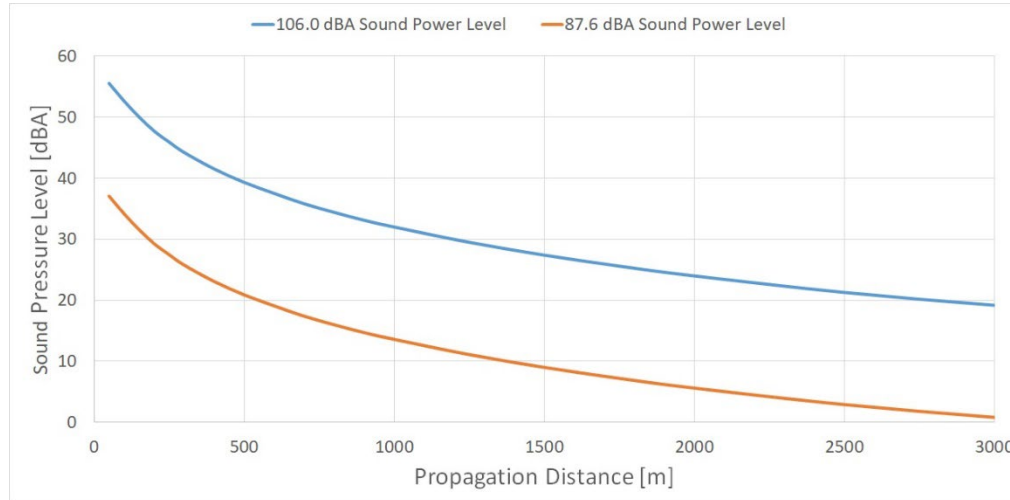
KivIA expressed a specific concern about the relative contribution of individual wind turbines to cumulative noise levels at receptor NPOR006. Table KivIA-6-2 presents the predicted noise contribution (i.e., sound pressure level) from each wind turbine at NPOR006. As indicated in Table 16 of the Meliadine Extension Noise Modelling report, the combined noise contribution from all 11 wind turbines is 40.2 dBA, which is 1.9 dBA greater than the noise contribution from “core elements” of the Meliadine Extension, which are predicted contribute 38.3 dBA at NPOR006.

Table KivIA-6-2: Predicted Noise Contribution from Each Wind Turbine at NPOR006

Wind Turbine	Predicted Noise Contribution at NPOR006 [dBA]
T01	37.5
T02	34.1
T03	28.6
T06	27.1
T04	24.8
T09	23.0
T05	22.3
T08	21.6
T07	21.3
T10	19.4
T11	17.4
Total – All 11 Turbines^(a)	40.2

^(a) Please note: Because of their logarithmic nature decibels (dBA) do not add like conventional numbers. For example, 35 dBA + 35 dBA = 38 dBA (not 70 dBA).

As requested, the graph below presents predicted noise level (i.e., sound pressure level) as a function of distance from a wind turbine operating with a sound power level of 106.0 dBA (i.e., maximum emissions for any wind speed) and a sound power level of 87.6 dBA (i.e., minimum emissions for any wind speed).



Response C)

As noted in response B, the Meliadine Extension Noise Modelling report assumed all 11 turbines operate with maximum noise emissions (i.e., sound power level of 106.0 dBA) 100% of the time. This is a conservative approach to assessing potential noise effects from the Meliadine Extension, which will tend to overestimate noise effects during periods when turbines operate with less than maximum noise emissions (e.g., periods with low wind speed).

Maximum noise emissions from the wind turbines were established using data sheets from the manufacturer (Enercon). The noise modelling did not include an artificial “penalty” to account for amplitude modulation. This modelling approach is consistent with the way that wind turbine noise is modelled and assessed in other Canadian jurisdictions. For example, Alberta Utilities Commission (AUC) Rule 012: Noise Control, which regulates wind power facilities in Alberta, states “...*the sound power level from a wind turbine must correspond to the maximum noise emitted when the wind turbine operates under planned maximum operating conditions...*”, but the AUC does not require or expect applicants to include a penalty to account for amplitude modulation.

Response D)

Agnico Eagle has provided the requested cited report as Appendix IR-1 to this response package.

Interested Party:	KivIA	Rec No.:	KivIA-IR-7
Re:	Use of collar data for assessment of Meliadine Extension Project		

Request Made by Interested Party:

GN-DoE should develop a DSA that will provide the Qamanirjuaq collar data to Agnico Eagle and its consultants on a regular and timely basis so that a comprehensive analysis of collar movements at broad and fine (individual collar trajectories) scales are available to assess potential impacts of the Meliadine Extension Project.

Agnico Eagle’s Response to Request:

While Agnico Eagle disagrees that the analysis provided to date based on caribou mapping data is insufficient, Agnico Eagle agrees with the KivIA that the GN should provide a Data Sharing Agreement (DSA) on reasonable and acceptable terms that will provide Agnico Eagle with the information described in this information request.

Agnico Eagle has provided the draft Industry Data Sharing Agreement to the GN for their review and are continuing discussions with the GN to finalize this agreement.

Interested Party:	KivIA	Rec No.:	KivIA-IR-8
Re:	Collared caribou movement in relation to existing mine site and roads		

Request Made by Interested Party:

GN-DoE should develop animations of collared caribou movements for 15 June to 25 July for 2015, 2016, 2017, 2018 and 2019.

Agnico Eagle's Response to Request:

As the Application is for a reconsideration primarily for windfarm and the area around the alternative airstrip, additional studies as suggested by the KivIA should be discussed in the TAG for existing infrastructure and roads.

Interested Party:	KivIA	Rec No.:	KivIA-IR-9
Re:	Infrastructure for the conveyance of saline and surface contact water from Discovery for treatment		

Request Made by Interested Party:

Agnico Eagle should confirm what infrastructure will be in place for conveying contact and saline water from Discovery. Would this infrastructure be compatible with a priority system for waterline discharge?

Agnico Eagle’s Response to Request:

Surface contact water originating from developed areas will be intercepted and conveyed to the various collection ponds for temporary storage and then treated prior to discharge to the receiving environment. Discharge to Itivia Harbour is prioritized, with the remainder discharged to Meliadine Lake. The Water Management Plan and Adaptive Management plans outline our water management strategy. KivIA has been involved in developing these.

At the Discovery site, surface contact and saline contact water will be managed in the Discovery saline pond (SPD) and conveyed by surface waterline to SP B7, the Saline Treatment Plant at the main mine, and then discharged to Itivia Harbour through the waterline.

Interested Party:	KivIA	Rec No.:	KivIA-IR-10
Re:	Surface Contact Water Volumes		

Request Made by Interested Party:

Agnico Eagle should:

A. Clarify whether the 2.7 million m³ in CP1 represents the total annual volume of surface contact water expected on site, or whether additional contact water will be routed through the waterline without deposition in CP1;

B. Provide the total volumes of surface contact water expected on site after Expansion construction is complete, including the contribution from the Discovery site; and

C. Clarify what are the expected annual discharge volumes of contact water into Meliadine Lake after the expansion is complete?

Agnico Eagle’s Response to Request:

Response A)

Consistent with the approved project and with the 2014 FEIS, surface contact water at Meliadine Extension is managed through a series of collection ponds and then is transferred to CP1. Therefore, CP1 is the primary surface contact water collection pond at Meliadine Mine. The surface contact water collected at CP1 is then routed to the EWTP prior to discharge to Meliadine Lake or to SP3 prior to discharge to Itivia Harbour via the waterline.

The projected annual inflows to CP1 average 2.66 Mm³ (rounded to 2.7 Mm³) and represent the whole of the contact water that will be managed on site for Meliadine Extension (Appendix H-7 of the Meliadine Extension FEIS Addendum). As noted above, these inflows are then split between discharges to Meliadine Lake and Itivia Harbour depending on climate and operational conditions. Please note that per Project Certificate No.006 Amendment 002, Term and Condition 25a, Agnico Eagle continues to assess opportunities to minimize or eliminate discharges to Meliadine Lake. The volumes presented under the FEIS addendum for Meliadine Extension represent an upped bound and remain within the prediction of the 2014 FEIS. Further optimizations of these volumes would be explored under the Water Licence Amendment regulatory process.

Response B)

The total volumes of predicted surface contact water expected on site after Meliadine Extension construction is complete are presented in Table KivIA-10-1. The table presents total inflows to the primary surface contact water CP1, and the primary saline water pond SP B7. The table also presents the projected discharges from these ponds.

Table KivIA-10-1: Total Volumes of Annual Surface Contact Water for Meliadine Extension

Year	Inflows to CP1 from all CPs (m ³)	Discharge from CP1 to Meliadine Lake (m ³)	Discharge from CP1 to Itivia Harbour via Waterline (m ³)	Total Inflows to SP B7 from all SPs (m ³)	Discharge from SP B7 to Itivia Harbour via Waterline (m ³)
2020	832,696	815,940	0	478,380	0
2021	721,084	731,482	0	535,673	0
2022	923,189	907,760	0	752,985	0
2023	718,221	722,738	0	652,738	0
2024	1,280,524	404,267	947,850	731,341	0
2025	2,438,750	743,901	1,498,588	826,184	163,083
2026	1,319,345	603,541	645,421	998,346	927,716
2027	2,113,201	1,152,156	833,078	1,107,448	983,212
2028	2,518,480	1,388,949	1,064,477	918,766	859,342
2029	2,845,785	1,807,440	919,239	983,140	855,450
2030	2,299,925	1,620,615	697,267	1,166,443	888,155
2031	2,228,488	1,126,222	1,037,136	1,284,114	957,330
2032	3,170,129	2,467,421	768,443	1,568,472	1,173,181
2033	3,215,644	2,250,000	946,918	1,529,326	1,094,597
2034	2,804,048	1,951,747	807,197	1,492,445	1,131,820
2035	3,427,265	2,533,350	819,775	1,639,738	1,207,293
2036	2,677,705	1,952,507	871,519	1,403,662	1,069,312
2037	2,847,691	1,922,706	907,912	1,386,980	1,036,781
2038	2,267,537	1,002,930	1,222,053	744,533	611,535
2039	3,811,507	2,404,129	1,307,087	1,106,375	733,656
2040	2,746,266	1,183,016	1,447,101	735,572	490,874
2041	3,234,155	1,611,102	1,449,082	837,412	568,310
2042	3,638,235	1,983,900	1,449,119	948,786	617,591
2043	2,436,801	1,053,289	1,345,583	767,901	517,727
Average (2024-2043)	2,666,074	1,558,159	1,049,242	1,108,849	794,348
Total (2024-2043)	55,987,555	32,721,347	22,034,087	23,285,832	16,681,313

Reference: Lorax WNWQM v4.7.9_17Nov2022, 2022

Agnico Eagle would like to clarify that at the Discovery site, surface contact water and saline water will be managed in the Discovery saline pond (SPD) and conveyed by surface waterline to SP B7, the Saline Treatment Plant (SETP) at the main mine, and then discharged to Itivia Harbour through the waterline. The projected inflows to SPD are 2.03 Mm³, and the total projected discharge from SPD to SP B7 is 1.98 Mm³. The total projected annual volumes at Discovery are presented in Table KivIA-10-2.

Table KivIA-10-2: Total Projected Annual Volumes at Discovery Site Transferred to Meliadine Site

Year	Total Saline Water from Discovery to SP B7 (m ³)
2020	0
2021	0
2022	0
2023	0
2024	0
2025	0
2026	24002
2027	34003
2028	46004
2029	66005
2030	94008
2031	96,008
2032	164,013
2033	134,011
2034	136,011
2035	154,012
2036	128,010
2037	112,009
2038	112,009
2039	168,013
2040	106,008
2041	142,011
2042	152,012
2043	116,009
Average	110,231
Total	1,984,158

Reference: Lorax WNWQM v4.7.9_17Nov2022, 2022

Response C

The total water discharged to Meliadine Lake will be within the ranges already assessed in the 2014 FEIS. The projected annual discharge volumes to Meliadine Lake are presented in Table KivIA-10-1 above.

Predictions of discharge volumes for Meliadine Extension are an upper bound and consider predicted future precipitation under climate change (RCP4.5) and runoff and interflow from the waste management facilities during open water season. These predictions assume that a portion of the water from CP1 is discharged to Itivia Harbour via the waterline, the waterline is operational in 2024 and there are no down days. In the last 4 years of operation, the average discharge has been 474,647 m³ per year. Further optimization to minimize discharges to Meliadine Lake will be reviewed through the NWB process.

Interested Party:	KivIA	Rec No.:	KivIA-IR-11
Re:	Dual Waterline Capacity		

Request Made by Interested Party:

Given the increase in surface contact water volumes, Agnico Eagle should clarify whether there are any plans to increase the capacity of the waterline to Itivia Harbour to minimize the discharge volumes into Meliadine Lake, either by increasing flow rate or through additional waterlines?

Agnico Eagle’s Response to Request:

There are no plans to permanently increase the capacity of the waterline. As described in the Adaptive Management Plan (AMP), the Normal Operating Conditions of the operational waterline is a total capacity of 20,000 m³/day (used to their full capacity by managing the release of 6,000 to 12,000 m³/day of treated saline effluent and the remainder 8,000 to 14,000 m³/day comprised of surface contact water), and operated from approximately late June to mid-October (or until consistent sub-zero temperatures are observed).

If the site moves out of Normal Operating Conditions, management actions (see Table 2 from the AMP) can be used to increase utilization of the waterline and to move back to Normal Operating Conditions include:

- Prioritize saline water for the waterline
- Evaluate starting discharge to Itivia Harbour earlier
- Evaluate temporary discharge of higher flow rate to Itivia Harbour

Interested Party:	KivIA	Rec No.:	KivIA-IR-12
Re:	Dual Waterline Surface Contact Water Discharge		

Request Made by Interested Party:

Please clarify whether Agnico Eagle intends to modify the Adaptive Management or Groundwater Management Plan to limit surface contact water discharge to 8,000 m³/day.

Agnico Eagle’s Response to Request:

On page 30 of the Meliadine Extension FEIS Addendum it is stated that:

- The dual waterline is operational and the capacity is 6,000 to 12,000 m³/day of saline water and up to 8,000 m³/day of surface contact water, for a total capacity of 20,000 m³/day.

On page 3 of the Adaptive Management Plan included with the Application it is stated that:

- The dual waterline is operational and the total capacity is 20,000 m³/day (used to their full capacity by managing the release of 6,000 to 12,000 m³/day of treated saline effluent and the remainder 8,000 to 14,000 m³/day comprised of surface contact water).

The Adaptive Management Plan has already considered utilizing capacity in the waterline for surface contact water as one measure to reduce discharge to Meliadine Lake.

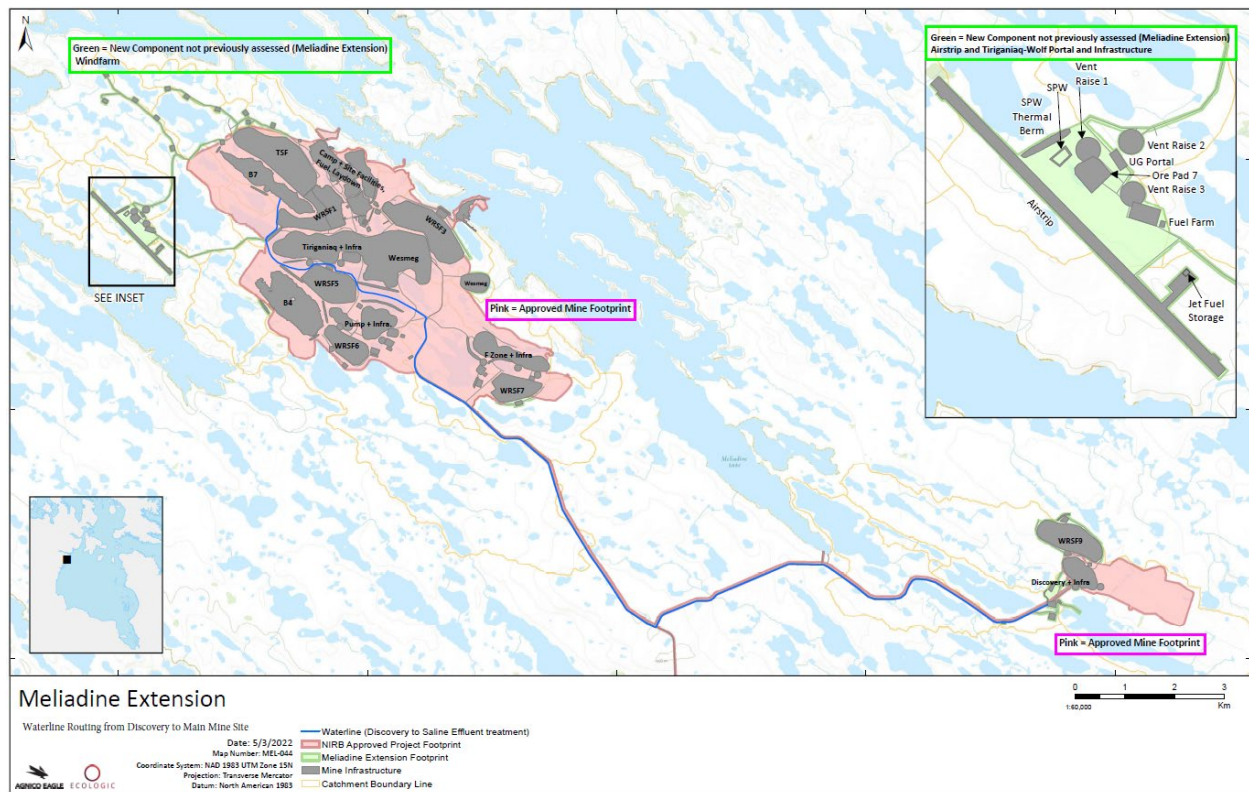
Interested Party:	KivIA	Rec No.:	KivIA-IR-13
Re:	Revised diagrams of Meliadine Extension features		

Request Made by Interested Party:

Agnico Eagle should provide updated diagrams with the location and features of the Meliadine Extension clearly identified and distinguishable from all other features noted on the above-noted figures.

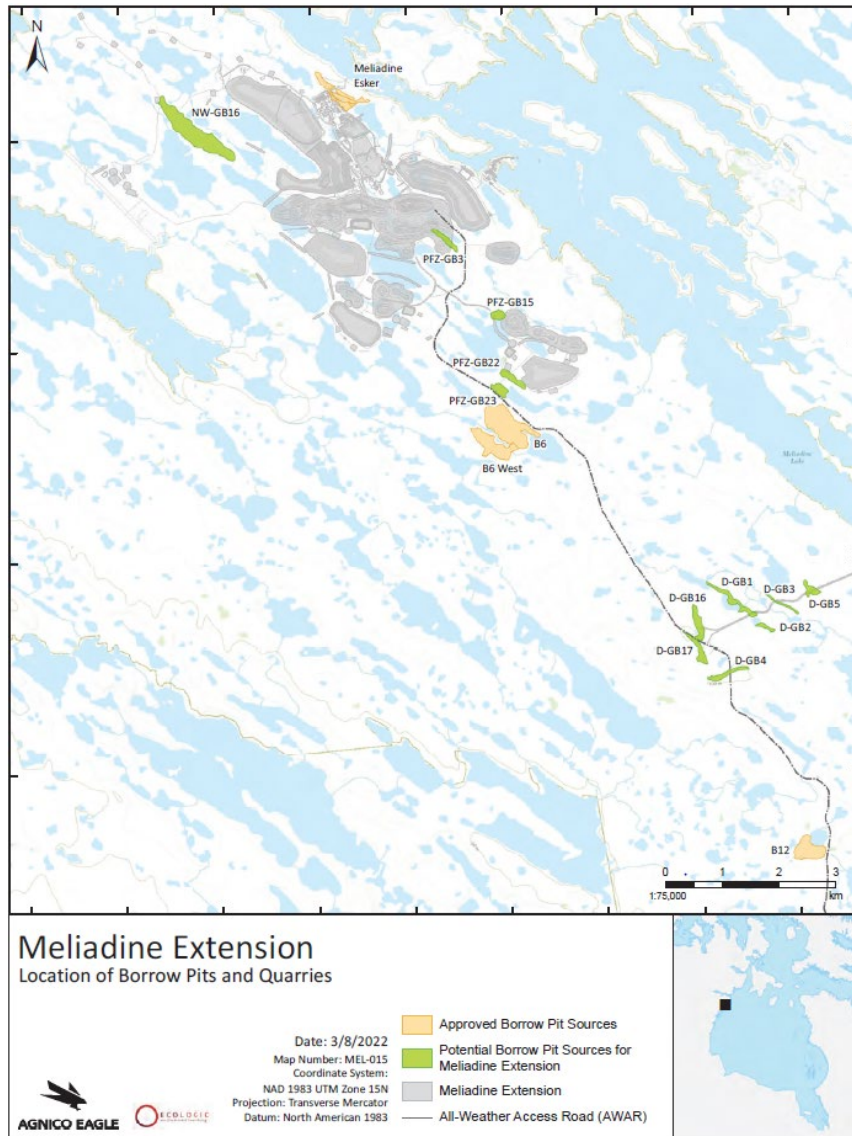
Agnico Eagle’s Response to Request:

Agnico Eagle refers the reader to Figure 1.1-5 (page 15 of the Meliadine Extension FEIS Addendum) which presents the approved Meliadine footprint and the new components of Meliadine Extension. It is important to note that five deposits (Tiriganiaq, F Zone, Pump, Wesmeg, and Discovery) and associated infrastructure, TSF, and WRSFs were all previously assessed and approved as part of the 2014 FEIS and are within the approved Meliadine footprint; therefore, do not need to be identified as “new” components of Meliadine Extension within the colouring scheme of this figure. The new components of Meliadine Extension were identified on Figure 1.1-5; however, to facilitate review, Agnico Eagle has provided an annotated figure to outline the features.



The potential pits identified as options for in-pit disposal are presented in Figure 2.5-1, Figure 2.5-2, and Figure 2.5-3 (pages 45, 46, and 47 the Meliadine Extension FEIS Addendum, respectively). As outlined in Section 2.5.1 to 2.5.3 of the Meliadine Extension FEIS Addendum, these pits were selected as potential options as they would all be within the approved footprint and previously impacted pit locations.

Agnico Eagle refers the reader to Figure 2.3-1 (page 37 of the Meliadine Extension FEIS Addendum) which identifies the approved and existing leases for borrow / quarry locations (orange on the figure) and the potential quarry locations of Meliadine Extension (green on the figure). Table 2.3-3 and Table 2.3-4 also summarize the approved and proposed borrow / quarry locations for Meliadine Extension.



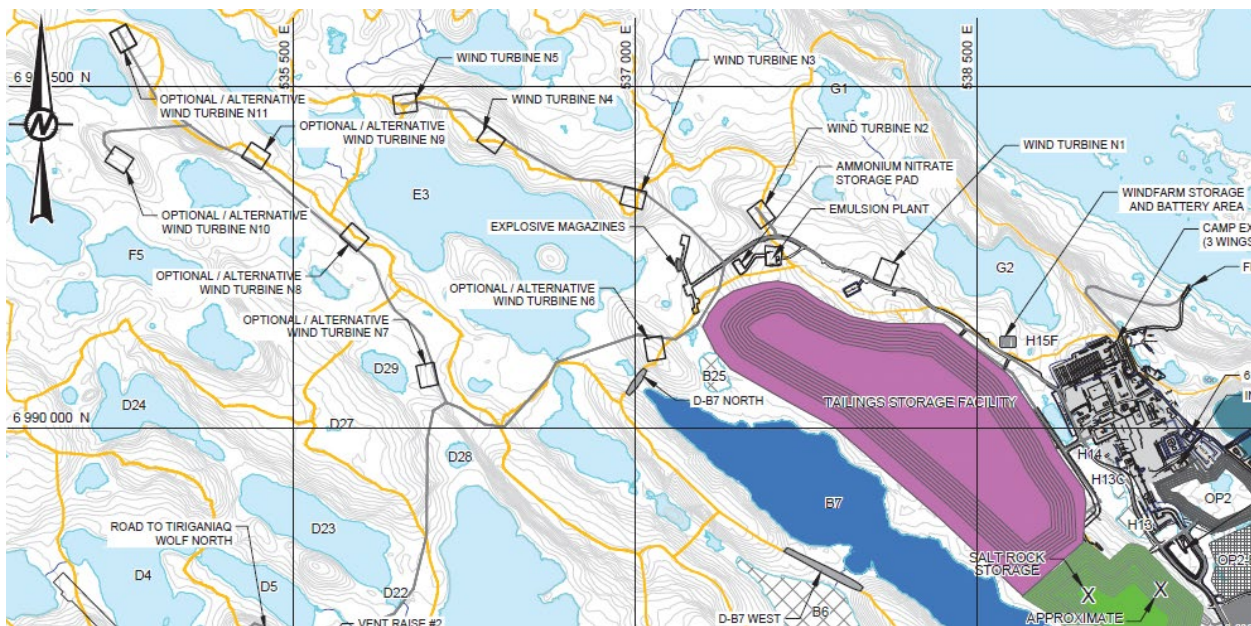
Interested Party:	KivIA	Rec No.:	KivIA-IR-14
Re:	Location of wind turbines that will be constructed in the first phase of the windfarm		

Request Made by Interested Party:

Agnico Eagle should provide an updated diagram (Figure 2.3-2) clearly showing the location of wind turbines N1 to N5.

Agnico Eagle’s Response to Request:

Agnico Eagle refers KivIA to Figure 1.1-4 (page 14 of the Meliadine Extension FEIS Addendum) which identifies the locations of the wind turbines and their associated numbers. The image below provides a snapshot of Figure 1.1-4, focusing on the wind turbines and their numbering.



Interested Party:	KivIA	Rec No.:	KivIA-IR-15
Re:	Geotechnical evaluation and thermal modeling for individual wind turbine platforms		

Request Made by Interested Party:

Agnico Eagle should provide the geotechnical evaluation and thermal modeling for each of the wind turbine platforms.

Agnico Eagle's Response to Request:

Agnico Eagle appreciates the comment from the KivIA; however, this level of design work is premature and not necessary for completing an environmental assessment and associated phase of the permitting process. Geotechnical evaluations and appropriate modelling would be completed as part of the detailed design phase.

Interested Party:	KivIA	Rec No.:	KivIA-IR-16
Re:	Airguard-type and fiber optic cables		

Request Made by Interested Party:

Agnico Eagle should provide information on the diameter of the airguard-type and fiber optic cables. In addition, information on the operational possibility of burying these cables is required.

Agnico Eagle’s Response to Request:

As outlined in the Windfarm Management Plan (Appendix D-36 of the Application), during the construction of the wind turbines, a collection system will link the wind turbines to the Mine powerhouse. The power cable would be spooled out and installed directly over ground, following the access road paths to the wind turbine platforms. A 1 m wide right-of-way for the power cable will be maintained adjacent to the access roads. Each turbine houses a 12.5kV transformer which connects via the power cables to a spare switchgear located in the main electrical room of the Mine powerhouse. The specifics of the cabling features would be evaluated during the detailed engineering phase, along with procurement of the wind turbines. In addition, as outlined in the Windfarm Management Plan (Appendix D-36 of the Application) during construction of the access roads, materials used for construction will be placed directly over the existing soil layer to avoid disturbance to the subgrade soils, the active layer, and permafrost. The roads will be sloped to allow ease of wildlife passage.

There will be no construction during caribou migration as per the Terrestrial Environment Management and Monitoring Plan (TEMMP). As for the operational period, Agnico Eagle will comply with the TEMMP submitted as part of this Application.

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Interested Party:	SDFN / NDFN	Rec No.:	SDFN/NDFN-IR-1
Re:	Specific Monitoring and Mitigation Measures for Caribou related to the Construction and Operation of the Windfarm.		

Request Made by Interested Party:

The SDFN and NDFN request additional information concerning:

1. *how the potential visual impacts of the windfarm for caribou were addressed in the FEIS Addendum.*
2. *what, if any, specific monitoring and mitigation measures for caribou have been included in relation to the construction and operation of the windfarm.*

Agnico Eagle’s Response to Request:

Response 1)

Visual impacts of the windfarm and all components of the Meliadine Extension on caribou were included in the assessment of indirect effects to habitat from sensory disturbance (Section 6.6.5.2 of the Meliadine Extension FEIS Addendum). Sensory disturbance includes all types of stressors such as noise, lights, dust, smells, and presence of people. Incremental and cumulative indirect effects to habitat from sensory disturbance were determined through application of zones of influence (ZOI) for different types of developments (see Table 6.6-6 of the Meliadine Extension FEIS Addendum). A 14 km ZOI was applied to the Meliadine Extension, which included the approved Mine.

Response 2)

Mitigation measures implemented during construction and operation of the windfarm were identified in the Windfarm Management Plan (Appendix D-36 of the Meliadine Extension FEIS Addendum). Specific mitigation for caribou was not included but was for birds. The mitigation specific to birds also benefits caribou. For example, construction of the windfarm will occur outside of the migratory bird breeding season (May 15 to September 15), which overlaps when caribou interact with the Meliadine Mine and AWAR (mid-June to mid-July). Thus, caribou will not be exposed to sensory disturbance from windfarm construction. Other mitigations from the TEMMP will be applied to the windfarm. Existing monitoring programs outlined in the TEMMP can also be applied to the Meliadine Extension. For example, key mitigation to minimize residual sensory disturbance effects to caribou includes the work suspension protocol identified in the TEMMP, which is triggered by the presence of 50 or more caribou within 5 km of the Mine and AWAR. The work suspension protocol includes warrant traffic signs, radio alerts and traffic/work stoppages (e.g., suspension of flights, drilling operations, and circulation of vehicles). Specific details (e.g., objectives, methods, analysis, and mitigation) of mitigation and monitoring can be addressed through the TAG.

Interested Party:	SDFN / NDFN	Rec No.:	SDFN/NDFN-IR-2
Re:	Construction and Operation of the Waterline between the Discovery Site and the AWAR		

Request Made by Interested Party:

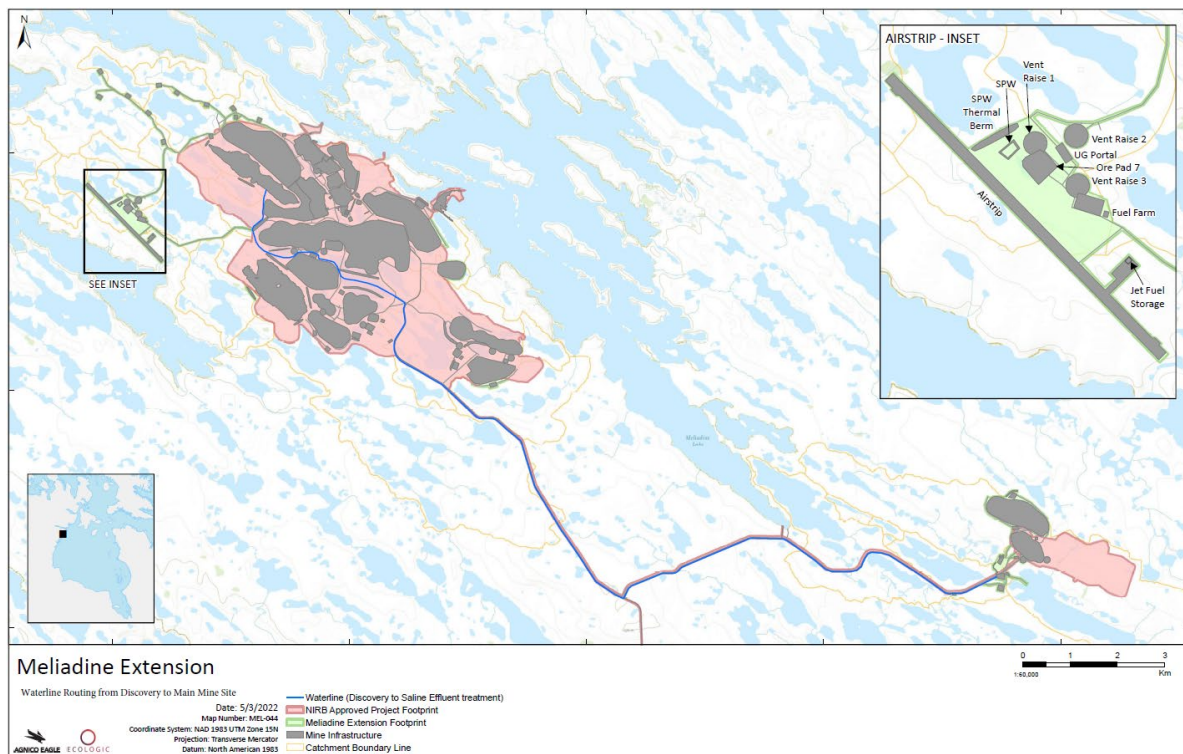
The SDFN and NDFN request additional information concerning:

1. the length and location of this waterline and its construction and operation.
2. if or how potential impacts related to caribou resulting from this waterline were considered and assessed.
3. if all of the commitments and mitigation measures outlined in Section 11 of this FEIS Addendum specific to waterlines would apply to this waterline.

Agnico Eagle’s Response to Request:

Response 1)

Agnico Eagle refers the reader to Figure 1.1-5 (page 15 of the Meliadine Extension FEIS Addendum) which identifies the proposed routing of the waterline from Discovery to Meliadine mine site, which is approximately 21 km. The exact routing would be further refined and evaluated through the detailed design phase. To facilitate review, Figure 1.1-5 is provided below for reference.



Construction of the waterline would take place outside of the caribou migration. Construction and operation activities will stay within existing easements and roads. As outlined in Table 2.2-1 of the Meliadine Extension FEIS Addendum, construction activities would start in 2024 upon receipt of permits and authorization.

The waterline (HDPE piping) would be 10 inches in diameter from Discovery to the AWAR (highest point) and would reduce to 8 inches in diameter from that point to the saline water pond SP B7 at the Meliadine main site. This line is smaller than the approved waterline to Itivia Harbour (i.e., 16 inches). The waterline will consist of a single line and will be covered with material (similar to the approved waterline). The Discovery waterline will be operational during the open water season and would run parallel to the road and the approved waterline (i.e., not a separate structure on the opposite side of the road) for ease of inspection and to minimize the overall footprint impacts. As outlined in the response to KivIA-IR-9, once the water is at saline water pond SP B7 at the Meliadine main site, water will be conveyed through the approved waterline to Itivia Harbour.

Response 2)

The waterline from Discovery to the saline water pond SP B7 is considered as part of the Meliadine Extension and was not explicitly assessed as a stand-alone component. The placement of the waterline adjacent to Discovery Road will be similar to the placement of waterlines along the AWAR, which were assessed in the Waterline FEIS Addendum (Agnico Eagle 2020) and included the following description and conclusions. The waterline will be placed next to the AWAR, which was considered an area of indirect disturbance in the 2014 FEIS and included as part of the Meliadine Mine and cumulative residual effects to caribou. Impacts to caribou movement from the combination of the AWAR (including traffic volumes) and the waterlines were predicted to be low in magnitude, local in geographic extent, occur over the medium-term, periodic, and likely. The addition of the waterline along Discovery Road is predicted to have no incremental measurable effect, and therefore no contribution to cumulative effects on caribou movement relative to effects assessed in the 2014 FEIS. The addition of the waterline along Discovery Road does not change the conclusions of the 2014 FEIS (Golder 2014) or the Meliadine Extension FEIS Addendum.

Response 3)

As outlined in the Accidents and Malfunctions section of the Application (Section 11.1), Agnico Eagle included the commitments made to mitigation measures for the waterline from Meliadine Mine to Itivia Harbour. This included the following:

- implement a leak detection system;
- implement an emergency response number;
- cover the waterline;
- place markers along the waterline; and
- test the waterline prior to each discharge season.

Agnico Eagle is of the opinion that many of these mitigation measures are an operational component; however, are also committed to apply these mitigation measures to the Discovery waterline.

References:

Golder (Golder Associates Ltd.). 2014. Final Environmental Impact Statement - Meliadine Gold Project, Nunavut. Prepared for Agnico Eagle Mines Limited by Golder Associates Ltd.

Golder. 2020. Agnico Eagle Mines Limited - Meliadine Gold Mine: Final Environmental Impact Statement. Addendum: Environmental Assessment of Treated Groundwater Effluent Discharge into Marine Environment, Rankin Inlet.

Interested Party:	SDFN / NDFN	Rec No.:	SDFN/NDFN-IR-3
Re:	Evaluating the Potential Noise Effects of the Meliadine Extension		

Request Made by Interested Party:

The SDFN and NDFN request further information concerning:

- 1. the validity of comparing the predicted noise levels from the 2014 FEIS to the predicted noise levels for the Meliadine Extension to determine the magnitude of change from the former to the latter, and*
- 2. why “actual” noise levels from the Noise Receptor locations subsequent to the mine becoming operational were not used in the analysis.*

Agnico Eagle’s Response to Request:

Response 1)

SDFN and NDFN are correct that potential noise effects from the Meliadine Extension were assessed based on the predicted change in cumulative noise levels relative to cumulative noise levels approved as part of the 2014 FEIS for the Meliadine Mine. Comparing noise levels from the 2014 FEIS to predicted cumulative noise levels following implementation of the Meliadine Extension focuses the assessment on incremental changes associated with the proposed Meliadine Extension.

As discussed in Section 3.4 of the Meliadine Extension Noise Model report (Appendix H-2 of the Meliadine Extension FEIS Addendum), computer noise modelling for the 2014 FEIS and for the proposed Meliadine Extension made use of the same environmental parameters (see Table 4), such that the only difference between the 2014 FEIS and Meliadine Extension models was the presence of new noise sources associated with the Meliadine Extension. As such, the increase in cumulative noise levels presented in the Meliadine Extension Noise Model report (Appendix H-2) results entirely from the proposed changes to Meliadine operations. Potential changes or uncertainties in natural environmental factors (e.g., wind, birds) have no bearing on the assessment. In other words, assessing post-Meliadine Extension cumulative noise levels against noise levels from the 2014 FEIS provides direct (i.e., “apples-to-apples”) comparison that would not be available via other methods.

Response 2)

Agnico Eagle completes regular noise monitoring as part of the Meliadine Noise Abatement and Monitoring Plan. This monitoring is conducted at a number of locations surrounding existing Meliadine operations. Most monitoring locations are approximately 1.5 km from the Meliadine footprint. The key objective of this regular noise monitoring is to confirm that noise from Meliadine operations does not exceed noise levels approved as part of the 2014 FEIS.

While noise monitoring conducted 1.5 km from the Meliadine footprint is an appropriate method for confirming noise levels are within approved limits, because of contamination by local natural sources and the influence of environmental conditions on propagation, this type of monitoring does not provide stable

data about the “actual” noise contribution from Meliadine operations. In other words, the measured noise level at a location 1.5 km from the Meliadine Mine includes the contribution from Meliadine operations and the noise contribution from local natural sources (e.g., birds, insects, wind). On many days, the noise contribution from local sources may exceed the noise contribution from Meliadine operations and the noise contribution from local natural sources is highly variable and unpredictable. For example, on a windy day the measured noise level may be 5 or 10 dBA higher than on a calm day, even if Meliadine operations are identical. Given this variability in measured data, it is not appropriate to assess potential noise effects from the Meliadine Extension by comparing post-Meliadine Extension model predictions to noise monitoring data collected in the field.

Interested Party:	SDFN / NDFN	Rec No.:	SDFN/NDFN-IR-4
Re:	Assessment Effects related to Caribou		

Request Made by Interested Party:

The SDFN and NDFN request further information concerning:

- 1. how the extension of the mine life to 24 years from 13 years has been addressed and accounted in the Meliadine Extension FEIS Addendum when assessing the incremental and cumulative residual effects assessment for caribou in relation to those in the 2014 FEIS.*
- 2. how the significant changes in caribou numbers, distribution and movements in the area of the mine site since 2015 have been addressed and accounted in the Meliadine Extension FEIS Addendum when assessing the incremental and cumulative residual effects assessment for caribou in relation to those in the 2014 FEIS.*

Agnico Eagle’s Response to Request:

Response 1)

The change in duration of mine life by 11 years was considered in the significance determination on the assessment endpoints of maintenance of population abundance and distribution of wildlife and continued opportunities for traditional and non-traditional use. As noted in Section 4.5 of the Meliadine Extension FEIS Addendum, significance determination is primarily influenced by the magnitude, geographic extent, and duration (includes reversibility) of the incremental and cumulative residual effects and the ecological context of caribou (or other Wildlife Valued Ecosystem Components).

For example, the magnitude of the incremental and cumulative direct and indirect caribou habitat loss was <1% (negligible) and <3% (low), respectively, of the caribou effects study area (i.e., the Qamanirjuaq post-calving range) (Section 6.6.7 of the Meliadine Extension FEIS Addendum). As a result, much of the caribou range remains intact, well connected, and available to caribou to obtain critical life requisites. As well, the Meliadine Extension does not include extensive length of the roads beyond those approved that would divert caribou migration routes if roads were completely avoided. There are few existing and no future proposed roads in the caribou effects study area that might also influence daily and seasonal movements or disrupt migration routes.

The geographic extent of primary pathways ranged from regional to beyond regional, with beyond regional because caribou migrate between other seasonal ranges than just the post-calving range. The duration of incremental and cumulative residual effects for sensory disturbance and movement and reclaimed habitat were determined to be either reversible at closure (medium-term) or during post-closure (long-term), with a negligible amount habitat loss being permanent.

For example, cumulative direct habitat loss from the Meliadine Extension (including the approved Meliadine Mine) was assumed to have a long-term duration because re-establishment of disturbed

vegetative communities will likely require long periods of time after closure reclamation is complete in an Arctic environment.

The combination of the magnitude, geographic extent, and duration of residual incremental and cumulative residual effects of the Meliadine Extension FEIS Addendum (including the approved Mine) should be within the resilience limits and adaptive capacity of caribou and not significantly influence the maintenance of population abundance and distribution and continued opportunities for traditional and non-traditional use.

Response 2)

The reader is referred to the response to GN-IR-1 and GN-IR-2

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Interested Party:	GN	Rec No.:	GN-IR-1
Re:	Trends in caribou interactions with the Project		

Request Made by Interested Party:

The GN - DOE requests the Proponent provide the following information:

1. An analysis of trends in caribou overlap and residency time within Local Study Area (LSA) and Regional Study Area (RSA) using collared caribou collar data for the period 1993 up to the most recent year of data available. This should report information on the following metrics (in graphical and/or tabular form): (a) For each year, the percentage of collars that enter the RSA and LSA; (b) For each year, the average number of days each collar, that entered the LSA or RSA, spent in these areas.
2. A revised assessment of the potential to disrupt caribou movements using scenarios in which current trends in caribou interaction with the Project (as measured by the metrics in item 1 above) continue through the approved Project's lifespan and through the proposed Project's 11-year extension of operations.

Agnico Eagle's Response to Request:

Response 1)

The most recent Qamanirjuaq collared caribou data available to Agnico Eagle spanned 1993 to 2019. The metrics requested by the GN are shown in Table GN-1-1 and were previously presented as Table 9 of the 2019 Annual Terrestrial Environment Management and Monitoring Plan report (Golder 2020). The percentages of collared caribou that enter the RSA and LSA are show in Figure GN-1-1 but were previously presented as Figure 7 of Golder (2022).

Table GN-1-1: Annual Timing of Qamanirjuaq Collared Caribou Presence and Duration in the Regional Study Area and Local Study Area, 1993 to 2019

Year	Total Number of Collared Caribou	Mean Date of RSA Entry	Mean Date of RSA Exit	Mean Number of Days in RSA	Number of Collared Caribou in RSA	Mean Date of LSA Entry	Mean Date of LSA Exit	Mean Number of Days in LSA	Number of Collared Caribou in LSA
1993	5	-	-	0	0	-	-	0	0
1994	4	-	-	0	0	-	-	0	0
1995	4	-	-	0	0	-	-	0	0
1996	7	-	-	0	0	-	-	0	0
1997	2	-	-	0	0	-	-	0	0
1998	7	-	-	0	0	-	-	0	0
1999	6	-	-	0	0	-	-	0	0
2000	3	Apr-11	Apr-21	10.0	1	Dec-29	Dec-30	1.0	1
2001	8	-	-	0	0	-	-	0	0
2002	4	-	-	0	0	-	-	0	0
2003	4	-	-	0	0	-	-	0	0
2004	15	-	-	0	0	-	-	0	0

Year	Total Number of Collared Caribou	Mean Date of RSA Entry	Mean Date of RSA Exit	Mean Number of Days in RSA	Number of Collared Caribou in RSA	Mean Date of LSA Entry	Mean Date of LSA Exit	Mean Number of Days in LSA	Number of Collared Caribou in LSA
2005	8	-	-	0	0	-	-	0	0
2006	24	Apr-12	Oct-06	19.0	2	-	-	0	0
2007	16	Apr-13	May-28	42.5	2	Feb-15	Feb-15	0.0	1
2008	32	Apr-14	Jul-14	0.0	1	-	-	0	0
2009	13	-	-	0	0	-	-	0	0
2010	10	-	-	0	0	-	-	0	0
2011	32	Apr-15	Aug-02	0.0	2	-	-	0	0
2012	14	Apr-16	Jul-19	3.6	5	Jul-17	Jul-17	0.0	1
2013	42	Apr-17	Jul-14	3.8	12	Jul-13	Jul-13	0.0	2
2014	27	Apr-18	Aug-01	22.7	7	Jul-08	Jul-09	1.0	3
2015	38	Apr-19	Jul-28	14.3	36	Jul-16	Jul-16	0.6	24
2016	46	Apr-20	Jul-15	17.8	37	Jul-12	Jul-13	1.7	23
2017	75	Apr-21	Jul-11	5.0	69	Jul-09	Jul-09	0.6	33
2018	53	Apr-22	Jul-17	13.4	50	Jul-12	Jul-14	1.9	35
2019	44	Apr-23	Jun-29	7.8	38	Jun-27	Jun-28	1.1	11

Source: (Table 9 from Golder 2020)

Notes: RSA = Regional Study Area; LSA = Local Study Area (per the FEIS, Golder 2014).

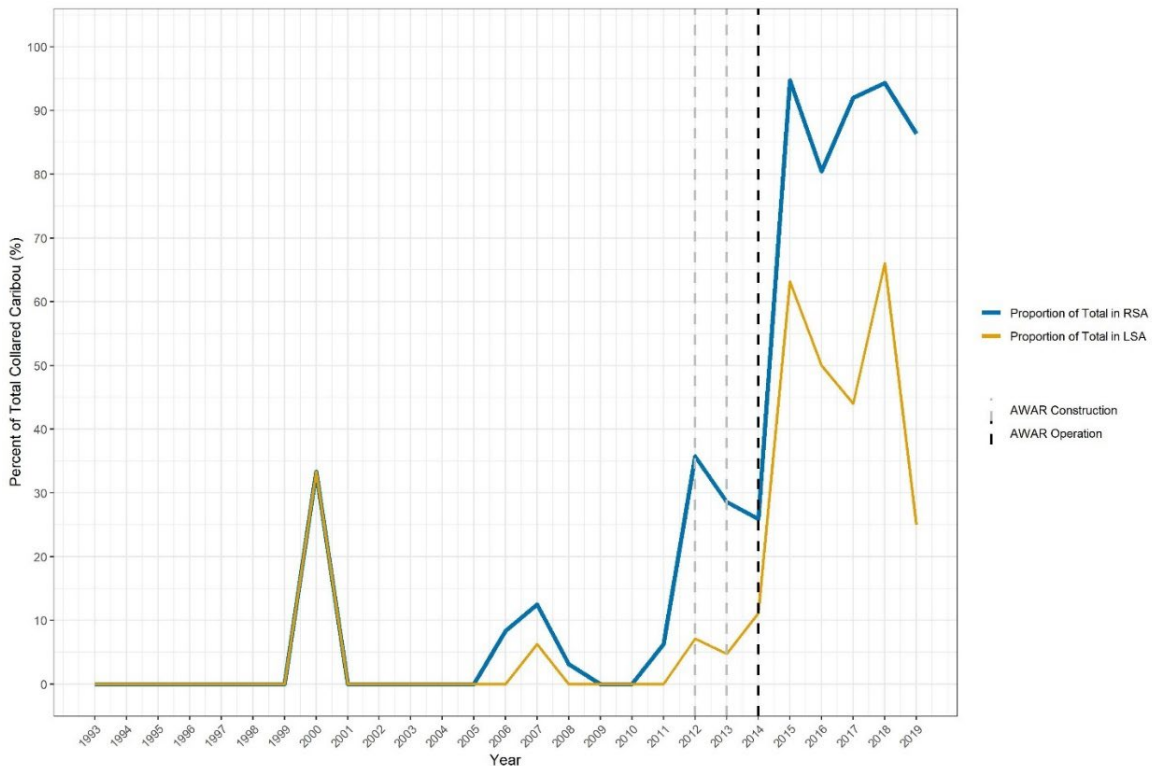


Figure GN-1-1: Proportion of total Qamanirjuaq collared caribou within the RSA and LSA, 1993 to 2019. Also shown is a vertical line for 2014 when Qamanirjuaq Collared Caribou would have first encountered activity associated with the AWAR (Figure 7 from Golder 2022)

Response 2)

Table GN-1-1 and Figure GN-1-1 show current trends of collared caribou presence in the RSA and LSA with an overall average of 5.9 days present in the RSA and 0.3 days present in the LSA since 1993. From 2014 to 2019, collared caribou averaged 13.5 days in the RSA and 1.2 days in the LSA.

As described in the 2014 FEIS (Golder 2014), Elders noted that caribou migrate through the area approximately every 6 to 12 years, which Table GN-1-1 and Figure GN-1-1 support.

The Meliadine Extension assessment assumed the effects pathways to caribou would be primary for direct and indirect habitat loss, disruption or alteration of migration, and permanent changes to habitat, which assumes caribou experience residual effects from the Project over its entire duration (i.e., a precautionary approach was applied to the assessment). Key mitigation used by the Meliadine Mine that will be also applied for the Extension include work stoppages as outlined in the TEMMP, which minimizes the residual indirect effects (sensory disturbances). If a scenario occurs where the abundance of caribou in the RSA and LSA increases, it would likely trigger more work stoppage protocols, presumably because the 5 km and 50 caribou trigger for this mitigation is met more frequently or for longer durations. Conversely, if a scenario occurs where caribou abundance decreases in the RSA and LSA, then work stoppages would be triggered less frequently. The number of caribou influenced by the Mine may change over time (i.e., magnitude), however, with the mitigation in place it is predicted that the Meliadine Extension would not significantly influence the maintenance of population abundance and distribution of the abundance and distribution of caribou populations or continued opportunity for traditional and non-traditional use. Fluctuations in caribou abundance in the RSA and LSA over time do not change the conclusions of the assessment.

References:

- Golder (Golder Associates Ltd.). 2014. Final Environmental Impact Statement - Meliadine Gold Project, Nunavut. Prepared for Agnico Eagle Mines Limited by Golder Associates Ltd.
- Golder. 2020. Agnico Eagle Mines Limited - Meliadine Division: 2019 Terrestrial Effects Monitoring and Mitigation Program Annual Report. Prepared for Agnico Eagle Mines Limited by Golder Associates Ltd.
- Golder. 2022. Revised Collared Caribou Meliadine AWAR Interactions (NIRB PC No. 006 T&C 44). Prepared for Agnico Eagle Mines Limited by Golder Associates Ltd.

Interested Party:	GN	Rec No.:	GN-IR-2
Re:	Effects of the All-Weather-Access-Road on caribou movement		

Request Made by Interested Party:

The GN – DOE requests the Proponent provide the following information:

1. Information from AWAR road surveys on the number of caribou observed, and their distance from the road, during the post calving periods while the approved Project has been in its operational phase. This should be summarized as presented above in figure 1 of this information request. Please provide a presentation of data pooled across years and for individual years.

Agnico Eagle’s Response to Request:

Road survey data are not collected in a way to allow a summary of the number of caribou and distance from road by year. However, information from detailed caribou behaviour surveys completed on the AWAR in 2020 and 2021 are presented in ERM (2021). This includes a summary of caribou behaviour and group sizes in relation to distance from infrastructure.

References:

ERM (ERM Consultants Canada Ltd.). 2021. Meliadine Project, Caribou Behaviour Study, 2021. Prepared for Agnico Eagle Mines Limited. 59 p.

Interested Party:	GN	Rec No.:	GN-IR-3
Re:	Caribou trails		

Request Made by Interested Party:

The GN - DOE requests the Proponent provide the following information:

- 1. A revised figure A1 (Appendix G4 – AEM 2022) that delineates the trail survey study area and survey effort.*
- 2. Clarification whether apparent differences in trail, water crossing and pinch point densities between the east and left sides of the existing project are real or a survey artifact.*
- 3. If the differences in trail densities, east versus west, is real please provide further information about why the east side of the Project was not considered as a site for elements of the proposed extension including airstrip and windfarm.*
- 4. If the difference in trail densities is an artifact of survey design, please explain why the east side of the existing project was not surveyed.*
- 5. Please provide further information regarding the rationale for selecting a 5km survey radius.*

Agnico Eagle’s Response to Request:

Caribou trail mapping was only done for the area around the proposed windfarm and airstrip. Survey effort was focused on conducting a complete survey of major trails within the footprint of the Meliadine Extension, as well as a pseudo-control area west of the west arm of Meliadine Lake that was a comparable size. At the time of the survey, trails mapped on the east side of the Mine were only completed incidentally and should not be considered a systematic survey. The 5 km survey radius was selected due to logistical constraints on helicopter time, but it should be noted that the full area within 5 km was not surveyed - as stated survey effort was focused on specific areas that were within a 5 km radius.

Interested Party:	GN	Rec No.:	GN-IR-4
Re:	Response of caribou to wind turbines		

Request Made by Interested Party:

The GN - DOE requests the Proponent provide the following information:

1. Please provide a review of the “limited” information available on barren-ground caribou responses to wind turbines (including supporting citations), as referred to in section 6.6.5.2 of the FEIS Addendum.
2. Based on literature and/or professional opinion, please provide further discussion about how the findings from studies of semi-domesticated reindeer responses to wind turbines may differ from responses of non-domesticated, migrating barren-ground caribou, including differences in Zone-of-Influence and disruption of migratory movements.
3. Please provide information on the predicted caribou Zone-of-Influence (ZOI) and disturbance coefficients for the windfarm including any supporting citations. A revision of the indirect habitat loss analysis is requested that incorporates these ZOI and disturbance coefficients.

Agnico Eagle’s Response to Request:

Response 1)

Agnico Eagle reiterates its statement that limited information exists for the response of barren-ground caribou to wind turbines, as stated in the Meliadine Extension FEIS Addendum. Relevant sources available are provided below (**bold** sources cited in the Meliadine Extension FEIS Addendum):

Colman JE, Eftestøl S, Tsegaye D, Flydal K, Mysterud A. 2012. Is a wind-power plant acting as a barrier for reindeer *Rangifer tarandus* movements? *Wildlife Biology* 18:439–445.

Colman JE, Eftestøl S, Tsegaye D, Flydal K, Mysterud A. 2013. Summer distribution of semi-domesticated reindeer relative to a new wind-power plant. *European Journal of Wildlife Research* 59(3):359-70.

Flydal K, Eftestøl S, Reimers E, Colman JE. 2004. Effects of wind turbines on area use and behaviour of semi-domestic reindeer in enclosures. *Rangifer* 24(2):55-66.

Skarin A, Nellemann C, Rønnegård L, Sandström P, Lundqvist H. 2015. Wind farm construction impacts reindeer migration and movement corridors. *Landscape Ecology* 30:1527–1540.

Skarin A, Alam M. 2017. Reindeer habitat use in relation to two small wind farms, during preconstruction, construction, and operation. *Ecology and Evolution* 7:3870–3882.

Skarin A, Sandström P, Alam M. 2018. Out of sight of wind turbines - Reindeer response to wind farms in operation. *Ecology and Evolution* 8:9906–9919.

Tsegaye D, Colman JE, Eftestøl S, Flydal K, Røthe G, Rapp K. 2017. Reindeer spatial use before, during and after construction of a wind farm. *Applied Animal Behaviour Science* 195:103–111.

Response 2)

Further discussion of potential differences in the response of semi-domesticated reindeer and barren-ground caribou to windfarm development, including ZOI predictions can be further discussed at the technical meeting. Colman et al. (2013) noted that wild reindeer may show stronger avoidance of windfarms than semi-domestic reindeer. Barren-ground caribou may respond differently than semi-domestic reindeer due to differences in migratory behaviour, habitat types and terrain in the area, predator abundance, novelty of windfarms, and flight response of domestic vs. non-domesticated individuals (Colman et al. 2013).

Response 3)

The Meliadine Extension FEIS Addendum assumed a ZOI of 14 km, including areas with wind turbines. The disturbance coefficients associated with different development types used to assess indirect habitat loss for caribou is presented in Table 6.6-9, which are the same as used in the FEIS (Golder 2014). As footnoted in Table 6.6-9, Note: DC and ZOI values were guided by published literature (Johnson et al. 2005; Weir et al. 2007; Boulanger et al. 2009).

References:

- Boulanger J, Poole KG, Gunn A, Wierzchowski J. 2009. The zone of influence for migratory tundra caribou around Canada's Arctic diamond mines: estimation and implications. Unpublished report.
- Golder (Golder Associates Ltd.). 2014. Final Environmental Impact Statement - Meliadine Gold Project, Nunavut. Prepared for Agnico Eagle Mines Limited by Golder Associates Ltd.
- Johnson CJ, Boyce MS, Case RL, Cluff HD, Gau RJ, Gunn A, Mulders R. 2005. Cumulative effects of human developments on arctic wildlife. *Wildlife Monographs* 160:1-36.
- Weir JN, Mahoney SP, McLaren B, Ferguson SH. 2007. Effects of mine development on woodland caribou *Rangifer tarandus* distribution. *Wildlife Biology* 13:66-74.

Interested Party:	GN	Rec No.:	GN-IR-5
Re:	Saline effluent waterline from Discovery deposit		

Request Made by Interested Party:

The GN - DOE requests the Proponent provide the following information:

- 1. Details regarding the design of the effluent pipeline to be built between the Discovery deposit and main mine site including its length; whether it will be above ground, buried or both (and proportions of each); the dimensions of any associated earthworks; the location of the pipeline relative to the approved effluent discharge pipeline along the AWAR; whether the pipeline will run alongside the approved discharge line (within the same underground structure) or in a separate structure on the opposite side of the road.*

Agnico Eagle’s Response to Request:

Agnico Eagle refers the reader to the response to SDFN/NDFN-IR-2 and KivIA-IR-9.

Interested Party:	GN	Rec No.:	GN-IR-6
Re:	Traffic levels on the All-Weather-Access-Road		

Request Made by Interested Party:

The GN -DOE requests the Proponent provide the following information:

- 1. Information regarding the proposed Project’s effects on AWAR traffic including levels (number and type of vehicles), seasonal pattern and duration (in years) of any changes induced by the proposal.*
- 2. Details of how predictions regarding traffic changes will be verified and reported.*

Agnico Eagle’s Response to Request:

Response 1)

Agnico Eagle is not proposing any changes to the level of traffic on the AWAR, nor any changes in the design of the AWAR.

Response 2)

Agnico Eagle records traffic use along the AWAR throughout each year and provides a comparison against FEIS predictions within its Annual Report. As outlined in Appendix 33 of the Meliadine 2021 Annual Report, traffic counts are reported by vehicle type, such as local ATVs, buses, pick-up trucks, etc.

Interested Party:	GN	Rec No.:	GN-IR-7
Re:	Monitoring of Archaeological Sites- Term and Condition #30		

Request Made by Interested Party:

- *Reference to the Annual Site Status Report should be included in: (1) FEIS Section 9.14.6 Monitoring and Follow up and; (2) FEIS Appendix D- Cultural and Heritage Resources Protection Plan.*
- *CH Term and Condition #30 should be included in Certificate 006.*

Agnico Eagle’s Response to Request:

It was a NIRB decision that GN-30 of the Joint Statement on Suggested Terms and Conditions respecting Nunavut Impact Review Board (NIRB) Final Hearing on Meliadine Gold Project, Nunavut Department of Justice File #7660-204, issued August 20, 2014 was not carried forward as a term and condition under Project Certificate No.006.

However regardless of the fact that it is not a NIRB requirement, Agnico Eagle has been submitting the Annual Site Status Report to the GN at the request of the Department of Culture and Heritage for the years which an archaeological permit is obtained and archaeological assessment and/or mitigation work is completed. Agnico Eagle will update the Cultural and Heritage Resources Protection Plan to include this commitment upon issuance of the Project Certificate Amendment. It is noted that this report will not be filed annually – it will only be updated in years there is a change. Therefore TC #30 should not be required.

CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA (CIRNAC)

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-1
Re:	Discovery Waterline		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Provide descriptions of the Discovery waterline infrastructure (physical characteristics, placement, alignment, operation, etc.).*
- b) *Provide an assessment of potential environmental interactions and impacts associated with the Discovery waterline.*

Agnico Eagle’s Response to Request:

Response a)

Agnico Eagle refers the reader to the response to SDFN/NDFN-IR-2 and KivIA-IR-9.

Response b)

For the most part, conveying water from the Discovery site to the Meliadine main site via a waterline does not have much impact on the environment. If a waterline was not in place, trucks would be required to move water from Discovery to the Meliadine main site; therefore, more trucks would be on the road. This means there would be more dust generated and more noise from the truck traffic. It also means more truck traffic that could interact with caribou, other wildlife, and people.

Construction and operation activities will stay within easements of roads, which have been previously assessed. A continuation of appropriate erosion and sediment control and mitigation measures deployed during the construction of the AWAR and bypass road, such as the use of appropriate equipment to minimize ground disturbance and regular road maintenance, will minimize potential effects during construction. Mitigation identified outlined in response to SDFN/NDFN-IR-2 and environmental design features will be in place to limit the number and size of spills that may result from the Discovery waterline.

Sensory disturbance has been previously assessed in the 2014 FEIS. Sensory disturbance from construction activities for the Discovery waterline are expected to be minor over a shorter construction period. The waterline construction is at a much smaller scale and over a shorter construction period than road construction activities for the Meliadine Mine. Agnico Eagle has committed to stop work if caribou are migrating and to predominantly work outside key wildlife windows, including the caribou migration season and the breeding bird season. Effects are anticipated to be limited to the construction period for the use of trucks and other required construction equipment. Environmental design features and wildlife mitigation and monitoring per the TEMMP will be implemented to limit disturbances due to auditory, visual and/or olfactory cues, which is expected to result in minor changes to habitat quality.

An assessment of watercourse crossings and habitat characteristics along the Discovery Road has been previously assessed and provided in the 2014 FEIS. As the Discovery waterline will follow the same routing of the Discovery Road, Agnico Eagle remains committed to implement applicable DFO mitigation measures to protect fish and fish habitat. For crossings over streams with minimal potential to support fish, such as those where flows are not visible and where there are no defined bed and banks, the waterline will be carefully positioned on the tundra adjacent to the crossings to allow for unobstructed flows during spring freshet conditions, maintaining bank integrity and vegetation. Where culverts are required, the waterline will be placed above existing culverts. Fish movements will not be impeded during installation and operation of the waterline due to planned avoidance of installing the waterline below the high-water mark on fish-bearing or potentially fish-bearing streams. Heavy machinery will not be used within the high watermark of fish-bearing or potentially fish-bearing waterbodies and watercourses; operating machinery will be restricted to dry areas on land to extent possible. By incorporating mitigation measures combined with design measures to avoid effects to fish and fish habitat, the placement of the waterline does not pose any risk to fish movements on watercourses.

Transferring surface and saline contact water from the saline pond at Discovery to saline pond SP B7 at the Meliadine main site was included in the Meliadine Extension assessment. Surface and saline contact water managed at Discovery were included in the site wide water balance and water management strategy for Meliadine Extension. The water balance flow diagrams were provided in Appendix H-7 of the Application, and discussed in the water management strategy of the Water Management Plan (Appendix D-35 of the Application) and in the Adaptive Management Plan (Appendix D-1 of the Application).

Given the footprint of the location of the Discovery Road has been previously assessed, no additional impacts beyond those predicted in the 2014 FEIS are anticipated.

For additional details, Agnico Eagle refers the reader to the response to SDFN/NDFN-IR-2.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-2
Re:	In-pit Disposal		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Describe the in-pit disposal methods, general design parameters, operating practices and limitations;*
- b) *Describe the specific circumstances that would trigger the option to use in-pit disposal;*
- c) *Describe the evaluations that would be done prior to regulatory approval of in-pit disposal (e.g., updated site-specific hydrogeological and geochemical modelling, etc.);*
- d) *Describe expected closure approaches (e.g., water and/or granular covers); and*
- e) *Provide an assessment of potential environmental interactions and impacts associated with in-pit disposal.*

Agnico Eagle’s Response to Request:

Deposition of tailings and waste rock into pits has been presented as an alternative in the Meliadine Extension FEIS Addendum. It is expected that updates and refinements to selected studies will be further evaluated as part of the Type A Water Licence amendment with the NWB. Nonetheless, Agnico Eagle wishes to respond to CIRNAC-IR-2 as follows.

Response a)

As described in Section 2.5.1 of the Meliadine Extension FEIS Addendum, the proposed in-pit disposal method consists of in-pit slurry tailings deposition as an alternative to the dry stacking method currently employed, as well as placing waste rock in mined out (exhausted) pits. The methods and operating practices for in-pit deposition of tailings will be similar to the approved in-pit disposal at the Meadowbank Mine. This alternative will be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Response b)

As described in Section 2.5.1 of the Meliadine Extension FEIS Addendum, the use of in-pit disposal could be used to reduce overall freshwater consumption during closure reflooding within an area that has previously been impacted, and to reduce the surface area impacted by the project by reducing the footprint of the TSF and WRSFs. Specific management actions and mitigation measures to be taken with respect to in-pit disposal will be further evaluated in the Adaptive Management Plan as part of the Type A Water Licence Amendment.

Response c)

It is expected that through the Water Licence Amendment, there will be timing triggers, such as at least 6 months prior to discharge of tailings or waste rock to a mined-out pit additional studies (including hydrogeological model update, water balance and water quality model update) shall be submitted to the NWB.

Response d)

As described in Section 2.2 of the Meliadine Extension FEIS Addendum, and as per approved 2014 FEIS, the closure strategy will consist of re-flooding pits. The filling of open pits with water would extend until the end of the closure phase. Local runoff and precipitation will be stored in the pits to enhance reflooding activities. Active reflooding will be conducted with water to be pumped from Meliadine Lake. There will be no discharge into Meliadine Lake or to Itivia Harbour during this phase. Post-closure will be initiated when flooded pits are reconnected to the surrounding environment. For additional details regarding closure and post-closure, please refer to the Conceptual Closure and Reclamation Plan (Appendix D-18).

Response e)

Following direction from the NIRB to ECCC-IR-5, potential environmental interactions and impacts associated with in-pit disposal will be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-3
Re:	Temporary Storage of Saline and Surface Contact Water in Pits		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Describe the approaches that will be used to store contact water in pits including general design parameters, operating practices and limitations (e.g., volumes stored, storage duration, any required treatment, eventual discharge to the environment);*
- b) *Describe the specific circumstances that would trigger the option to store contact water in pits;*
- c) *Describe the evaluations that would be done prior to regulatory approval of in-pit storage of contact water (e.g., updated site-specific hydrogeological and geochemical modelling); and*
- d) *Provide an assessment of potential environmental interactions and impacts associated with storing contact water in pits.*

Agnico Eagle’s Response to Request:

Response a)

The alternative to temporarily store saline and surface contact water into pits will be further evaluated as part of the Type A Water Licence Amendment with the NWB. This alternative will be following the general design parameters and operating practices as described in Section 2.2.1 of Appendix D-35 – Water Management Plan, and Section 2.3 of Appendix A – Meliadine Groundwater Management Plan which is presented within Appendix D-35 for storage of saline water in TIR02 and builds on lessons learned at Meliadine.

Response b)

Tables 1 and 2 of the Adaptive Management Plan (Appendix D-1 of the Application) present the operation condition and adaptive management response for temporary storage of surface contact water in open pits and/or saline ponds.

Response c)

Prior to commencement of storing water within a pit, Agnico Eagle would submit a 60-days notice under Type A Water Licence 2AM-MEL1631, Part D, Items 1 and 2.

Response d)

The effects on the permafrost by temporarily storing contact water in Tiriganiaq Pit 2 was assessed by Tetra Tech in March 2021 and was provided as Exhibit 2 during the Water Licence Amendment Final Hearing (Tetra Tech 2021). In summary and depending on the water levels and timing assumed for water storage, temporarily storing water in a pit can degrade the permafrost below the water level and a talik may develop and propagate into submerged base and side slopes of the pit. Further potential

environmental interactions and impacts associated with temporary storage of contact and saline water will be evaluated as part of the Type A Water Licence Amendment with the NWB.

Reference:

Tetra Tech (2021). Assessment of Water Storage in Tiriganiaq II Open Pit, Meliadine Mine, Canada. March 28, 2021. Available at ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MEL1631%20Agnico/2%20ADMIN/4%20HEARINGS/2%20HEARING/210330%202AM-MEL1631%20Assessment%20of%20Water%20Storage%20TirilIPit%20Flooding_IFU-IMLE.pdf

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-4
Re:	Evolution of Project Changes		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Provide a tabular summary of all infrastructure that has been proposed or built at the Meliadine Mine since its inception, including the date it was approved, licensed, and constructed. At minimum, this should include all: pits, underground mining, mine waste storage facilities (tailings and waste rock), water management facilities (e.g., ponds, treatment plants, conveyance, discharge), transportation infrastructure and buildings. If a proposed piece of infrastructure was not built or is no longer required, please indicate why.*
- b) *Provide annotated figures (e.g., site maps) summarizing the information contained in a) that clearly illustrate existing infrastructure and proposed new infrastructure.*

Agnico Eagle’s Response to Request:

Response a)

Agnico Eagle appreciates the comments from CIRNAC, along with other reviewers, regarding clarity of the Meliadine Extension components.

Agnico Eagle notes that this NIRB application is for the windfarm and the alternatives are the airstrip and the open pit deposition. All other information is within the annual reports related the approved footprint related to NIRB 2014 and also the approved water licence with NWB. Additional discussions on water and waste will occur during the water licence process related to the Meliadine Extension.

Response b)

Agnico Eagle refers the reader to response provided in a).

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-5
Re:	Wind Power Generation		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Provide a copy of the Hatch report that evaluates potential GHG emissions reductions associated with wind turbines.*
- b) *Provide additional information regarding partnership with community or other group in the building and operation of windfarm.*

Agnico Eagle’s Response to Request:

Response a)

Agnico Eagle provided the NIRB the requested report in July as Appendix H-13 of the Application. This document can be found on the NIRB Registry Public Registry ID: 340919.

Response b)

In the Meliadine Extension FEIS Addendum, it was noted that Agnico Eagle could partner with the community or use internal resources to build and operate the windfarm. At this time, there have been no discussions for partnerships with the community or other groups; however, Agnico Eagle is open for any discussions in the future.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-6
Re:	Minimizing Discharges to Meliadine Lake		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Confirm the maximum discharge volumes to Meliadine Lake, as presented in the Waterline FEIS and the Meliadine Extension FEIS;*
- b) *Present the rationale for any differences in the volumes reported under a); and*
- c) *Indicate what steps will be taken to fulfill the commitment to minimize or eliminate discharges to Meliadine Lake (e.g., ongoing grouting to limit saline water inflows to the mine).*

Agnico Eagle’s Response to Request:

Response a)

Agnico Eagle refers the reader to response provide to KivIA-IR-10.

Response b)

Agnico Eagle would like to reiterate that the predicted discharges to Meliadine Lake for Meliadine Extension predictions are within the limits of the 2014 FEIS (2.7 Mm³) and represent an upper limit for the purposes of an Environmental Impact Assessment. The discrepancies between the Meliadine Extension FEIS Addendum and Waterline FEIS Addendum are due to a different life of mine, mine footprint and set of assumptions for the Water Balance, such as discharge window and climate considerations. However, as presented in Section 2.5.3 of the Meliadine Extension FEIS Addendum, Agnico Eagle continues to evaluate alternatives to meet Term and Condition 25a, per Project Certificate No.006 Amendment 002 which will be discussed in more detail during the Water Licence Amendment process with the NWB.

Response c)

Agnico Eagle appreciated the NIRB’s direction; however, Agnico Eagle feels this should be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-7
Re:	Total Dissolved Solids (TDS) Concentrations in CP1		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Confirm that future TDS concentrations in CP1 are now predicted to remain below 1,000 mg/L;*
- b) *Describe the factors that resulted in predicted TDS concentrations in CP1 reducing by more than 70% under the proposed Meliadine Extension.*

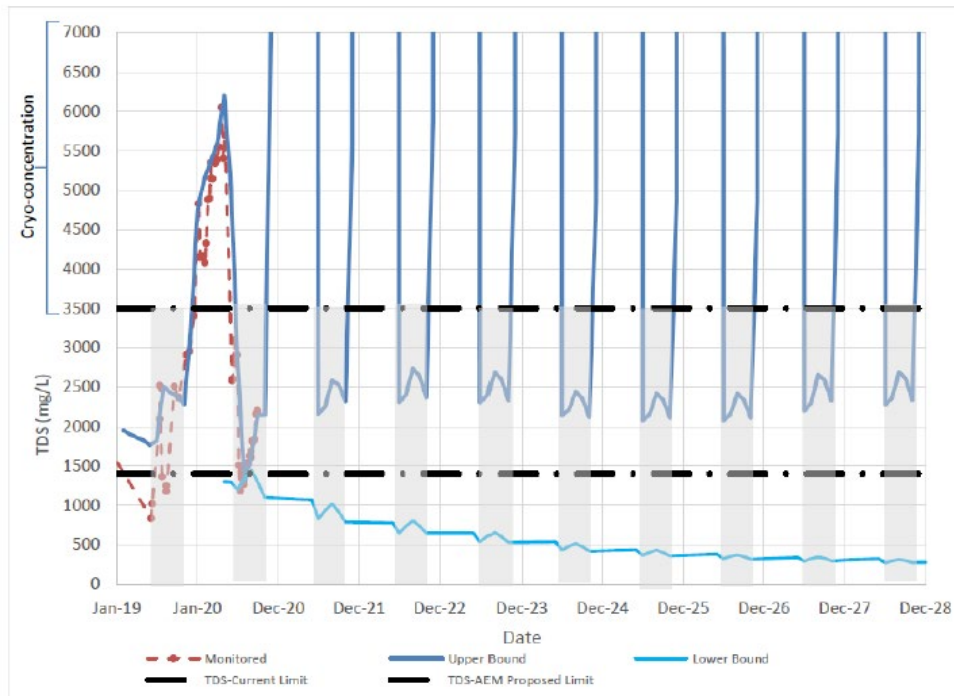
Agnico Eagle’s Response to Request:

Response a)

Figure 6-4 of Appendix H-7, shows that future predictions of TDS at CP1 will remain below 1,000 mg/L from 2027 onwards. The higher TDS concentrations predicted by a previous model iteration, as presented in the 2021 Annual Report, are due to a much smaller mine layout incorporated in the model based on existing mine operations.

To reflect the additional mine facilities planned for the Meliadine Extension, the updated WBWQM incorporates an expanded mine site layout, and includes annual changes to volume, area, and the characteristics of all mine infrastructure. Note that in both model iterations, CP1 collects surface contact water generated by the WRSFs, open pit walls, and other disturbed areas that are not related to underground mining operations. As such, the differences in TDS predictions at CP1 are not related to saline water management, but rather reflect the change in mine layout between existing and planned operations for Meliadine Extension. These results are consistent with the lower bound predictions of TDS concentration in CP1 presented in Figure 1 of response to the Water Licence Amendment Technical Response to KIA-WL-TC-2 (Agnico Eagle 2020) and shown below.

Figure 1. Monitored and Forecasted TDS Concentration in CP1



The lower bound and the upper bound set of predictions are expected to represent the range of conditions that could occur at the site. The models will be updated annually with the most recent data and will be used to guide daily operations at the site. Although TDS concentrations in the discharge are expected to be less than 3,500 mg/L during most times of the year, the proposed limit of 3,500 mg/L provides operational flexibility and avoids circumstances that would require future emergency amendment applications.

Response b)

Per NIRB’s direction, Agnico Eagle will address item b of this question during the technical review.

Reference:

Agnico Eagle. 2020. 2AM-MEL1631 Water Licence Amendment. Technical Comment Responses. Submitted to Nunavut Water Board. November 13, 2020.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-8
Re:	Post-Closure Arsenic Concentrations in SP B7		

Request Made by Interested Party:

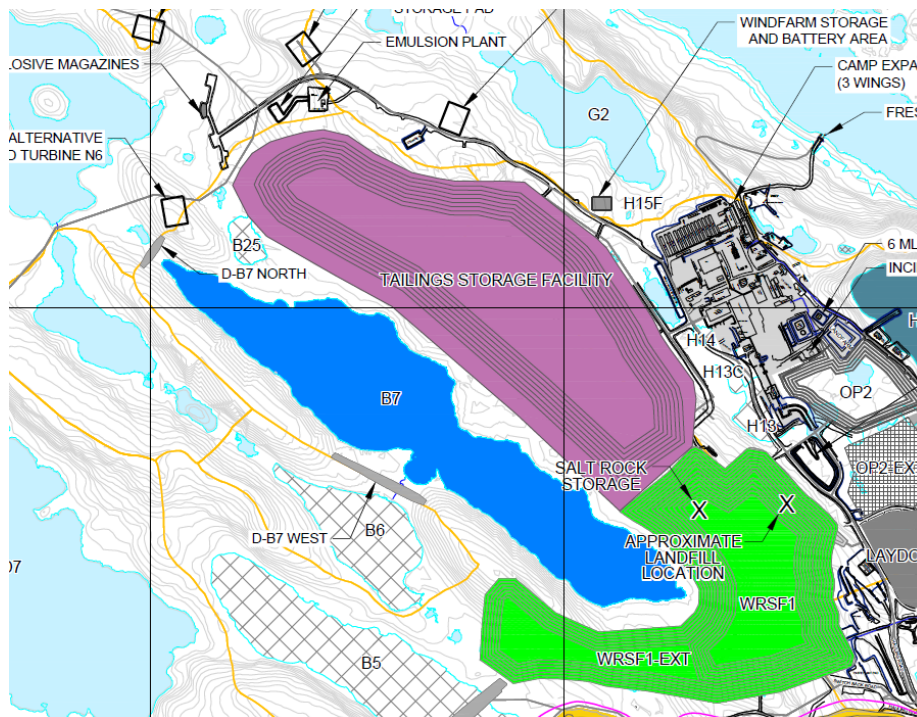
CIRNAC requests that AEM:

- a) Provide a figure illustrating the location of SP B7;
- b) Indicate whether aquatic species will have access to SP B7 during post-closure;
- c) Confirm that the predicted arsenic concentrations in SP B7 are spatially averaged and that localized concentrations may be higher;
- d) Indicate whether sensitivity analyses have been performed to confirm that arsenic concentrations in SP B7 during post-closure will not be substantively greater than currently predicted

Agnico Eagle’s Response to Request:

Response a)

The saline pond B7 (SP B7) is shown in Figure 1.1-4 of the Meliadine Extension FEIS Addendum, in the colour blue where it is labeled as B7. The image below provides a snapshot of Figure 1.1-4, focusing on the general location of SP B7.



Response b)

As described in the FEIS Addendum, Lake B7 will be listed in Schedule 2, if approved, modified into SP B7 and will no longer be a waterbody. Aquatic species will not have access to it.

Response c)

SP B7 was modelled as fully mixed, with no consideration for lake stratification or an initial dilution zone.

Response d)

An appropriately conservative model was developed for SP B7. The model was based on loadings associated with runoff from the TSF and WRSF1.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-9
Re:	Post-Closure Arsenic Concentrations in Tiri Pit Lake		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Extend the modelling duration until results demonstrate that maximum concentrations within surface water receivers have been achieved;*
- b) *Confirm that the predicted arsenic concentrations in the Tiri Pit Lake are spatially averaged and that localized concentrations may be higher (e.g., in the vicinity of drainage from SP B7);*
- c) *Indicate the approximate accuracy of the water quality modelling presented in the FEIS Addendum; and*
- d) *Indicate whether sensitivity analyses have been performed to confirm that arsenic concentrations in Tiri Pit Lake during post-closure will not be substantively greater than predicted.*

Agnico Eagle’s Response to Request:

Response a)

Agnico Eagle feels this should be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Response b)

All closure water quality results are provided by assuming complete mixing in pit lakes. No stratification or initial dilution zone considerations are incorporated into model predictions.

Response c)

The Meliadine Extension water quality model was developed to produce conservative predictions within the context of modelling objectives and the inherent uncertainties in any long-term modelling of environmental water quality. The Meliadine Extension WBWQM has the advantage of being supported by several years of site monitoring data, which are used to calibrate water balance and source term inputs which model predictions are based upon. Incorporating field scale operational monitoring data allows more accurate model predictions compared to green fields sites where predictions rely on laboratory testing and observations from other mine sites.

Response d)

Upper case arsenic predictions for the Post-Closure phase in Tiri Lake have not been completed. Maximum concentrations at this location (0.013 mg/L) do not approach the AEMP guideline (0.025 mg/L), making it unlikely that an upper-case sensitivity would result in an exceedance.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-10
Re:	Post-Closure Seepage Quality from Reclaimed Areas		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Confirm that post-closure water quality modelling presented in the FEIS Addendum assumes that metal loadings from reclaimed areas of the site will be equal to loadings from background areas; and*
- b) *Provide evidence from other mine sites that seepage from reclaimed areas will revert to background conditions*

Agnico Eagle’s Response to Request:

Response a)

The water quality model assumes that all ore stockpiles are removed and that mine facilities are reclaimed at the end of mine life. Mine reclamation activities are described in the Interim Closure and Reclamation Plan (SNC 2021). At closure, all buildings and structures will be decontaminated and dismantled. Cover material will be placed where required for erosion and dust control. The water quality model assumes that source terms for these areas reverts to background runoff concentrations in Post-Closure.

Response b)

This should be discussed during the Water Licence Amendment process with NWB.

Reference:

SNC (SNC Lavalin). 2021. Meliadine Interim Closure and Reclamation Plan – Update 2020. Final Report. Prepared for Agnico Eagle Mines Limited. April 7, 2021. Available at: ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MEL1631%20Agnico/3%20TECH/J%20A%20and%20R/ICRP/210922%20AM-MEL1631%20ICRP/210922%20AM-MEL1631%20674942-4000-4EER-0002_03_ICRP%202020%20Update_report%20only-IMLE.pdf

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-11
Re:	Interflow and Modelling Period		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Demonstrate that the temporal scope of all water quality modelling for the Extension Project extends past the point at which the WRSFs will reach their full field capacity.*

Agnico Eagle’s Response to Request:

The WRSFs reach a hydraulic steady state by approximately 2040. Both temperature and precipitation forecasts do not diverge notably before this time frame. Practically, a hydraulic ‘steady-state’ is indicated within numerical models when the total water volume within the modelled cross section reaches a value that changes only in response to annual climate variability and not due to wet-up as the waste reaches field capacity. In the case of the WRSFs, this time period is quite short as the waste rock has a very low field capacity due to its very coarse texture, while the formation of ice lenses near the boundary of the active zone further reduces the depth of material available for wet up. In the figure presented within the IR, the increase in seepage beyond 2040 is a direct result of an increase in annual precipitation over time.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-12
Re:	Discovery Tailings Management		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Indicate whether it has evaluated the advantages and disadvantages of alternative management approaches for the Discovery tailings with elevated ARD potential. If yes, please provide a summary of any such evaluations.*

Agnico Eagle’s Response to Request:

Ore from Open Pit and Underground mining at Discovery represents approximately 9.5% (6.18 Mt) of the mill throughput during the Life of Mine of Meliadine Extension. Basically, the Discovery ore will be blended with ore from the other deposits representing the remaining 90.5%. For Meliadine Extension it was assumed that tailings from Discovery will be placed in the dry stack TSF mixed with tailings from other deposits and prior to the placement of a thermal cover. Thermal and seepage analyses conducted for Meliadine Extension under climate change conditions indicate that the TSF will freezeback and that near-freezing temperatures and suboxic conditions that will develop within the cover system will substantially limit oxidation reactions, and therefore limit the solute load emanating from the tailings.

As presented in Section 2.5.1 of the Meliadine Extension FEIS Addendum, Agnico Eagle continues to evaluate alternatives for the management of tailings at site. The alternative of tailings in-pit deposition into pits will be further evaluated as part of the Type A Water Licence Amendment with the NWB. Agnico Eagle is approved for in-pit disposal at the Meadowbank Mine and has proven success with this method. As part of the Meadowbank in-pit tailings assessment, the Meadowbank Mine Dike Review Board supported the use of early in-pit tailings disposal as it has advantages with respect to health and safety, quality of life, water, air, capital cost, technology, natural hazards, and adaptability.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-13
Re:	Treatment of CP1 Water Prior to Discharge		

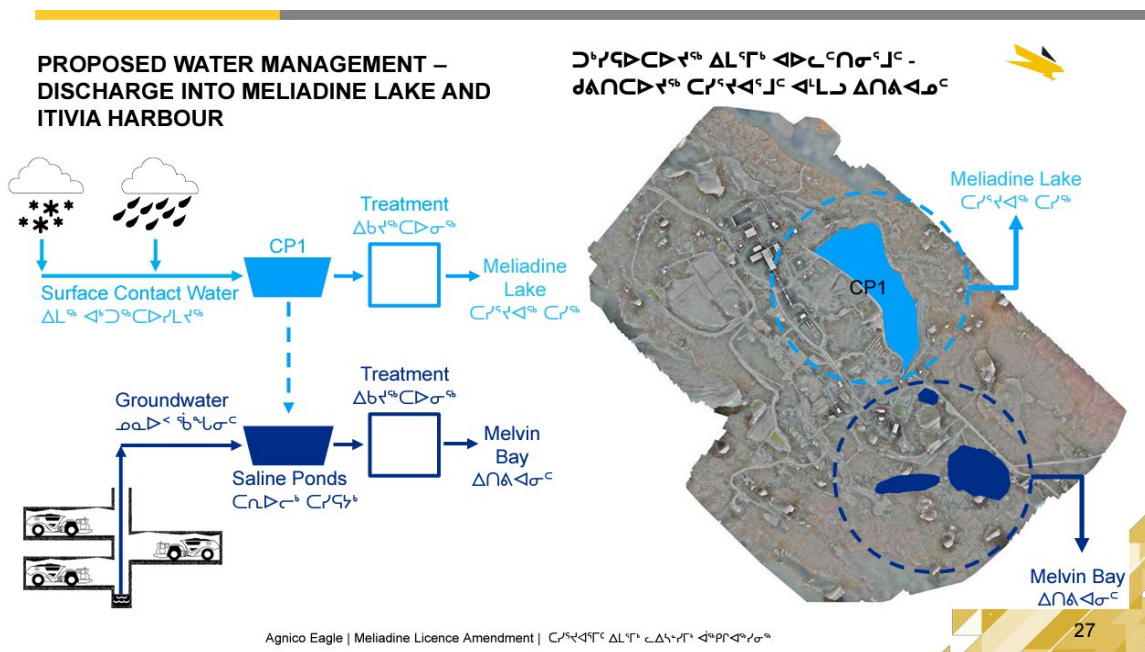
Request Made by Interested Party:

CIRNAC requests that AEM:

- a) Clarify whether all CP1 surface contact water will be treated before discharge to the environment.

Agnico Eagle’s Response to Request:

Yes all of the CP1 water will be treated based on the figure noted below. This water management strategy is consistent with what was proposed by Agnico Eagle during the Community Roundtable and Public Hearing for the Meliadine Mine Water Licence Amendment on March 30-31, 2021, and presented visually in the below image.



Reference: 2AM-MEL1631-Agnico Eagle WL Amendment - Public Hearing-EN and IU-Final presentation, slide 27 – March 30-31, 2021.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-14
Re:	Conceptual Socio-economic Closure Analysis		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Review its 2019 Analysis of the Risk of Temporary Mine Closure and make any necessary updates based on the current Meliadine Extension project proposal. Consideration should be directed toward relevant information requested under Section 8.2.1.1 and Section 8.2.1.2 of the NIRB’s EIS Guidelines.*

Agnico Eagle’s Response to Request:

Should Meliadine Extension be approved by NIRB, Agnico Eagle commits to update the 2019 Analysis of the Risk of Temporary Mine Closure (Term and Condition No. 90 of Project Certificate No.006) in the annual report to reflect updates based on the Meliadine Extension Application.

Interested Party:	CIRNAC	Rec No.:	CIRNAC-IR-15
Re:	Workforce Barriers Analysis		

Request Made by Interested Party:

CIRNAC requests that AEM:

- a) *Review its most recent Inuit Workforce Barriers Study and make any necessary updates based on the current Meliadine Extension project proposal. Consideration should be directed toward relevant information requests included in Section 8.2.3.2 of the NIRB’s EIS Guidelines;*
- b) *Make the Inuit Workforce Barriers Study available to the NIRB for consideration in the Meliadine Extension project proposal assessment, provided there are no privacy requirements; and*
- c) *Submit to the NIRB a plain language summary of its main findings, if the Inuit Workforce Barriers Study cannot be shared with the NIRB for privacy reasons.*

Agnico Eagle’s Response to Request:

Response a)

Via IIBA’s Employment and Culture Committee (ECC), Agnico Eagle is continuously working in collaboration with the KivIA on its Inuit Workforce Barriers Study (IWBS) and related recommendations. Current priorities are on removing and/or reducing Inuit barriers related to attracting and building the talent pool, recruitment and hiring, engagement and satisfaction, career development, workforce departure, and re-hiring process.

The intent of the IWBS is to identify strategies to improve the ability of Inuit to achieve their life goals through engagement in the workforce. This is accomplished by collecting data and talking to Inuit and others about the job search; job retention; and career progression. Insight into the factors that affect how work contributes to a good life are also sought. An understanding of barriers and factors for success is enhanced by consideration of the context in which workforce dynamics are played out. These include attributes and characteristics of individuals, families, communities, the workplace, and the local labour market.

The current focus of the strategy is on Inuit employment related to the Meliadine Mine and Kivalliq communities. Agreed priorities between Agnico Eagle and the KivIA target to answer the following performance objectives:

- Address the most important factors affecting Inuit employment success, including factors that affect the ability of employment to contribute to life goals.
- Quantify barriers to success, where possible, using data from other IIBA studies, obligations, and committee’s work.
- Address the roots of study identified barriers to achieve effective outcomes.

- Focus on strategies that can be initiated by Agnico Eagle and its partners.

Agnico Eagle and the KivlIA continue to work on most recent IWBS under Meliadine IIBA. In 2021, a new IWBS was planned to be delivered. In 2021 and 2022, both parties assessed 2018 IWBS and agreed to continue working on listed recommendations since they were still accurate to the Kivalliq labour market. A prioritization exercise was performed and parties established an action plan targeting impacts elimination and benefits creation to Inuit workforce. Based on action plan advancement, the ECC will determine the right time to perform a new IWBS. To ensure follow-up on IWBS action plan, updates are planned every year at first and third quarter.

Agnico Eagle can consider the items listed under CIRNAC's request, as outlined in the NIRB guidelines; however, Agnico Eagle and the KivlIA will determine future scopes of the study depending on factors such as Inuit workforce, life of mine status, and training needs at the time of the next IWBS.

Response b)

The Inuit Workforce Barriers Study is publicly available and was previously submitted to the NIRB as part of the Whale Tail Annual Report. However, for this Application, it has been included as Appendix IR-2 of this response package.

Response c)

Please see below a summary of the Inuit Workforce Barriers Study, as presented in the Agnico Eagle Kivalliq Project, 2019 Socio-Economic Monitoring Program Report and submitted as part of the 2019 Annual Report:

- There are challenges in attracting workers in a tight local labour market. The main attractors to working full time are financial and personal motivations; however, these attractors are challenged by factors such as earnings-based rent increases and the family impacts of a rotational work schedule. Findings from this study indicate that there is limited awareness of what mining work involves and what employment opportunities there may be.
- The recruitment and hiring processes currently in place at AEM may be creating unintended barriers for Inuit workers. For example, the lengthy Labour Pool process, a limited understanding of particular skills sought by AEM, as well as pragmatic challenges with the recruitment and application processes.
- Once employed, barriers to full Inuit engagement and job satisfaction include language barriers and a perception of cultural disconnect in the workplace.
- Skills gaps and cultural norms concerning career advancement can create barriers, meaning that Inuit employees may need more encouragement to apply for advancement, particularly for supervisory positions. The timeframes and steps required to advance from an entry-level position upward can also pose challenges.
- Turnover is high, including both resignations and dismissals. Some interviewees reported a tendency to resign instead of approaching supervisors or HR to problem-solve the issue that may be affecting availability.
- Confusion around the re-hiring process can result in unmet expectations. The length of time waiting for eligibility and progression on the labour pool list may result in losing out on job candidates who could have been re-hired after leaving for a variety of voluntary or involuntary reasons.

There are a number of strategies that AEM and KIA could consider to positively impact the Inuit workforce. These include:

- Enhancing communication to potential workers and community stakeholders to build greater awareness of employment opportunities and foster a 'new narrative' that is more consistent with today's realities of mining work.

- Addressing selected priority barriers that are the ‘critical pain points’ and root causes that add to costs and create stress for managers and workers. Based on the research findings, these would be absenteeism and lateness; preventable turnover and cultural disconnects in the workplace.
- Foster and capitalize on early successes and quick wins that signal change. Some of the recommended pragmatic actions are already under consideration or in progress, including onsite adult educator(s), increased use of Inuktitut in signage and written materials onsite, and creation of ‘clear language’ versions of company information.
- Develop pilots of innovative approaches that demonstrate recognition that ‘business as usual’ is not sufficient to meet the desired level of Inuit employment, and to show commitment and openness to meaningful change. Build on opportunities created by new mining operations at Meliadine and Amaruq such as implementing new rotation schedules, greater reliance on teams, enhanced pre-employment skills training, accelerated hiring and advancement, and time-limited job shadowing.” (Agnico Eagle Kivalliq Project, 2019 Socio-Economic Monitoring Program Report)

ENVIRONMENT AND CLIMATE CHANGE CANADA (ECCC)

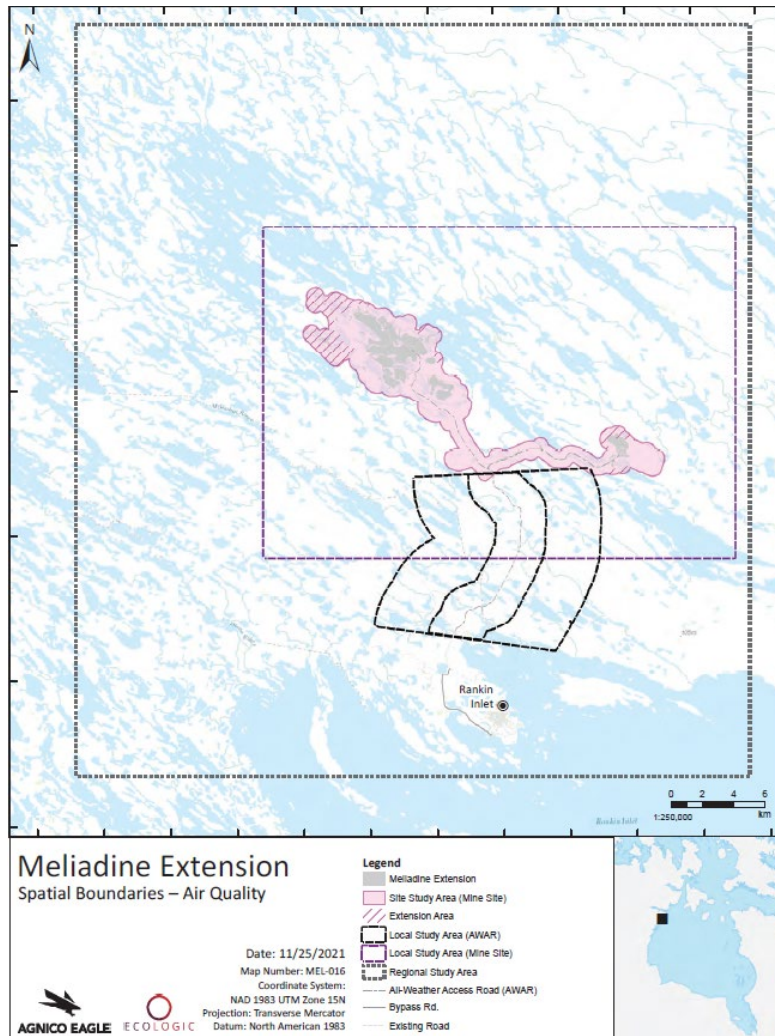
Interested Party:	ECCC	Rec No.:	ECCC-IR-1
Re:	Ambiguity in spatial boundaries for air quality		

Request Made by Interested Party:

ECCC recommends that the Proponent provide additional information to resolve the ambiguity in this figure.

Agnico Eagle’s Response to Request:

As outlined in the 2014 FEIS the AWAR LSA was defined as a band 3 km in width, extending 1.5 km either side of the travel surface of the roadway. As part of Meliadine Extension, outlined in Section 5.1.2.1 and Figure 5.1-1 of the Application, there was no change to the AWAR LSA. Figure 5.1-1 is provided below to facilitate the review.



Interested Party:	ECCC	Rec No.:	ECCC-IR-2
Re:	Inconsistency between text and Climate Data Table		

Request Made by Interested Party:

ECCC recommends that the Proponent resolve the inconsistency between the text and Table 5.3-1.

Agnico Eagle’s Response to Request:

Agnico Eagle thanks ECCC for pointing out this inconsistency between the text and the table. Please see below the updated text and table.

5.3.3.1 Temperature

The 39-years of modelled hourly temperature data are summarized monthly in Table 5.3-1 (Okane 2021). The coldest month, on average, over the period of 1981 through 2020, was January (-30.3°C), whereas July had the highest average temperature (10.8 °C). These trends are the same as observed in the 2014 FEIS. The average annual temperature in Rankin Inlet during this period is -10.4 °C which is the same as the average mean temperature reported in the 2014 FEIS (Volume 5, Table 5.4-4; Agnico Eagle 2014).

Table 5.3-1: Climate Data (Existing Conditions based on Meliadine/Rankin Inlet Weather Station 1981 to 2020)

Month	Average Maximum Temperature (°C)	Average Minimum Temperature (°C)	Average Temperature (°C)
January	-26.7	-33.9	-30.3
February	-26.4	-33.7	-30.1
March	-20.7	-29.2	-24.9
April	-11.4	-20.4	-15.9
May	-2.3	-8.9	-5.6
June	8.1	0.7	4.4
July	15.1	6.4	10.8
August	13.2	6.4	9.8
September	6.4	1.4	3.9
October	-1.8	-7.1	-4.5
November	-13	-20.7	-16.9
December	-21.7	-29.1	-25.3
Annual	-6.7	-14.0	-10.4

Interested Party:	ECCC	Rec No.:	ECCC-IR-3
Re:	Explanation of apparent discontinuity in snow data before and after 1960		

Request Made by Interested Party:

ECCC recommends that the Proponent add a plot of average wind speed for each snow season to Figure 5.3-1 to assess the possible influence, if any, of wind speed on accuracy of snowfall measurements.

Agnico Eagle’s Response to Request:

The precipitation (snow) data were collected at the Baker Lake A weather station. Environment Canada does not publish daily mean or monthly wind values, so the requested average wind speeds for each snow season would need to be processed from the hourly data, which is a long process, especially with inconsistent practices in the frequency of hourly reporting.

Spot checks of the early hourly wind data for Baker Lake A station, available online, found that the station operation varied in its early years. The online records begin in January 1953. At that time, three wind data readings are reported each day: at 00:00, 12:00, and 18:00. As shown in the [ECCC website](#). This continues for several years. A detailed assessment would have to be conducted to identify a transition day to other reporting intervals considering that the online data are displayed one day at a time.

Jumping forward to 1958, the wind data are reported every three hours: 00:00, 03:00, 06:00, 09:00, etc. This trend continues until [1962](#). Wind data are found to be reported on an hourly basis in 1963, and this assumed to continue for [subsequent records](#).

Although Agnico Eagle can retrieve and process the data to produce a winter season mean wind speeds, however, Agnico Eagle is of the opinion that the results won’t be conclusive because the dataset is non-homogeneous. An additional check would be needed to see what bias exists in computing daily average wind speeds from 3 per day versus every three hours versus hourly.

The data record shows that there was a change in the wind data collection protocols for periods before and after 1963. It would seem likely that the snow data collection protocols also changed or evolved. Agnico Eagle appreciates ECCC comment; however, is of the opinion that the requested exercise will not change the outcome of the assessment.

Interested Party:	ECCC	Rec No.:	ECCC-IR-4
Re:	Greenhouse Gases (GHG) Emission Estimate		

Request Made by Interested Party:

ECCC recommends the following information be provided in consultation with the Draft Technical Guide Related to the Strategic Assessment of Climate Change: Guidance on quantification of net GHG emissions, impact on carbon sinks, mitigation measures, net-zero plan and upstream GHG assessment (“the draft Technical Guide”):

GHG emission estimate:

1. *ECCC recommends that the Proponent confirm any change in project throughput / capacity as a result of the proposed expansion, and the associated change to GHG emissions, if applicable.*
2. *ECCC recommends that the Proponent provide more information on the GHG emission estimate, including methodologies, assumptions, emission factors, and equipment details.*
3. *ECCC recommends that the Proponent provide a GHG emission estimate for construction and decommissioning phases of the expansion.*
4. *ECCC recommends that the Proponent provides GHG emission reduction information on the wind turbines according to steps in Section 2.1.3. of the draft Technical Guide.*
5. *ECCC recommends the Proponent provide an emission intensity according to Section 2.1.5. of the draft Technical Guide*

Mitigation measures and net-zero plan:

6. *ECCC recommends that the Proponent review and incorporate the guidance for mitigation measure principles and the Best Available Technologies / Best Environmental Practices (BAT/BEP) determination process in Section 3 of the draft Technical Guide.*
7. *ECCC recommends that the Proponent develop a net-zero plan for the project according to section 3.5 of the draft Technical Guide.*

Carbon sinks:

8. *If the project is anticipated to impact carbon sinks, ECCC recommends the Proponent performs an assessment of the project’s impact on carbon sinks. Guidance for a carbon sink impact assessment can be found in section 4 of the draft Technical Guide.*

Agnico Eagle's Response to Request:

Response 1)

The upper milling rate is not expected to change from the current approved 8,500 tpd rate but will extend in time until the new proposed end of life of mine (LOM). As presented in Section 2.3.1 of the Meliadine Extension FEIS Addendum, the combined total tonnages of all deposits throughout the LOM for Meliadine Extension include:

- 65 Mt of ore (22.4 Mt open pit and 42.5 Mt underground)
- 191.6 Mt of waste rock (174.6 Mt open pit, 15.9 Mt underground, and 1.1 Mt saline WRSF)
- 34.6 Mt of overburden

In comparison, the 2014 FEIS included the following:

- 38 Mt of ore (27 Mt open pit and 11 Mt underground)
- 378.6 Mt of waste rock (373.3 open pit, 5.3 Mt underground)
- 57 Mt of overburden

The GHG calculations for Meliadine Extension considered the tonnages and extended LOM described above. The results showed that GHG emissions remained within the upper limit assessed under the 2014 FEIS.

Response 2)

The methodologies, assumptions, emission factors, and equipment details used to predict GHG emissions from Meliadine Extension were developed at a conceptual level and followed industry standards suitable for an Environmental Impact Assessment. The Analysis also used criteria from the *2020 Meliadine Output-Based Pricing System (OPBS) Annual Report On Emissions And Production* to account for actual greenhouse gas emissions data from the Meliadine site. Table ECCC-4-1 presents key metrics used to forecast GHG emissions for Meliadine Extension FEIS Addendum. Table ECCC-4-2 presents additional inputs and results of the conceptual GHG emissions model for Meliadine Extension.

Table ECCC-4-1: Key Metrics used to Forecast GHG Emissions for Meliadine Extension

Category	Proportion of total site emissions in 2020 (%)	Description	Unit	Value	Comment
Electricity Production Emissions	61	Meliadine Power Plant GHG Emission Factor	T CO ₂ e/GWh	663	Based on 2019-2020 OBPS Declaration
		Process Plant Throughput Versus Power Plant Electricity Production	GWh/Tonne	7.44x10 ⁻⁵	Based on 2019-2020 data. Assumption: site total electricity consumption is proportional to process plant throughput.
Stationary Combustion Emissions	8.8	Heating Intensity	T CO ₂ e/camp occupant	110	Based on 2019-2020 OBPS declaration. Assumption: heating requirements are proportional to camp occupancy.
On site transportation Emissions	28	Transport GHG Intensity	T CO ₂ e/tonne-km	0.00521	Based on 2019-2020 OBPS and NPRI declarations. Assumption: diesel consumption is proportional to quantity of material moved and distance travelled.
Refrigerant Emissions	0.1	Refrigerant Use Intensity	T CO ₂ e/camp occupant	0.118	Based on 2019-2020 OBPS declaration. Assumption: refrigerant requirements are proportional to camp occupancy.
Waste Emissions	1.7	Waste Incinerator Emissions Intensity	T CO ₂ /camp occupant	3.02	Based on 2019-2020 OBPS declaration. Assumption: waste generation is proportional to camp occupancy.
Blasting Emissions	0.3	Emulsion Intensity	T CO ₂ e/tonne	6.20x10 ⁻⁵	Based on 2019-2020 OBPS declaration. Assumption: emulsion requirement is proportional to total material moved (OP+UG, Ore and Waste Rock)

Reference: BBA 2021

Table ECCC-4-2: Conceptual GHG Emissions Estimate for Meliadine Extension

OBPS Metrics					
Parameter	Unit	2020	2030*	2034	2036
Meliadine Elec. Prod. GHG KPI	ton CO ₂ eq/GWh	663			
Meliadine Power Production	GWh/year	113			
Meliadine Gold Prod. GHG KPI	ton CO ₂ eq/kg Au	4.6			
Meliadine Gold Prod.	kg Au/year	9919			
Stationary combustion (heating)	ton CO ₂ eq/year	10900			
On site transportation	ton CO ₂ eq/year	35097			
Meliadine refrigerant emissions	ton CO ₂ eq/year	80			
Meliadine waste emissions	ton CO ₂ eq/year	2058			
Meliadine blasting emissions	ton CO ₂ eq/year	364			
Meadowbank Electricity Production. GHG KPI	ton CO ₂ eq/GWh	758			
MBK Power Production	GWh/year				
MBK Gold Production GHG KPI	ton CO ₂ eq/kg Au	17.4			
MBK Gold Production	kg Au/year				
EIA Reference Information					
Parameter	Unit	2020	2030*	2034	2036
Meliadine employee count**		680	905	905	905
GHG Emissions					
Electricity Production GHG Emission	ton CO ₂ eq/year	74,910	104,552	104,552	104,552
Stationary combustion (heating)	ton CO ₂ eq/year	10,900	14,507	14,507	14,507
On site transportation	ton CO ₂ eq/year	35,097	127,382	135,938	135,152
Refrigerant emissions	ton CO ₂ eq/year	80	106	106	106
Waste emissions	ton CO ₂ eq/year	2058	2,739	2,739	2,739
Blasting emissions	ton CO ₂ eq/year	364	960	910	926
2030 Estimated Total	ton CO ₂ eq/year	123,409	250,246	258,751	257,982
Estimate Agnico Eagle 2014 FEIS	ton CO ₂ eq/year		304,000		

* On December 12, 2015, Canada and 194 other countries reached the Paris Agreement, an ambitious and balanced agreement to fight climate change. At present, Canada has objectives for 2030.

** 2034-2036 Meliadine employee count increases assumed proportional to total material moved

Response 3)

The GHG calculation for Meliadine Extension was modelled for an upper bound emission taking into consideration the years of operation with peak material movement and mine development. It was assumed that lower GHG emissions would be observed during the closure and post-closure phases of the project and would remain below the upper limit that was assessed in the 2014 FEIS; therefore, they have been considered in the assessment.

Response 4)

Agnico Eagle refers ECCC to Section 4 of Appendix H-13 of the Meliadine Extension FEIS Addendum for details on the GHG emission reduction information on the wind turbines according to steps in Section 2.1.3 of the draft Technical Guide.

Response 5)

The conceptual GHG emission intensity calculated for Meliadine Extension are presented in Table ECCC-4-3. Agnico Eagle assumed a conservative gold production for these calculations (9,919 kg Au for 2020, and 11,674.8 kg Au for 2030, 2034 and 2036), and will optimize these assumptions when further details of the Meliadine Extension Royal Sensitivity Model is updated.

Table ECCC-4-3: Estimated GHG Intensity for Meliadine Extension

Description	Unit	GHG Intensity			
		2020	2030	2034	2036
Electricity Production	T CO ₂ /GWh	662.69	452.81	452.81	452.81
Gold Production	T CO ₂ /kg Au	4.89	12.48	13.21	13.21

Response 6)

Further to the direction from the NIRB, Agnico Eagle will address item 6 of this question during the technical review.

Response 7)

Further to the direction from the NIRB, Agnico Eagle will address item 7 of this question during the technical review.

Response 8)

Further to the direction from the NIRB, Agnico Eagle will address item 8 of this question during the technical review.

Interested Party:	ECCC	Rec No.:	ECCC-IR-5
Re:	Assessment of waste rock and tailings in-pit disposal		

Request Made by Interested Party:

ECCC recommends that the Proponent provide a comprehensive evaluation of the disposal of tailings and waste rock to mined-out pits, which examines the interactions with groundwater, effects on pit water quality and surface water quality, and considers any closure implications. This should include information on water cover depth, pore water quality, pit wall geometry and composition, tailings and rock geochemistry, and monitoring and mitigation measures.

Agnico Eagle's Response to Request:

Agnico Eagle appreciates the NIRB's direction provided; however, Agnico Eagle feels this should be further evaluated as part of the Type A Water Licence Amendment with the NWB. For additional information, refer to response to CIRNAC-IR-02.

Interested Party:	ECCC	Rec No.:	ECCC-IR-6
Re:	Clarification of Pathways Table		

Request Made by Interested Party:

ECCC recommends that additional information be provided to clarify the following:

1. *how treated sewage wastewater will be disposed of, as it is currently being sent to CP1 (Appendix D35 Water Management Plan, Section 2.8.2);*
2. *that the Proponent confirm that licence limits will be met at end-of-pipe, not edge-of-mixing zone;*
3. *the assessment of potential dust effects and mitigation measures for the airstrip; and*
4. *how the conclusions of the effects pathway assessment for pits would differ with disposal of waste rock and tailings to pits.*

Agnico Eagle’s Response to Request:

Response 1)

Agnico Eagle thanks ECCC for pointing out this inconsistency and confirms that, consistent with the approved project, and the Appendix D-35 Water Management Plan, Section 2.8.2 of the Meliadine Extension FEIS Addendum, wastewater from the accommodation complex and from satellite sewage tanks will be treated in the STP before being directed to CP1.

Response 2)

Agnico Eagle thanks ECCC for pointing out this typo and confirms that Agnico Eagle will follow regulations and Water Licence limits at the end-of-pipe.

Response 3)

Agnico Eagle refers the reader to the response provided in HC-IR-3 and HC-IR-5.

Response 4)

The effects pathways in the assessment for groundwater/hydrogeology and water quality (Table B-5 and Table B-6 of Appendix B-2 of the Meliadine Extension FEIS Addendum, respectively) included pit development and operations. More specifically, i) how large open pits may alter the thermal regime and produce open taliks where none existed before therefore altering the regional groundwater flow directions; ii) removal of saline effluent inflows during pit development to the local watersheds; and iii) the release of pit water inflows to local watersheds that may affect water and sediment quality in local watersheds. All of these pathways were considered minor and could be mitigated with appropriate mitigation measures and environment design features presented in Table B-5 and Table B-6.

Deposition of tailings and waste rock into pits has been presented as an alternative in the Meliadine Extension FEIS Addendum. It is expected that updates and refinements to selected studies (e.g., water

balance and water quality modelling) will be further evaluated as part of the Type A Water Licence Amendment. However, further studies will not change the conclusion of the assessment as the main criteria to decide which pits would be suitable for tailings or waste rock was based on the connectivity between the open pit and underground.

Interested Party:	ECCC	Rec No.:	ECCC-IR-7
Re:	Mill Process Water – Water Balance		

Request Made by Interested Party:

ECCC recommends additional information be provided to clarify the fate and quality of mill process water in the context of contributions to the water quality model and overall water balance.

Agnico Eagle’s Response to Request:

Mill tailings will be dewatered by a filter press prior to discharge. The filter press water is re-circulated within the mill to minimize makeup water demands. The filter press tailings are released from the mill as a stackable product with approximately 15% water content, which represents the only release of process water from the mill circuit. The dewatered tailings will either be stacked on the TSF or used as cemented backfill in the Tiriganiaq underground.

Process water contained in dry stack tailings will be either retained within TSF by water holding capacity of tailings, frozen in place through permafrost aggradation, or rinsed by interflow and runoff. The relative contribution of TSF interflow and runoff to the water balance has been estimated through TSF water balance and thermal modelling which is incorporated into the water quality model (Appendix H-7 of the Meliadine Extension FEIS Addendum) and source term development (Appendix G-6 of the Meliadine Extension FEIS Addendum). Process water contained in cemented backfill will either be consumed by the cement curing process or released as bleed water in the mine underground. The geochemical loadings associated with process water are captured by the Tiriganiaq Underground and TSF source terms, as presented in Section 8.4 and Section 8.6 of Appendix G-6.

Interested Party:	ECCC	Rec No.:	ECCC-IR-8
Re:	Climate Change Modelling		

Request Made by Interested Party:

Given the potential sensitivity of the proposed project to future climate change, ECCC requests that AEM provide additional rationale as to why a range of climate change scenarios were not considered for the Meliadine Extension project and identify any risks associated with limiting climate change RCPs to a more moderate prediction.

Agnico Eagle’s Response to Request:

An ensemble approach to climate change projections, including review of as many models and climate scenarios as possible, was completed by Agnico Eagle as part of the 2014 FEIS. Subsequently RCP4.5 was determined to be reasonably conservative and was selected and approved for use in design of infrastructure for the existing water licence application at Meliadine (Tailings Storage Facility (TSF) Design Report and Drawings, submitted as part of Water Licence 2AM-MEL1631, Part D, Item 1 [Agnico Eagle 2018]). RCP4.5 was therefore selected and presented as a base case for design within the current application.

Reference:

Agnico Eagle (Agnico Eagle Mines Limited). 2018. Tailings Storage Facility (TSF) Design Report and Drawings. Reference 6515-583-163-REP-001. 30-day Notice to Nunavut Water Board in Accordance with Water Licence 2AM-MEL1631, Part D, Item 1. November 2018. Available at: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MEL1631%20Agnico/3%20TECH/D%20CONSTRUCTION/Tailings%20Storage%20Facility/>

Interested Party:	ECCC	Rec No.:	ECCC-IR-9
Re:	Migratory Bird Pathways of Effect – Proposed Airstrip		

Request Made by Interested Party:

ECCC considers the airstrip to be a novel disturbance within the Project and Local Study Areas and requests the Proponent include the optional airstrip as a new pathway of effect to migratory birds and their habitat.

Agnico Eagle’s Response to Request:

The proposed airstrip represents a change in location from Rankin Inlet to the Meliadine site and was identified as a linkage between Meliadine Extension components or activities and corresponding potential residual effects (Section 4.5.1 of the Meliadine Extension FEIS Addendum). As noted in Section 4.4.1 of the Meliadine Extension FEIS Addendum, the local study area boundary was increased to accommodate this and other proposed changes of the Meliadine Extension Amendment. The same pathways of effects that were assessed in the 2014 FEIS were also assessed for the Meliadine Extension (Table 6.7-4 of the Meliadine Extension FEIS Addendum). The residual effects associated with the new proposed airstrip location at the Meliadine site were considered under the following primary pathways:

- Direct loss and fragmentation of bird habitat from the Meliadine Extension footprint (Section 6.7.4.1 of the Meliadine Extension FEIS Addendum).
- Permanent changes in bird habitat following closure of the mine site and supporting infrastructure (Section 6.7.4.2 of the Meliadine Extension FEIS Addendum).
- Sensory disturbance can change the amount of different quality habitats and alter bird movement and behaviour (distribution) (Section 6.7.4.3 of the Meliadine Extension FEIS Addendum).

Bird collision with aircrafts was considered a minor pathway and not assessed further (Appendix B-2, Table B-3 of the Meliadine Extension FEIS Addendum). Although the airstrip location has changed relative to the 2014 FEIS, the flight volume is anticipated to be the same as specified in the 2014 FEIS for the Rankin Inlet airstrip (4-6 flights per week). Therefore, bird collision risk with aircrafts is also anticipated to be similar, since no large concentrations of waterbirds are known to occur near either airstrip location based on available existing information.

Interested Party:	ECCC	Rec No.:	ECCC-IR-10
Re:	Local Study Area		

Request Made by Interested Party:

Due to the risk of compounding or additive adverse effects to migratory birds from the airstrip and wind farm, ECCC requests:

1. *The LSA be expanded around the windfarm and airstrip to encompass the area between and around the two sites. The Proponent should consider ECCC’s recommended buffer for aircraft disturbances in establishing a new buffer around the two sites and provide rationale on the new buffers.*
2. *The Proponent conduct an assessment of the interactions between the airstrip and the wind farm, identify any compounding adverse effects from these two sites.*

ECCC requests that this information be used to identify mitigation, monitoring and follow-up measures.

Agnico Eagle’s Response to Request:

Response 1)

The local study area was expanded from the 2014 FEIS to include the windfarm and airstrip location. The local study area boundary used a 500 m buffer to maximize predicted local residual effects by the Meliadine Extension (Section 4.4.1 of the Meliadine Extension FEIS Addendum). ECCC recommends avoiding known concentrations of birds (e.g., staging and molting areas) by a lateral distance of 1.5 km. Having a local study area that uses a 1.5 km buffer around the airstrip and windfarm would not change the assessment’s significance conclusions for primary pathways because they were assessed at the regional study area scale (i.e., the assessment endpoint is the abundance and distribution of the regional bird population). Residual effects occurring beyond the current local study area boundary would be assessed and classified as regional in geographic extent.

Response 2)

An interaction between the airstrip and the windfarm could occur if waterfowl on waterbodies near and around the airstrip are startled during low-level flights (i.e., take-offs and landings) and flushed in the direction of the windfarm, potentially exposing them to collision risk with wind turbines. However, the likelihood of mortality risk would be a function of the presence of congregated birds, a flight causing these birds to flush, and the birds travelling in the direction and distance of the windfarm and colliding with the turbines. All of these conditions must occur at approximately the same time in order for mortality events in this scenario. Considering that there are no known migratory bird staging or molting locations in the RSA and that there will only be 4 to 6 flights per week, this scenario is anticipated to occur infrequently. As an effect pathway, this interaction is expected to result in a minor risk to bird injuries/mortality (i.e., resulting in a negligible residual effect) and would not be carried forward through the effects assessment.

Furthermore, the effect pathway for bird collision with wind turbines (Section 6.7.4.4 of the Meliadine Extension FEIS Addendum) used mortality rates from across Canada and the US reported in scientific literature to estimate change in bird abundance. Using this approach, a potential interaction between the windfarm and airstrip would not change the residual impact classification. As described in Section 6.7.4.4 of the Meliadine Extension FEIS Addendum, the resulting bird mortality estimates are considered conservative because mortality rates reported in scientific literature are likely greater than what would occur at the Meliadine Extension based on monitoring results at Diavik mine windfarm, observed flight heights during avian use surveys conducted at the Mine, and no known migratory bird staging areas in the RSA.

Mitigation to reduce collision risk between birds and wind turbines includes (Section 6.7.5.4 of the Meliadine Extension FEIS Addendum):

- Pre-construction avian use surveys have informed the placement of wind turbines based on potential mortality risk to birds.
- Turbine blade height (i.e., rotor swept area) will be above average flight height of birds observed during the June 2018 avian use surveys (Golder 2018b).
- Use of flashing red aircraft obstruction warning lights to reduce attraction and collision of nocturnally migrating bird (Rebke et al. 2019; Kerlinger et al. 2010).

References:

Golder. 2018b. Proposed Meliadine Windfarm – Terrestrial Baseline Report. Prepared for Agnico Eagle Mines Ltd. Prepared by Golder Associates Ltd. Doc715-18102671. 5 pp. + appendices.

Kerlinger P, Gehring JL, Erickson WP, Curry R, Jain A, Guarnaccia J. 2010. Night migrant fatalities and obstruction lighting at wind turbines in North America. *Wilson Journal of Ornithology*, 122: 744-754.

Rebke M, Dierschke V, Weiner CN, Aumüller R, Hill K, Hill R. 2019. Attraction of nocturnally migrating birds to artificial light: the influence of colour, intensity and blinking mode under different cloud cover conditions. *Biological Conservation*. 233:220-227.

Interested Party:	ECCC	Rec No.:	ECCC-IR-11
Re:	Bird Baseline		

Request Made by Interested Party:

To address gaps in the baseline assessment, ECCC requests that the Proponent conduct additional pre-construction surveys consistent with ECCC’s *Wind Turbines and Birds: A Guidance Document For Environmental Assessments and the Recommended Protocols for Monitoring Impacts of Wind Turbines on birds*.

In particular, ECCC requests:

1. Point count surveys be expanded to cover the entirety of the wind farm footprint
2. Surveys be conducted outside the nesting season, which includes spring and fall migration
3. PRISM-style surveys be conducted in the vicinity of the wind farm and airstrip to increase detection of species not well captured by traditional point counts

ECCC requests that this information be used to identify mitigation, monitoring and follow-up measures.

Agnico Eagle’s Response to Request:

It is acknowledged there may be some minor gaps in the information collected during baseline studies (e.g., surveys during spring and fall migration). However, to address key uncertainties associated with the bird collisions with wind turbines effect pathway, the proposed mitigation, monitoring, and follow-up measures for the Meliadine Extension correspond to projects with a high level of concern (i.e., Category 4) as described in the *Wind Turbines and Birds: A Guidance Document for Environmental Assessment* (ECCC 2007), even though the actual level of concern for the Meliadine Extension is likely much lower (i.e., Category 1 or 2).

As described in Section 6.7.8 of the Meliadine Extension FEIS Addendum and Section 5.3 of the Windfarm Management Plan (Appendix D-36 of the Meliadine Extension FEIS Addendum), a bird mortality monitoring program will be implemented at the windfarm to test impact predictions by quantifying the number of bird collisions and species composition. The bird collision monitoring program will consist of weekly carcass searches around wind turbines from June 15 to August 15 during the first three years of operation, as well as searcher efficiency and scavenger removal trials to estimate the proportion of carcasses that may go undetected. Monitoring results will inform the adequacy of proposed mitigation.

Based on the conservative approach to the assessment of potential residual effects as described in Section 6.7.4.4 of the Meliadine Extension FEIS Addendum, and rigorous proposed monitoring program, additional baseline studies are not anticipated to change the outcome of the effects assessment or proposed mitigation and monitoring measures.

Interested Party:	ECCC	Rec No.:	ECCC-IR-12
Re:	Meteorological Data		

Request Made by Interested Party:

ECCC requests the Proponent provide site-specific meteorological information, including the number of days with fog or low visibility. ECCC requests that this information be used to inform the assessment of effects of the wind farm on migratory birds and to identify mitigation and monitoring measures and follow up.

Agnico Eagle’s Response to Request:

Site specific meteorological data are presented in Section 5.3 of the Meliadine Extension FEIS Addendum; however, data on the number of days with fog or low visibility are not available. According to available data, winds at the Meliadine site are moderate to strong, with mean monthly wind speeds typically between 19 km/hr (5 m/s) and 29 km/hr (8 m/s), with an average of 22.3 km/hr (6.2 m/s) (Meliadine Extension FEIS Addendum, Section 5.3). The occurrence of stronger monthly wind suggests that days with fog may be infrequent at the Meliadine site.

The effect pathway for bird collision with wind turbines (Section 6.7.4.4 of the Meliadine Extension FEIS Addendum) used mortality rates from across Canada and the US reported in scientific literature to estimate change in bird abundance. Using this approach, meteorological data from the site (i.e., days with low visibility) would not change the residual impact classification. As described in Section 6.7.4.4 of the Meliadine Extension FEIS Addendum, the resulting bird mortality estimates are considered conservative because mortality rates reported in scientific literature are likely greater than what would occur at the Meliadine Extension based on monitoring results at Diavik mine windfarm, observed flight heights during avian use surveys conducted at the Project, and no known migratory bird staging areas in the RSA. These studies commonly present mortality rates as the average number of birds killed per turbine per year (e.g., Zimmerling et al. 2013) and correspond to projects at more southerly latitudes where bird abundance is greater than at the Project site for much of the year (e.g., late fall, winter, and early spring) when many species of migratory birds are absent from northern Nunavut.

The Meliadine Extension is predicted to decrease abundance of waterbirds and upland birds by <1% in the RSA relative to Approved Project case, as a result of mortality from collisions with wind turbines (Meliadine Extension FEIS Addendum, Section 6.7.5.4). While this is believed to be a conservative assessment, even if mortality rates were underestimated due to the presence of low-visibility conditions, this may increase the magnitude of the residual effect to low (i.e., 1 to 10% change from the Meliadine Extension relative to 2014 FEIS value), but would not change the other residual impact criteria (i.e., geographic extent, duration, likelihood).

As stated in Section 6.7.5.4 of the Meliadine Extension FEIS Addendum, species composition data suggest that <0.2% of the Canadian population of any bird species is currently affected by mortality or

displacement from wind turbine development (Zimmerling et al. 2013). Desholm (2009) concluded that from a demographic point of view, passerines (i.e., songbirds) are relatively insensitive to windfarm-related adult mortality. Therefore, the conclusions of the assessment would not change because an increase in the magnitude of incremental changes to bird mortality from negligible to low would not decrease the resilience and increase risk to bird population maintenance and opportunities for traditional and non-traditional use.

Interested Party:	ECCC	Rec No.:	ECCC-IR-13
Re:	References		

Request Made by Interested Party:

ECCC requests that the Proponent provide the Golder (2018b) report for review.

Agnico Eagle's Response to Request:

Agnico Eagle has provided this report as Appendix IR-1 to this response package.

FISHERIES AND OCEANS CANADA (DFO)

Interested Party:	DFO	Rec No.:	DFO-IR-1
Re:	Scope of the reconsideration		

Request Made by Interested Party:

With respect to the disposition of this issue, DFO would like the NIRB to provide clarity on the scope of the Reconsideration.

Agnico Eagle’s Response to Request:

While this is a question to NIRB, Agnico Eagle has provided some additional information.

The scope of the review of the reconsideration is limited to only those components that are new and have been added since the 2014 FEIS assessment. The NIRB is not re-assessing 2014 components. Whether or not the component has been built is not relevant to the scope of the 2022 assessment.

As noted in Section 2.1 of the Meliadine Extension FEIS Addendum, Agnico Eagle considers the following activities included in the Meliadine Extension Reconsideration that are relevant to the issuance of a new or amended *Fisheries Act* Authorization and/or Schedule 2:

- underground mining and associated saline water management infrastructures at the Pump, F Zone, and Discovery deposits that were previously assessed and approved for open pit mining activities by NIRB;
- development of a new portal and associated infrastructures in the Tiriganiaq-Wolf area to improve access to and expand the existing Tiriganiaq underground mine; and
- extension of the operation phase (LOM) by 11 years to 2043.

The Meliadine Extension Reconsideration NIRB process will provide DFO with consultation opportunities to discharge the duty to consult.

As noted above, certain components of the Meliadine Extension Reconsideration were previously approved in 2014 as part of the NIRB process but have not yet been built. For those components, the 2014 NIRB Meliadine approval process already provided DFO with consultation opportunities to discharge the duty to consult.

Interested Party:	DFO	Rec No.:	DFO-IR-2
Re:	Scope / Completed vs proposed works		

Request Made by Interested Party:

Please prepare and categorize a table into works that have already been constructed, works that were proposed in the 2014 FEIS but have not been constructed, and proposed works that are changes to what was approved in the 2014 FEIS.

Agnico Eagle’s Response to Request:

Following direction from the NIRB, this response is limited to clarification on project components within the current proposal and how they relate to the approved project. Revisiting how data is represented or additional assessment is deferred to the technical review, and an exhaustive list of infrastructure is deferred to monitoring activities.

Agnico Eagle considers that there are few new activities or infrastructure beyond that assessed through the 2014 FEIS with the potential to influence fish and fish habitat. In the current proposal, the following activities with the potential to influence fish and fish habitat include:

- saline water management infrastructures (from underground mining) at the Pump, F Zone, and Discovery deposits;
 - Pump: Sump P4, Sump P5
 - F Zone: Pond CP10
 - Discovery: CP11
- development of a new portal and associated infrastructures in the Tiriganiaq-Wolf area; and
- extension of the operation phase (LOM) by 11 years to 2043.

These project components were highlighted on Figures 1.1-3, 1.1-4, and 1.1-5 from the current proposal.

In the 2014 FEIS (Section 7.1.3), effects to fish and fish habitat were evaluated for the local study area and the regional study area. As noted in the Meliadine Extension FEIS Addendum (Table 4.4-1, Section 7.1.3, Figure 7.1-4, and Figure 7.1-5) these areas have not changed.

Interested Party:	DFO	Rec No.:	DFO-IR-3
Re:	Existing work and permits affecting Fish and Fish Habitat		

Request Made by Interested Party:

Please provide a table that lists all of the work that was completed during Phase 1 on Meliadine Mine site that had the potential to impact waters frequented by fish.

Agnico Eagle’s Response to Request:

Work completed during Phase 1 Meliadine Mine is not part of the Meliadine Extension assessment. Please refer to CIRNAC-IR-4.

Information on work completed under Fisheries Authorizations to date has been reported to DFO previously in accordance with the issued approvals.

Interested Party:	DFO	Rec No.:	DFO-IR-4
Re:			

Request Made by Interested Party:

Please amend the table (Table 2.3-1) to include waterbodies downstream of works that will be subject to changes in flow from proposed mine activities.

Agnico Eagle’s Response to Request:

The list of waterbodies that may be affected by the direct footprint Meliadine Extension were included in Table 2.3-1 of the Meliadine Extension FEIS Addendum and in Table 2.2-2 of the Conceptual Fish Offsetting Plan (Appendix D-26) and an updated comprehensive table is provided in Appendix IR-3. Waterbodies downstream of the full Meliadine Extension footprint, by sub-watershed, that may be affected through changes in downstream flows, include:

- Main Site
 - Sub-watershed A
 - Lake A1
 - Sub-watershed B
 - Lake B45, Lake B46, Lake B1
 - Sub-watershed J
 - Lake J1
- Discovery
 - Sub-watershed CH6
 - Lake CH6
 - Sub-watershed CH
 - Pond CH5, Lake CH1- CH4.
 - Meliadine
 - Lake W1

As noted in response to DFO-IR-2, effects to fish and fish habitat were evaluated for the local study area (which included these sub-watersheds and waterbodies downstream of the direct footprint area) and the regional study area. As noted in the Meliadine Extension FEIS Addendum (Table 4.4-1, Section 7.1.3, Figure 7.1-4, and Figure 7.1-5) these areas have not changed.

Interested Party:	DFO	Rec No.:	DFO-IR-5
Re:	Borrow Pits		

Request Made by Interested Party:

Please provide detailed maps of each borrow pit location as well as distance to waterbody (including seasonally inundated channels) and whether the waterbody is fish bearing or flows to a fish-bearing waterbody.

Agnico Eagle’s Response to Request:

Borrow pit locations were included in Figure 2.3-1 (page 37 of the Meliadine Extension FEIS Addendum). See response to KivIA-IR-13.

Environmental design features and mitigations with respect to the secondary pathway of drainage through quarries was described in the 2014 FEIS (Table 7.5-16) and the Meliadine Extension FEIS Addendum (Appendix B-02, Table B-7). Term and Condition 31 from the Meliadine Project Certificate requires “an appropriate setback distance between project quarries and fish-bearing or permanent water bodies as required to prevent acid rock drainage or metal leaching into such water bodies”. The Borrow Pits and Quarries Management Plan (Appendix D-8) describes selection, operations, and closure strategies for the borrow pits and quarries at the Meliadine Mine, plus management of activities near waterbodies or watercourses.

Interested Party:	DFO	Rec No.:	DFO-IR-6
Re:	Flow Change		

Request Made by Interested Party:

1. *Please provide a table of all the existing diversions and resultant changes to downstream flow and water level.*
 - a. *Include average flows (monthly and daily mean (m³/s)), how much flow is diverted/expected to be diverted, and where the flows are/will be diverted to.*
2. *Please identify how the future operations of Meliadine will affect connectivity between all of the lakes and ponds.*
3. *Please provide a table with changes of flow inputs and to and between waterbodies during and after mine operations, changes in water levels of ponds and lakes, as well as potential changes to flooded areas around the waterbodies.*
4. *Provide changes in flow expected during pit flooding, and how those changes will impact downstream waterbodies, including seasonal channels.*

Agnico Eagle’s Response to Request:

Response 1)

Changes in flows between waterbodies were modelled in detail for the 2014 FEIS as presented in Section 7.3.3, Appendix 7.3-A, Appendix 7.3-B, and Appendix 7.3-C of the 2014 FEIS. The activities for the Meliadine Extension will occur within the same sub-watersheds as described and modelled in the 2014 FEIS. Potential effects and residual effects for the Meliadine Extension are the same as those presented in the 2014 FEIS.

Response 2)

Future operations will affect connectivity between lakes and ponds as previously assessed in the 2014 FEIS and the Meliadine Extension FEIS Addendum. Within the footprint area, the identified lakes, ponds and watercourses will be dewatered and flows will be stopped. Flows outside of the footprint area will remain. At closure, and after pits and waterbodies have been reflooded, and water quality meets criteria, flows outside the footprint will be re-established.

Response 3)

See response to DFO-IR-6, Response 1.

Response 4)

For the base case, flooding of all pits would occur during active closure. Pit flooding was described in the Water Balance and Water Quality Model report (Appendix H-7 of the Meliadine Extension FEIS Addendum) and is summarized as: occurring over 7-years (2044-2050), consisting of all collected surface

contact water routed from CP1, gravity drainage from the catchments surrounding the pits, and supplementary flows pumped from Meliadine Lake. The same assumptions used in the model from 2014 (see Section 7.3.3, Appendix 7.3-A, Appendix 7.3-B, and Appendix 7.3-C of the 2014 FEIS) were carried forward in the updated model. These key assumptions included:

- Pumping of water from Meliadine Lake will take place at a constant rate from the start of June to the end of September each year.
- Pumping rates will be managed to minimize effects to Meliadine Lake and will ensure that the total annual discharge does not drop below the 10-year dry condition. In years during which Meliadine Lake discharges are forecast to naturally fall below the 10-year dry condition, no pumping will occur.

Interested Party:	DFO	Rec No.:	DFO-IR-7
Re:	Road Crossings		

Request Made by Interested Party:

Please provide an updated table of all the potential watercourse crossings (bridges and culverts) associated with the project as well as whether there are fish bearing waterbodies downstream and/or upstream of the crossing. The seasonal channels between fish bearing waterbodies are considered fish habitat. Include roads to Discovery, proposed windfarms, and the proposed airfield.

Agnico Eagle’s Response to Request:

Roads required for the Meliadine Extension were described in Section 2.3.9 of the Meliadine Extension FEIS Addendum:

- No changes are proposed to the AWAR and bypass road as approved under the 2014 FEIS. The AWAR and bypass road will continue to provide year-round access to the Meliadine Mine.
- There are no changes proposed to the access roads to Discovery, Pump, F Zone, and Wes-Wesmeg-North deposits. The Minister approved these roads through the Type A Water Licence Amendment (Agnico Eagle 2020).
- New access roads to the Tiriganiaq-Wolf mining area, airstrip, and to wind turbine locations will be constructed.
 - It is anticipated that two roads will be constructed to the Tiriganiaq-Wolf deposit, one to the north of Lake D7 and one to the south.
 - The road north of Lake D7 will have a few watercourse crossings (D6 to D22, and D6 to D5). For these few watercourse crossings, culverts will be required.
 - The access roads will be constructed using waste rock or aggregates from quarry and borrow pit sites, and top-dressed with esker, quarry material or crushed open pit waste rock (see Section 2.3.11 of the Meliadine Extension FEIS Addendum).

Agnico Eagle will adhere to the management practices outlined in the Roads Management Plan (Appendix D-30) and Terrestrial Environment Management and Monitoring Plan (TEMMP; Appendix D-34).

Reference:

Agnico Eagle. 2020. Meliadine Gold Mine – Type A Water Licence 2AM-MEL1631 Amendment. Submitted to Nunavut Water Board. August 2020

Interested Party:	DFO	Rec No.:	DFO-IR-8
Re:	Baseline Assessments		

Request Made by Interested Party:

Please provide a revised assessment on potential impacts to Fish and Fish Habitat including lower trophic level fish and new data collected on other fish population.

Agnico Eagle’s Response to Request:

Agnico Eagle has completed an assessment that is consistent with the EA methods used in the 2014 FEIS and the 2018 and 2020 FEIS Addenda, and in alignment with the Meliadine Project Guidance document (NIRB 2012, Public Registry ID 286775) including the VECs identified in the guidance document. In addition, the NIRB determined that the application conforms to the requirements as set out in the Nunavut Agreement, the NuPPAA, the EIS Guidelines, and the NIRB’s additional direction to the level which would enable the assessment to proceed (NIRB 2022).

Following direction from the NIRB, revised analyses are deferred to the technical review. Agnico Eagle is of the view that a thorough assessment on the effects to fish and fish habitat has been completed and that the remaining technical comments from DFO are best handled through the parallel process of the *Fisheries Act* Authorization.

References:

- NIRB. 2022. Conformity Determination for Agnico Eagle Mines Limited’s Final Environmental Impact Statement Addendum for the “Meliadine Extension” Project Proposal and Commencement of the NIRB’s Technical Review Period. Letter issued to Agnico Eagle. August 2022.
- NIRB. 2012. Guidelines for the Preparation of an Environmental Impact Statement for Agnico-Eagle Mines Ltd.’s Meliadine Project (NIRB File No. 11MN034). February 20, 2012.

Interested Party:	DFO	Rec No.:	DFO-IR-9
Re:	Duration of Residual Effects		

Request Made by Interested Party:

1. *Provide a rational and explanation for the definitions of Duration and revise the assessment to be based on the “duration” of the effect from the initiation of the work rather than the ability to be reversed at the end of construction and/or closure of the mine.*
2. *Revise the definitions of criteria in Table 4.5-1 and the assessment of the duration of Residual Effects in the FEIS Addendum based on environmental considerations rather than mine life.*
3. *Revise the FEIS Addendum to provide detailed statements of the duration of effects (in months/years from start of construction) to be included to support the determination of duration of the effects and significance.*

Agnico Eagle’s Response to Request:

Response 1)

Duration is one of the criteria used to evaluate residual effects and determine if the effect could lead to significant adverse effects. Duration was defined in Section 4.5.2 and Table 4.5-1 of the Meliadine Extension FEIS Addendum and has been applied to evaluate residual effects on the VEC and VSEC. In addition, and as noted in response to DFO-IR-8, Agnico Eagle has completed an assessment that is consistent with the EA methods used in the 2014 FEIS and the 2018 and 2020 FEIS Addenda. Changing the definition of “duration” of effect for fisheries and how it is applied to evaluate the fisheries VEC would then be inconsistent with the previous assessments and inconsistent with how effects were evaluated for the other VECs and VSECs.

Following direction from the NIRB, the need for revised analyses is deferred to the technical review. Agnico Eagle is of the view that a thorough assessment on the effects to fish and fish habitat has been completed using appropriate criteria to evaluate residual effects, and that a revision to the definition of “duration” of effects is not required. Further, the remaining technical comments from DFO are best handled through the parallel process of the *Fisheries Act* Authorization

Response 2)

See response to DFO-IR-9, Response 1.

Response 3)

See response to DFO-IR-9, Response 1.

Interested Party:	DFO	Rec No.:	DFO-IR-10
Re:	Fish and Fish Habitat		

Request Made by Interested Party:

- Please provide a completed table of every waterbody in the LSA, locations, years that the waterbody was sampled, sample method, and fish species captured or observed.*
- In the Addendum, Please provide an overall summary of Fish and Fish habitat, and potential for each watershed and each waterbody per watershed.*

Agnico Eagle’s Response to Request:

Following direction from the NIRB, the response to this IR is limited to providing clarification on project components that relate to the current project proposal.

Response 1)

The inventory of fishing effort by waterbodies and watercourses that could be affected by the Meliadine Extension were included in Section 4 and Table 4.1-1 of the Conceptual Fish Offsetting Plan (Appendix D-26 of the Meliadine Extension FEIS Addendum).

Response 2)

The inventory of waterbodies and watercourses that could be affected by the Meliadine Extension were included in Section 2.3, Tables 2.2-2 and 2.2-3, Figure 2.2-1, and Appendix D of the Conceptual Fish Offsetting Plan (Appendix D-26). Further breakdown of potential fish habitat loss by sub-watershed was provided in Table 7.1-1 of the Conceptual Fish Offsetting Plan (Appendix D-26).

Interested Party:	DFO	Rec No.:	DFO-IR-11
Re:	Fish and Fish Habitat		

Request Made by Interested Party:

1. *DFO requests clarity in the table - the table should identify the waterbody, the area (m²) of the natural waterbody, the work occurring that affects the waterbody, the size of physical impact (water level/flow change, size of infill, etc), and the fish observed in the waterbody.*
2. *DFO further requires lengths and descriptions (braided, diffuse, dimensions, seasonal, perennial, etc) of channels between all of the waterbodies and the change in flow/physical impact to those watercourses, including road crossings.*

Agnico Eagle’s Response to Request:

Response 1)

Tables 2.2-2 and 2.2-3 from the Conceptual Fish Offsetting Plan (Appendix D-26) provide an inventory of waterbodies and watercourses that could be potentially affected by the Meliadine Extension. In addition, this table includes the “effect of the Meliadine Extension” such as “water quantity (i.e., change in water quantity), and overprinted by pit. Total calculated potential losses were provided in Table 7.1-1 from the Conceptual Fish Offsetting Plan (Appendix D-26). While there is no change in the information that has been previously presented, a large and comprehensive table has been included to address this information request (Appendix IR-3).

Response 2)

Agnico Eagle refers the reader to response to DFO-IR-6 regarding assessment of changes in flows to watercourses/waterbodies, and response to DFO-IR-7 regarding new roads for the Meliadine Extension.

Characteristics of watercourses and fish habitat in the local study area was described in detail in the 2014 FEIS (Section 7.5.4.2.2). There is no change to this characterization for the Meliadine Extension since the local study area is the same.

Interested Party:	DFO	Rec No.:	DFO-IR-12
Re:	Fish and Fish Habitat		

Request Made by Interested Party:

1. *Please provide updates on fish and fish habitat assessments for all the lakes and channels that will be potentially impacted by the project. This should include multi-year data, data from spring and fall sampling events, and data based on sampling efforts that are suitable for potential and target species.*
2. *In addition, include a revised assessment of Section 7.5.3 with new fish distribution and habitat use by lifestage information.*
3. *In Section 7, please include a revised assessment of:*
 - a. *the potential for fish migrations into waterbodies in the LSA from Meliadine Lake,*
 - b. *an assessment of the value of small-bodied fish to the larger ecosystem, including as a food source.*
4. *Update Appendix D26, Table 2.2-1 to include all the potentially affected waterbodies.*

Agnico Eagle’s Response to Request:

Following direction from the NIRB, the response to this IR is limited to providing the information requested in item 4, and information related to items 1 to 3 is more appropriately addressed during the technical review. Agnico Eagle is of the view that a thorough assessment on the effects to fish and fish habitat has been completed and that the remaining technical comments from DFO are best handled through the parallel process of the *Fisheries Act* Authorization.

The Meliadine Mine was subject to the environmental and socio-economic impact assessment and permitting process established under the Nunavut Agreement. Following a Part 5 public review, Project Certificate No. 006 was issued. Included with this certificate was a number of terms and conditions, plus commitments, that were the result of the review process which included Nunavummiut, regulators (include ECCC and DFO), and the public. The effects of constructing, operating and closing a mine on the environment were duly considered. Following this, a Type A water licence was issued by the Nunavut Water Board for construction, operations, and closure of a mine, including deposition of waste. Construction of the mine started in 2016 and operations started in 2019.

In July 2022, Agnico Eagle submitted to the NIRB an application that focusses on refined open pit and underground mining. The footprint of the mine has been optimized through this application (i.e., refinement of the size of the pits and generation of waste rock).

Response 4)

The inventory of fishing effort by waterbodies and watercourses that could be affected by the Meliadine Extension were included in Section 4 and Table 4.1-1 of the Conceptual Fish Offsetting Plan (Appendix D-26 of the Meliadine Extension FEIS Addendum).

As described in response to DFO-IR-11, while this information has been previously provided, a large and comprehensive table has been included to address this information request (Appendix IR-3).

Interested Party:	DFO	Rec No.:	DFO-IR-13
Re:	Fish and Fish Habitat, Assessment of Effects		

Request Made by Interested Party:

Please provide an updated Table 7.5-1 that includes a revised assessment based on the results of the AEMP, findings of additional fish and fish habitat assessments, and information collected through past works such as dewatering the ponds around Tiriganiaq pits 1&2 in 2022.

Agnico Eagle’s Response to Request:

Section 7.5.2 of the Meliadine Extension FEIS Addendum provided a summary of existing conditions, including information gained from recent monitoring (including the AEMP). These data were used to consider the assessment of potential effects (Section 7.5.3). Table 7.5-1 of the Meliadine Extension FEIS Addendum is a complete table that includes all potential primary pathways that could affect fish and fish habitat and took into consideration the most recent monitoring data. No update or further analyses are required.

Interested Party:	DFO	Rec No.:	DFO-IR-14
Re:	Fish and Fish Habitat, Assessment of Effects		

Request Made by Interested Party:

Please identify how the increase in access from the AWAR as well as the proposed construction of boat launch facilities on Meliadine Lake may change the conclusion of the FEIS 2014 assessment.

Agnico Eagle’s Response to Request:

Following direction from the NIRB, this response is limited to clarification on project components within the current proposal.

The purpose of the effect pathway “Potential overexploitation of fish stocks due to improved road access can lead to changes in the abundance and distribution of fish” was to identify that with many non-local people in the vicinity of Meliadine, there is the potential for overexploitation of fish stocks. However, the key mitigation (as stated in Table 7.5-1 of the Meliadine Extension FEIS Addendum) is that “Mining staff will not be allowed to hunt or fish while on their work rotation. Agnico Eagle enforces no hunting, trapping, harvesting or fishing”. By using this mitigation, there will be no overexploitation of fish stocks and therefore no change to the conclusion of the 2014 FEIS.

The community boat launch at Meliadine Lake was discussed during the 2014 FEIS and resulted in Term and Condition 102:

- Prior to commencing construction of the Discovery spur road to pass Meliadine Lake, the Proponent shall provide to the NIRB, details regarding the design features for the Meliadine Lake community boat launch, including traffic turnoffs from the all-weather access road, relevant signage, parking areas, considerations for public safety around the boat launch, plans for garbage removal and treatment of other refuse including buildings and equipment which may be stored at the site, as well as plans to monitor and/or maintain the site, including frequency and timing. These details, once finalized, shall also be incorporated, as updates, to various mitigation, monitoring and/or management plans as applicable.

The Meliadine Extension does not change previous conclusions reached regarding the boat launch or the AWAR.

Interested Party:	DFO	Rec No.:	DFO-IR-15
Re:	Fish and Fish Habitat		

Request Made by Interested Party:

Please provide a summary of the potential for loss and what the results are with new knowledge incorporated, and how changes to known distribution of Arctic Char, Arctic Grayling spawning, Ninespine Stickleback, and other fish species presence has been accounted for.

Agnico Eagle’s Response to Request:

Following direction from the NIRB, this response is limited to providing additional clarification on the topic with updates to the assessment more appropriately addressed through technical review. Agnico Eagle is of the view that a thorough assessment on the effects to fish and fish habitat has been completed and that the remaining technical comments from DFO are best handled through the parallel process of the Fisheries Act Authorization

The potential for loss to fish habitat by the Meliadine Extension was described in the Meliadine Extension FEIS Addendum (Section 7.5 and Appendix D-26).

From the 2014 FEIS (Table 7.5-6), the fish species known to occur within the LSA included:

- Sportfish (large bodied fish)
 - Arctic char, Lake trout, Arctic grayling, Round whitefish, Cisco, and Burbot
- Non-sportfish (small bodied fish)
 - Slimy sculpin, Ninespine stickleback, and Threespine stickleback

From the pre-2014 surveys, Ninespine stickleback (71.1%) and Arctic grayling (15.9%) were the most commonly captured fish in the waterbodies and watercourses on the peninsula (sub-watersheds around the Meliadine Mine) (Table 7.5-13 of the 2014 FEIS). Fish surveys conducted since the 2014 FEIS corroborated the earlier findings (Section 4 of the Conceptual Offsetting Plan [Appendix D-26]); in addition, these surveys focussed more on the smaller waterbodies and watercourses of the peninsula where it was determined that Ninespine Stickleback were the most prevalent (95.6%) followed by Threespine Stickleback (2.3%), and Arctic Grayling (1.5%).

No new fish species were identified in the fish surveys conducted after 2014.

Inuit Qaujimagatuqangit, Traditional Knowledge, and Engagement regarding fish species and fishing effort confirmed that:

- Arctic Char are an important food species for the residents of Rankin Inlet.
- Women did and still do most of the fishing in the communities.
- Community members used to walk from Rankin Inlet to the area near Diana River to fish on the surrounding lakes.

As described in Section 7.3.2 of the Meliadine Extension FEIS Addendum, watersheds within the LSA comprise an extensive network of waterbodies and interconnecting streams. Based on the interconnected nature of aquatic habitat, the known fish species, and the known fish habitat, the assessment of potential loss to fish and fish habitat has been appropriately informed by the existing information and no further updates to the assessment is required.

Interested Party:	DFO	Rec No.:	DFO-IR-16
Re:	Marine Environment		

Request Made by Interested Party:

Please clarify what is meant by “physical barrier”

Agnico Eagle’s Response to Request:

A physical barrier between the discharge area and the harvesting areas at Itivia Harbour was discussed in detail during the Waterline Application and review process. As provided in response to HC-TRC-1.1 in the Waterline FEIS Addendum Final Written Submission Responses (Agnico Eagle 2021) a physical barrier means:

Physical Barriers Between Discharge Area and Shoreline Harvesting Areas

From our understanding, people tend to harvest shellfish in areas that are exposed during low tide. Collection areas have been identified by the Kivalliq Wildlife Board and include a beach area (approximately 2 km northwest of the discharge area) and Aukpik Island (approximately 4 km southeast of the discharge area) (see Figure 1 in Attachment 1). Our discharge location (i.e., the diffuser) will be at a water depth of approximately 16 m (low tide) to 20 m (high tide) and a distance of 100 m from the end of the horizontal direction drill (which enters Melvin Bay at 7 m below water), as such there is a physical barrier between the location of the diffuser and shorelines that are exposed at low tide. In addition, discharged water will be rapidly mixed within a few meters of the discharge point; the area of mixed (or unmixed) discharge is very small, and the residence time of any aquatic animal (i.e., fish) passing close to the end of pipe will be very short (in meeting minutes from meeting held with GN on December 11, 2020). Shellfish tend to be found in the intertidal zone and are generally sparse in the intertidal area proximal to the diffuser (Agnico Eagle 2014; 2020). Therefore, Agnico Eagle feels there is no physical linkage between the mixing zone around the diffuser and the tidal flats related to harvesting. In addition, the KWB identified shellfish harvesting areas that are far removed from the discharge area and the mixing zone area. The size of the mixing zone area, and predicted change to water quality, is discussed further in the sub-section “Size and Quality of the Receiving Environment”.

Based on this, there is no operable pathway between the project and areas where people may harvest mussel and other shellfish country foods.

Reference:

Agnico Eagle. 2021. Waterline FEIS Addendum – Meliadine Mine. Final Written Submission Responses. Submitted to the Nunavut Impact Review Board. May 17, 2021.

Interested Party:	DFO	Rec No.:	DFO-IR-17
Re:	Fish and Fish Habitat		

Request Made by Interested Party:

Please provide a complete table of affected waterbodies and update the discussion in Section 4 to include impacts to all fish and fish habitat.

Agnico Eagle’s Response to Request:

Following direction from the NIRB, this response is limited to providing additional clarification on the topic with updates to the assessment more appropriately addressed through technical review.

As described in response to DFO-IR-10, tables of affected waterbodies were provided in the Conceptual Fish Offsetting Plan (Appendix D-26). As described in response to DFO-IR-11, while this information has been previously provided, a large and comprehensive table has been included to address this information request (Appendix IR-3).

Interested Party:	DFO	Rec No.:	DFO-IR-18
Re:	Habitat Assessment and Offsetting		

Request Made by Interested Party:

Please provide ground-truthing to the measurements of waterbody boundaries and stream and channel habitats.

Agnico Eagle's Response to Request:

Following direction from the NIRB, this response is limited to providing additional clarification on the topic with updates to the assessment more appropriately addressed through technical review. However, Agnico Eagle has provided sufficient information for purposes of an environmental assessment, and ground-truthing will not change the outcome of the assessment.

Interested Party:	DFO	Rec No.:	DFO-IR-19
Re:	Harmful Alteration, Disruption, or Destruction of Fish Habitat determination		

Request Made by Interested Party:

Provide an account of the complete change in area of habitat due to the mine activities and include the change in area due to loss of seasonal flows with reduction in runoff (changed watershed capture). This is important in DFO’s assessment of impacts to fish and fish habitat and in determining the potential Harmful Alteration, Disruption, and Destruction of fish habitat that may need to be offset.

Agnico Eagle’s Response to Request:

Following direction from the NIRB, this response is limited to providing additional clarification on the topic with updates to conclusions more appropriately addressed through technical review. However, Agnico Eagle has provided the required information in Section 5 of the Conceptual Fish Offsetting Plan (Appendix D-26) states that the potential loss to fish habitat was calculated as:

- A total of approximately 431.73 ha, of which 2 ha are watercourses
 - Temporary loss under Section 35 of the *Fisheries Act* would be approximately 266.04 ha
 - Permanent loss under Section 36 of the *Fisheries Act* would be approximately 165 ha

Agnico Eagle is of the view that a thorough assessment on the effects to fish and fish habitat has been completed and that the remaining technical comments from DFO are best handled through the parallel process of the *Fisheries Act* Authorization.

Interested Party:	DFO	Rec No.:	DFO-IR-20
Re:	Harmful Alteration, Disruption, or Destruction of Fish Habitat determination		

Request Made by Interested Party:

This statement should be revised to include the areas of permanent and temporary waterbodies as listed in DFO-IR-02 to DFO-IR-20 as potential Harmful Alteration, Disruption, and Destruction of fish habitat, and the statement should be clarified to indicate upon review by DFO.

Agnico Eagle's Response to Request:

Agnico Eagle refers the reader to the response to DFO-IR-19.

Interested Party:	DFO	Rec No.:	DFO-IR-21
Re:	Fish and Fish Habitat		

Request Made by Interested Party:

Please revise these diagrams to include identification of all the potentially affected waterbodies in or near the boundaries identified in the figures. This includes channels that flow downstream from the “Meliadine Footprint Extension” and the “NIRB Approved Footprint”.

Agnico Eagle’s Response to Request:

Following direction from the NIRB, this response is limited to providing additional clarification on project components that relate to the current project proposal.

As described in DFO-IR-2, effects to fish and fish habitat were evaluated for the local and regional study areas. The local study area was made up of a series of sub-watersheds, and the assessment included and considered the interconnected waterbodies and watercourses within those various sub-watersheds. The footprint area (2014 FEIS and the Meliadine Extension) is within the local study area and thus effects to waterbodies and watercourses both under the direct footprint and downstream were assessed. The figures included in the Conceptual Fish Offsetting Plan (Appendix D-26) do not need to be updated.

Agnico Eagle is of the view that a thorough assessment on the effects to fish and fish habitat has been completed and that the remaining technical comments from DFO are best handled through the parallel process of the *Fisheries Act* Authorization

Interested Party:	DFO	Rec No.:	DFO-IR-22
Re:	Fish and Fish Habitat		

Request Made by Interested Party:

1. *Please provide an explanation as to why areas of waterbodies were sampled and why some lakes with insufficient data were not sampled (i.e. the area around the Discovery Mine and Lake J1).*
2. *Please provide a description of site conditions and water conditions during the surveys - i.e. low water period, unseasonably low water, wind conditions etc.*

Agnico Eagle’s Response to Request:

Following direction from the NIRB, this response is limited to providing additional clarification on item 2, evaluation of assessments is deferred to the technical review.

Response 1)

Timing of the field programs in 2020 and 2021 were constrained by limitations enforced through the pandemic, timing of receipt of the fish permit, caribou migration, weather, and general accessibility of the various sites. Outside of these constraints, timing of field programs and location of sampling programs were determined based on qualified professionals, previous experience, and knowledge of the study area.

Response 2)

For the 2014 FEIS, the site conditions and water conditions during the surveys, along with the results, were provided in Appendices 7.5-A, 7.5-B, 7.5-C, 7.5-D, 7.5-E, 7.5-F, 7.5-G, and 7.5-H. These baseline data were already part of a public review process.

Data collected in 2020 to 2021 were summarized in Appendix G-7 of the Meliadine Extension FEIS Addendum with sampling methods, and timing described in Section 5, and results described in Section 6 and Appendices A through D of that report. Table B-2 in Appendix G-7 provides a summary of flow conditions in the watercourses during the survey. General weather conditions (e.g., windy) were noted on the summary tables (e.g., Table B-9 from Appendix G-7) and field sheet summaries (e.g., Table D-2 from Appendix G-7).

HEALTH CANADA

Interested Party:	HC	Rec No.:	HC-IR-1
Re:	Project Description and Scope		

Request Made by Interested Party:

With respect to the disposition of this issue, HC recommends the following information be provided:

1. *Provide an updated map with each of the deposits labelled, clearly indicating the location(s) of Tiriganiaq and Tiriganiaq-Wolf mining areas, as well as the other relevant approved and proposed deposits associated with the Meliadine Mine. Provide a description of what will be involved with the new portal and infrastructure at Tiriganiaq-Wolf. Identify all relevant human receptor locations (recreational areas, seasonal cabins, permanent residences, other sensitive receptors such as schools, hospitals etc.) on these maps, as applicable.*
2. *Confirm whether underground mining is proposed for the Wesmeg deposit, and if so, whether blasting noise or other potential impacts to human receptors were included in the assessment.*
3. *Provide a detailed description of the logistical and operational implications for all proposed mining methods (which appear to include both an open pit and an underground mine) including, but not limited to, changes in:*
 - *Noise impacts at the Project site;*
 - *Traffic and associated vehicle noise and air emissions along haul roads;*
 - *Dust and other air emissions from all on-site Project activities;*
 - *Possible contamination of country foods; and,*
 - *Possible contamination of local drinking water supplies.*

Agnico Eagle’s Response to Request:

Agnico Eagle commits to meet with Health Canada (preferably in person) to confirm understanding of the Meliadine Extension and associated topics received from Health Canada. The PowerPoint presentation developed to support these discussions will be filed with NIRB in advance of the technical meetings scheduled for November 2022. However, Agnico Eagle wishes to respond as follows.

Response 1)

As illustrated in Figure 1.1-4 and Figure 1.1-5 (page 14 and 15 of the Meliadine Extension FEIS Addendum, respectively) deposits are labelled, along with infrastructure associated with the Tiriganiaq-Wolf mining area. To facilitate the review, pits labelled “TIR” refer to the Tiriganiaq Deposit; “WES” refer to the Wesmeg Deposit; “PUM” refers to the Pump Deposit; “FZO” refers to the F Zone Deposit; and “DIS” refers to the Discovery Deposit.

For additional clarity of the infrastructure to support the Tiriganiaq-Wolf mining area is also provided in a closer view in Figure 1.1-6 (page 16 of the Meliadine Extension FEIS Addendum). Based on exploration work completed in previous years, it has been demonstrated that the Tiriganiaq-Wolf underground mining area is a continuation of the Tiriganiaq deposit. The deposit is the same; however, as part of Meliadine Extension, Agnico Eagle is applying to access the location through a new portal and therefore requires infrastructure to support this location.

Relevant human receptor locations are provided in Figure 10.3-2 and discussed in Section 10.3.7 of the Human Health and Ecological Risk Assessment (page 488 of the Meliadine Extension FEIS Addendum).

Response 2)

Wesmeg underground is currently being mined through the Tiriganiaq portals.

Response 3)

Agnico Eagle refers the reader to the assessment completed for the Meliadine Extension FEIS Addendum which addresses the requests (**in bold**) of Health Canada:

- **Noise impacts at the Project site:**
 - Section 5.5.4 of the noise assessment, and in Section 10.3, Section 10.3.7, and Section 10.4.2 of the Human Health and Ecological Risk Assessment. Appendix H-2 provides additional details to the noise modelling for Meliadine Extension.
- **Traffic and associated vehicle noise and air emissions along haul roads:**
 - Section 10.3.5, Table 10.3-2 of the Human Health and Ecological Risk Assessment.
- **Dust and other air emissions from all on-site Project activities:**
 - Section 5.2.4 of the air quality assessment, and in Section 10.3 and Section 10.4.2 of the Human Health and Ecological Risk Assessment. Appendix H-1 provides additional details to the air quality modelling for Meliadine Extension. The reader is also referred to responses in HC-IR-3 to HC-IR-6.
- **Possible contamination of country foods:**
 - Section 10.3 and Section 10.4.2 of the Human Health and Ecological Risk Assessment.
- **Possible contamination of local drinking water supplies:**
 - Section 10.3, Section 10.3.7, and Section 10.4.2 of the Human Health and Ecological Risk Assessment.

Interested Party:	HC	Rec No.:	HC-IR-2
Re:	Project Description and Scope		

Request Made by Interested Party:

With respect to the disposition of this issue, HC recommends the following information be provided:

1. *Clarify whether the scope of the technical assessment is limited to the new mine components and activities or includes existing activities subsequent to the 2014 assessment. All changes to the environment that have occurred as a result of the existing mine and future activities should be considered*

Agnico Eagle’s Response to Request:

As outlined in Section 4.2 of the Meliadine Extension FEIS Addendum, for this Application “baseline” is defined as previously collected data which was used in the 2014 FEIS; thus, has been previously assessed. “Existing conditions” is defined as data collected post commencement of construction of the Meliadine Mine. The data from supplemental studies (i.e., existing conditions) conducted by Agnico Eagle since 2014 has been incorporated into the Meliadine Extension design and the Meliadine Extension FEIS Addendum. Baseline data presented in the 2014 FEIS have been subject to review through the assessment processes and through review of annual monitoring reports since 2016.

The 2014 FEIS assessed and included the potential for five open pit deposits (Tiriganiaq, Pump, F Zone, Wesmeg, and Discovery), associated infrastructure, the tailings storage facility, roads (AWAR, Discovery, access road), and waste rock storage facilities. The approved approach in Project Certificate No.006 was described as a multi-phase approach meaning not all of the deposits would come online at once; however, the impacts associated with all of the deposits and associated infrastructure had been evaluated.

Meliadine Extension is focused on the new components not previously assessed in the 2014 FEIS, which is the windfarm, and alternatives airstrip, and in-pit disposal. The incremental change is between what was previously assessed and approved in the 2014 FEIS and these three new components not previously assessed.

Interested Party:	HC	Rec No.:	HC-IR-3
Re:	Air Quality		

Request Made by Interested Party:

With respect to the disposition of this issue, HC recommends the following information be provided:

1. *Provide a robust description and analysis assessing the potential impacts to air quality from all Project-related activities (including any existing mining activities) during the construction, operation, and decommissioning phases of the airstrip.*
2. *Provide additional justification to validate the approach used to assess air quality impacts from airstrip activities.*

Agnico Eagle’s Response to Request:

Agnico Eagle does not feel additional modelling is justified. The 2014 FEIS modelling in conjunction with the NO₂ and SO₂ modelling for Meliadine Extension is sufficient to demonstrate the effects of the Meliadine Extension on air quality.

Response 1)

Agnico Eagle reiterates the conclusions made in Section 5.2.4 of the Meliadine Extension FEIS Addendum as the predictions of the 2014 FEIS were conservative, and Meliadine Extension is within upper limits. The airstrip is within the upper limit of the 2014 FEIS as six different scenarios were assessed at that time, the airstrip fits within those scenarios.

Agnico Eagle disagrees with providing estimates for the construction and decommissioning phases of Meliadine Extension. It is common practice to model potential worst-case scenarios that is predicted to have the highest operational activity which provides a conservative estimate of emissions for all years, including decommissioning phases. For Meliadine Extension, air emissions for the year 2030 was selected as the basis for the air quality modelling.

Response 2)

As discussed in Section 5.2.4 of the Meliadine Extension FEIS Addendum, the airstrip will likely increase fugitive emissions; however, the tailings storage facility and waste rock storage facilities will be smaller than originally anticipated therefore balancing increased emissions from the newly added airstrip.

Additional modelling (for particulate matter that includes the airstrip) will not provide more accurate results than what have already been predicted. Modelling fugitive dust has an inherently high-level of uncertainty. Re-modelling the decrease in fugitive emissions from the waste rock storage facilities and tailings storage facility and the increase in fugitive emissions from the airstrip, will likely not produce results that are any closer to true concentrations than what were already available through the previous

modelling. The best way to confirm what the true concentrations of contaminants are, is to have a good monitoring program.

From the perspective of gaseous emissions from aircraft, it is certain that the emissions from aircraft will be negligible compared to emissions from generators and surface vehicles, and will therefore have negligible impact on ambient concentrations.

Interested Party:	HC	Rec No.:	HC-IR-4
Re:	Air Quality		

Request Made by Interested Party:

With respect to the disposition of this issue, HC recommends the following information be provided:

- 1. Include all Project-related emissions, including existing operations, and construction and operation of future Project-related components in the air quality assessment, notably activities at the Project site in addition to haul road and airport activities. This could be considered in the context of a ‘cumulative effects assessment’.*
- 2. Provide a comparison of the new cumulative air emissions of the Project, for each air contaminant (refer to HC-IR-05), to appropriate territorial and federal guideline levels.*

Agnico Eagle’s Response to Request:

Response 1)

Agnico Eagle refers the reader to HC-IR-3 for the air quality assessment approach. Agnico Eagle reiterates that predictions of Meliadine Extension are within 2014 FEIS predictions.

Response 2)

As outlined in Section 4.5.3 of the Meliadine Extension FEIS Addendum, cumulative effects assessment requires identifying and predicting the likelihood and significance of potential cumulative effects, including direct, indirect, and residual impacts; however, not every valued component requires an analysis of cumulative effects. Any potential effects associated with air quality are captured in the assessment of potential effects to, and residual impact classifications for, other VECs (e.g., water quality, and human health).

The 2014 FEIS and Meliadine Extension FEIS Addendum have already addressed the worst-case scenario for air emissions; therefore, adding construction and decommissioning phases does not provide any further insight into Meliadine Extension effects. Adding those two phases into the modelling does not constitute a cumulative effects assessment. Cumulative effects refer to other projects or emissions outside of the Meliadine Extension that may act in a cumulative way to impact air quality.

In addition, for air quality the measurement endpoint is compliance with regulatory ambient air quality standards or guidelines for a particular contaminant; therefore, Agnico Eagle reiterates the conclusions made in Section 5.2 of the Meliadine Extension FEIS Addendum and does not agree that a comparison of new cumulative air emissions is required. Again, Agnico Eagle reiterates that predictions of Meliadine Extension are within 2014 FEIS predictions.

Interested Party:	HC	Rec No.:	HC-IR-5
Re:	Air Quality		

Request Made by Interested Party:

With respect to the disposition of this issue, HC recommends the following information be provided:

1. *Revise air quality modelling to include:*

- *Air contaminants associated with the Project, including but not limited to: TSP, PM2.5, PM10, CO, VOCs, PAHs, DPM, and any other contaminants from mobile and/or stationary sources, and/or provide justification why these contaminants were not included;*
- *Estimates of the above-mentioned air contaminants for all phases of the Project (construction, operation, decommissioning); and,*
- *Existing and recent baseline air quality data (i.e., post-2014 Environmental Impact Statement).*

Agnico Eagle’s Response to Request:

Bullet 1)

Agnico Eagle reiterates the conclusions made in Section 5.2 of the Meliadine Extension FEIS Addendum and does not agree that a revised air quality model is required, as the predictions of the 2014 FEIS were conservative, and Meliadine Extension is within the upper limits.

Agnico Eagle expects no change in particulate matter emissions from the 2014 FEIS as the assessed production rate will remain the same at 8,500 tpd. Meliadine Extension traffic are within the same traffic numbers of the 2014 FEIS and therefore, do not anticipate a change to the TSP predictions. VOCs and PAHs were already addressed as part of the HHERA; therefore, does not need to be redone.

Bullet 2)

Agnico Eagle refers the reader to HC-IR-3 regarding providing estimates for all phases of the Meliadine Extension.

Bullet 3)

Agnico Eagle refers the reader to Section 5.2.3 of the Meliadine Extension FEIS Addendum which includes a summary of existing conditions for the Meliadine Mine in comparison to the predictions of the 2014 FEIS.

Interested Party:	HC	Rec No.:	HC-IR-6
Re:	Air Quality		

Request Made by Interested Party:

With respect to the disposition of this issue, HC recommends the following information be provided:

- a) *Update Figure 5.2-1 to include isopleths of predicted NO₂ and SO₂ concentrations as described in the text on PDF pg. 127 and figure title, including any nearby human receptor locations. This would enable HC to review the potential health impacts from exposure to Project-related NO₂ and SO₂.*

Agnico Eagle’s Response to Request:

Agnico Eagle refers the reader to Appendix H-1 (Section 6, Table 6.1-1) of the Meliadine Extension FEIS Addendum for the numerical predictions from the air quality model. Table 6.1-1 of Appendix H-1 provides the maximum predicted ambient air contaminant concentrations of NO₂ and SO₂ for Scenario 1, Scenario 2, and Scenario 3 comparative to the 2020 and 2025 Canadian Ambient Air Quality Standards (CAAQS).

As outlined in Section 5.2.4.1 the Meliadine Extension FEIS Addendum, all modelled NO₂ and SO₂ concentrations were below the applicable 2020 and 2025 CAAQS; however, to facilitate Health Canada’s review, Agnico Eagle has provided figures to include isopleths and receptor locations for the three scenarios assessed for both NO₂ and SO₂, provided in Appendix IR-4 of this response package. Three scenarios with four plots per scenario were modelled (varying contributions from the windfarm). It should be noted that the SO₂ emissions do not change from one scenario to another and appear the same; however, for completeness SO₂ plots (1-hour and annual concentrations) for all three scenarios are provided.

NATURAL RESOURCES CANADA (NRCan)

Interested Party:	NRCan	Rec No.:	NRCan-IR-1
Re:	Geochemistry test data–ARD/ML		

Request Made by Interested Party:

Provide results of kinetic tests to date for all tests initiated since the 2014 FEIS.

Agnico Eagle’s Response to Request:

The geochemical characterization of the Meliadine Mine completed in support of the 2014 FEIS included ore, waste rock, overburden, and tailings to be produced as part of the 2014 FEIS mine plan. This mine plan included open pit operations at five separate deposits defined as Tiriganiaq, Wesmeg, F Zone, Pump, Discovery. Samples were collected to assess potential open pit operations at Wesmeg North and Tiriganiaq-Wolf. Sample collection for the 2014 FEIS included:

- Waste rock (n= 557) and ore (n=25) samples collected from drill core.
- Tailings samples produced from metallurgical testing (n=20).
- Overburden samples collected from shallow test pits (0.3 to 0.7 m depth) (n=34).
- Waste rock samples collected from a pad constructed near the Tiriganiaq exploration (n=12).
- Ore (n=2) samples from two stockpiles (Lode 1000 and Lode 1100) present at the mine surface.

A comprehensive analytical testing program was completed on these samples. All samples were analyzed by acid base accounting (ABA), metals by aqua regia, and whole rock analysis. A subset of samples was also analyzed for net acid generation (NAG) pH, shake flask extractions (SFE) and X-ray diffraction (XRD).

The kinetic testing program completed for the 2014 FEIS included 46 humidity cell tests, 9 unsaturated column experiments and 4 field cells. Details on analytical methods and sample collection methods can be found in the 2014 FEIS (SD6-3 Geochemical Baseline).

A sampling program was initiated in 2020 to supplement the geochemical dataset generated for the 2014 FEIS. This program included sampling of drill core, tailings, overburden, saline mine wastes, and a water quality survey. Overall, the objective of the supplemental sampling programs was to:

- Characterize geologic material that will be disturbed by the Meliadine Extension which were not characterized in the 2014 FEIS. This mainly consists of deeper bedrock associated with underground mine operations and changes in pit shell geometry.
- Existing mine waste sampling to examine composition of mill tailings and saline mine wastes
- Seep survey of existing mine facilities to supplement monitoring database.
- Kinetic testing to assess long term drainage chemistry, develop source terms for water quality predictions and evaluate disposal strategies for mine waste.

A summary of the supplemental kinetic testing completed in support of the Meliadine Extension is presented in Table 3-6 of Appendix G-6 of the Meliadine Extension FEIS Addendum and shown here below for reference. The analytical methods used in the supplemental kinetic testing are described in detail in Section 3.2.3 of the of Appendix G-6 of the Meliadine Extension FEIS Addendum.

Summary of Kinetic Tests Initiated for the Meliadine Extension

Test ID	Facility	Material Type	ARD Potential	Drill Core/ Tailings/ ROM Waste Rock Sample IDs	Sample Mass (kg)	Influent	Test Initiated
Unsaturated Columns							
01-TSF	TSF	Whole Ore Tailings	Non-PAG	TSF 26; TSF 27; TSF 28; TSF 29; TSF 30	9.7	Deionized Water	17-Dec-20
02-IF-PAG	Discovery	IF Waste Rock	PAG	CAMLD264952; CAMLD264954; CAMLD264947; CAMLD273962; CAMLD264944; CAMLD264941; CAMLD264932; CAMLD264943	10.0	Deionized Water	21-Jan-21
03-SED-PAG	Discovery	SE Waste Rock	PAG	CAMLD264942; CAMLD264940; CAMLD264927; CAMLD264928; CAMLD264938	10.0	Deionized Water	21-Jan-21
04-GAB-NPAG	Discovery OP	GB Waste Rock	Non-PAG	CAMLD264930; CAMLD264931; CAMLD264957	10.0	Deionized Water	21-Jan-21
05-SED-NPAG	Discovery OP	SE Waste Rock	Uncertain	CAMLD264968; CAMLD264937; CAMLD264972; CAMLD264959; CAMLD264961	10.0	Deionized Water	21-Jan-21
06-IF-NPAG	Discovery OP	IF Waste Rock	Non-PAG	CAMLD264960; CAMLD264939; CAMLD264933; CAMLD264950; CAMLD264955	10.0	Deionized Water	21-Jan-21
07-IF-PAG-CW	Discovery	IF Waste Rock	PAG	Same sample composition as 02-IF-PAG	10.0	Connate Water	21-Jan-21
08-SED-PAG-CW	Discovery	SE Waste Rock	PAG	Same sample composition as 03-SED-PAG	10.0	Connate Water	21-Jan-21
09-FZONE-NPAG	F Zone OP	VO Waste Rock	Non-PAG	CAMLD262228; CAMLD262229; CAMLD262231	10.0	Deionized Water	21-Jan-21
10-ROM-SR1	Tiriganiaq UG	ROM Waste Rock	Non-PAG	Pit 16 and Pit 17 (Low Grade Ore)	5.0	Deionized Water	21-Jan-21
11-ROM-SR2	Tiriganiaq UG	ROM Waste Rock	Non-PAG	Pit 18 and Pit 19 (Ore Pad)	5.0	Deionized Water	21-Jan-21
Saturated Columns							
TSF_100FP	TSF	Whole Ore Tailings	Non-PAG	Same sample composition as 01-TSF	6.3	100% Filter Press Water	15-Oct-20
TSF_5FP	TSF	Whole Ore Tailings	Non-PAG	Same sample composition as 01-TSF	6.3	5% Filter Press Water	15-Oct-20
Humidity Cells							
T1	Tiriganiaq UG	Paste Backfill	Non-PAG	Cemented Paste	1.0	Deionized Water	11-Feb-21

Source: Table 3-6 - Appendix G-06 of the Meliadine Extension FEIS

UG- underground; OP- open pit; ROM- run of mine; TSF- tailings storage facility

Results of the unsaturated tailings columns are provided in the technical memo titled 'Meliadine ACLC Kinetic Testing Summary' authored by Okane Consulting Group (Appendix IR-5 of this response package).

The results for the saturated column tests are summarized as follows:

- Both saturated column tests produced circumneutral to alkaline pH values for the duration of the experiment. Minimum values were observed in the initial weeks of testing (pH 6.76 and 6.42) before stabilizing at more alkaline values after week 8 (pH 7.42 to 8.07).
- Parameters which significantly exceeded AEMP guidelines (>5x) in saturated column effluent included TDS, NH₃, NO₂, NO₃, SO₄, Cl, Ag, As, Co, Cu, Fe, Mo, Pb and Se. Parameters which exceeded MDMER guidelines included As, T-CN, NH₃ and Cu. Each of these parameters also exceeded their respective guidelines in the filter press water used to initiate the columns.
- In general concentrations of most parameters declined over time as the initial filter press water was rinsed out of the column and/or reactive parameters decayed (i.e., T-CN and NH₃). Notably, concentrations of T-CN, Ag, As, and Cu declined below influent concentrations over the course of the experiment indicating that attenuation of these parameters was occurring within the saturated columns. These attenuation reactions were likely related to decay of T-CN and sorption to mineral surfaces.
- Parameters which were elevated in column effluent relative to filter press water included TDS, SO₄, NO₂, Co, Se and Mo.
 - Elevated TDS and SO₄ are likely related to dissolution of gypsum and halite which formed within the mill (gypsum) or as evaporites on the TSF surface (halite and gypsum).
 - Nitrite forms as an intermediate reaction product during NO₃ reduction. Formation of NO₂ was likely a result of incomplete reduction of NO₃ to NH₄ or N₂ gas within the columns.
 - The trace metals Co, Se and Mo occur in concentrations greater filter press water, but otherwise show similar rinsing behaviour as other parameters. The concentration of these parameters rapidly declines over time, stabilizing at concentrations similar to column influent after 24 to 28 weeks. The elevated initial concentrations of these metals indicate they are present as a water-soluble phase (e.g., evaporates or oxides) which is quickly depleted within the column.

Overall, saturated column results show that metal release will be dominated by rinsing of filter press water and water-soluble oxides and evaporites. Saturated column results show limited evidence for reductive dissolution reactions. This is likely related to the large reservoir of NO₃ present in filter press water, preventing the development of conditions capable of reducing Mn and Fe oxide minerals.

Interested Party:	NRCan	Rec No.:	NRCan-IR-2
Re:	Geochemistry test data–ARD/ML		

Request Made by Interested Party:

Clarify why the Amaruq mine pit water quality monitoring data is not used to develop the scaling factors for pit wall runoff chemistry during operations.

Agnico Eagle’s Response to Request:

Open pit source terms presented in Section 8.5 of Appendix G-6 of the Meliadine Extension FEIS Addendum rely on analogue data from other regional mine pits. Nitrogen is present in mine pits as a result of explosive use and is not sensitive to the specific geochemistry of mine rock which may vary from site to site. Therefore, monitoring data from a number of regional mine pits excavated with similar blasting practices are appropriate analogues.

Development of scaling factors by comparing WRSF and pit wall monitoring data requires complementary datasets from an open pit and associated waste rock storage facilities. This combination of data is available at both Vault and at Whale Tail. However, the waste placement in the Whale Tail WRSF is being managed such that PAG/ML mine waste is encapsulated by a progressively constructed NPAG/NML cover. Therefore, data from the Vault mine was considered more appropriate. Note that the scaling factors based on this comparison are similar to what would be expected based on the reactive thickness of waste rock versus pit wall and Meliadine (Section 8.5.1 of Appendix G-6), providing independent support that the applied scaling used to convert calibrated WRSF loadings to pit wall loadings is appropriate.

Interested Party:	NRCan	Rec No.:	NRCan-IR-3
Re:	Mine waste disposal in exhausted open pits–ARD/ML		

Request Made by Interested Party:

When considering tailings and waste rock disposal in open pits, please provide information on mitigation measures (use of the pit as is versus implementation of pervious surrounds, clay barriers, etc.) that may be needed to limit metals releases from the pit disposal facility.

Agnico Eagle’s Response to Request:

Agnico Eagle acknowledges that NRCan is in support of in-pit disposal. The alternative of in-pit disposal will be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	NRCan	Rec No.:	NRCan-IR-4
Re:	Pressure to head conversion–Groundwater Quantity		

Request Made by Interested Party:

- a) Provide the numerical equations for TDS vs. depth (Fig 6) and water density vs. depth that were used in the conversion of pressures to freshwater heads.
- b) Indicate whether a generic TDS vs. depth equation (Fig. 6) or measured TDS data were used to convert pressures to freshwater heads.
- c) Indicate if pressures measured below the permafrost are converted similarly.

Agnico Eagle’s Response to Request:

Agnico Eagle wishes to clarify that vibrating wire sensors record the total pressure acting at a point (in this case the location of the vibrating wire sensor). The measured pressure is affected by the density of the fluid in the pore space. However, conversion of the pressure into an equivalent height of fluid is only dependent on the density of the equivalent fluid of interest (in this case freshwater). Pressure itself can be converted to many alternative units (for example 1 kilopascal equals approximately 7.5 mm of mercury or approximately 0.1 m of fresh water).

The measured pressure was converted to equivalent fresh water hydraulic head using the following equation that was rearranged to solve for the equivalent fresh water hydraulic head:

$$P = (p_{fw})(g)(h_{fw})$$

Where, P is the pressure recorded at the sensor, p_{fw} is the density of freshwater (1000 kg/m³), g is the gravitational constant (9.8 m/s²) and h_{fw} is the equivalent fresh water hydraulic head (m).

The long-term trends in the measured hydraulic head data (expressed as equivalent freshwater hydraulic head) were used to understand the extent of depressurization near the underground and the relative changes in that hydraulic head at different locations as mining progressed (the relative change in hydraulic head was a calibration target).

Interested Party:	NRCan	Rec No.:	NRCan-IR-5
Re:	M11-1257 vertical gradients relative to Lake B5–Groundwater Quantity		

Request Made by Interested Party:

- a) Provide Table 9 recalculated with vertical hydraulic gradients relative to the elevation of Lake B5.
- b) Assess the vertical gradients relative to Lake B5
- c) Provide an assessment of the uncertainty of the vertical hydraulic gradients.

Agnico Eagle’s Response to Request:

Agnico Eagle appreciates the NIRB’s direction provided; nonetheless, Agnico Eagle wishes to respond to NRCan-IR-5 as follow:

Response a)

Table NRCan-5-1 presents the estimated freshwater heads, flow directions and gradients between M11-1257 and Lake B5. Average density between the lake and the sampling port has been calculated using the TDS versus depth profile presented on Figure 6 of the Hydrogeology Existing Conditions Report.

Table NRCan-5-1: Estimated Freshwater Heads, Flow Directions and Gradients Between M11-1257 and Lake B5

Borehole	Port	Vertical Depth (m)	Port Elevation (masl)	Freshwater Head at Port (masl)	Freshwater Head at Lake B5 (masl)	Average Density (kg/m ³)	Gradient Between B5 and Port
M11-1257	2	602.2	-544.2	65.6	58	1028	0.016
M11-1257	3	573.7	-515.7	72.0	58	1028	0.003
M11-1257	4	518.7	-460.7	64.3	58	1026	0.014
M11-1257	5	448.6	-390.6	71.5	58	1023	-0.007

Note: Gradients calculated between each multi-level port and Lake B7. A positive value indicates a downward gradient.

Response b)

The direction of the vertical gradient between M11-1257 ports and Lake B5 is similar to the vertical gradients calculated in the existing conditions report between M11-1257 and Lake B7. An upward gradient is estimated to be present between the shallowest port (Port 5) and Lake B5 and a downward gradient is estimated to be present between the deeper ports (Ports 2, 3, and 4) and Lake B5.

Response c)

To assess uncertainty in the calculated gradients, the analysis was repeated for two alternative TDS versus depth profile assumptions. For a lower bound scenario, the TDS at depth was assumed to be 54,000 mg/L rather than 61,000 mg/L presented on Figure 6 of the existing conditions report (Appendix G-5 of the Meliadine Extension FEIS Addendum). For the upper bound scenario, the TDS at depth was assumed to be 71,000 mg/L rather than 61,000 mg/L. As summarized in Table NRCan-5-2 while the magnitude of the gradient is estimated to change, the directions are consistent. The higher the TDS results in a weaker

upward gradient at the shallower sampling port and a stronger downward hydraulic gradient at the deeper sampling ports.

Table NRCan-5-2: Gradient Between B5 and M11-1257 Sampling Port with Respect to TDS Scenario

Borehole	Vertical Depth (m)	Port	Gradient Between B5 and Sampling Port		
			Base Case Profile	Lower TDS Scenario	Upper TDS Scenario
M11-1257	602.2	2	0.016	0.013	0.021
M11-1257	573.7	3	0.003	0.001	0.008
M11-1257	518.7	4	0.014	0.011	0.019
M11-1257	448.6	5	-0.007	-0.009	-0.002

Interested Party:	NRCan	Rec No.:	NRCan-IR-6
Re:	Identify the hydrostratigraphic units of piezometers–Groundwater Quantity		

Request Made by Interested Party:

Provide a table indicating the hydrostratigraphic units (e.g. Tables 2 and 3 in Appendix H6) that each piezometer is completed in.

Agnico Eagle’s Response to Request:

The hydrostratigraphic units that each piezometer is completed in are presented in Table NRCan-6-1.

Table NRCan-6-1: Hydrostratigraphic Units at which Piezometers have been Installed at Meliadine

Piezometer	Borehole ID	Node	Sensor Elevation (masl)	Approximate Sensor Depth (mbgs)	Hydrostratigraphic Unit
PZ-RF200-01	TIS-200-001	VW1	-270.7	325.7	Volcanic Rock Formations
		VW2	-319.1	374.1	Volcanic Rock Formations
		VW3	-564.7	619.7	Volcanic Rock Formations
PZ-ES225-02	TIS-225-001	VW1	-273.2	328.2	Volcanic Rock Formations
		VW2	-321.5	376.5	Volcanic Rock Formations
PZ-ML17-225-166	ML17-225-166-F1	VW1	-143.9	198.9	Volcanic Rock Formations
		VW2	-144	199.3	Lower Fault/KMS Corridor
PZ-ML17-350-161	ML17-350-161-001	VW1	-268	323.4	Lower Fault/KMS Corridor
		VW2	-268	323.2	Lower Fault/KMS Corridor
PZ-ML375-164	ML376-164-D1	VW1	-306	361	Lower Fault/KMS Corridor
		VW2	-317	372	Lower Fault/KMS Corridor
		VW3	-319	374	Lower Fault/KMS Corridor
PZ-ML350-171	ML350-171-D1	VW1	-286	341	Lower Fault/KMS Corridor
		VW2	-288	343	Lower Fault/KMS Corridor
PZ-WH350-152	WH350-152-D1	VW1	-276	331	Lower Fault/KMS Corridor
		VW2	-280	335	Lower Fault/KMS Corridor
		VW3	-285	340	Sedimentary Rock Formations

Interested Party:	NRCan	Rec No.:	NRCan-IR-7
Re:	Piezometer data –Groundwater Quantity		

Request Made by Interested Party:

- a) Report elevations in meters above sea level in both the figure and the table.
- b) The large number of lines with similar colours makes it difficult to identify with certainty which data belong to which sensor. The figure is inaccessible to colour-blind readers. Data lines should be labelled or clearly identifiable.
- c) Several lines overlap, making the data difficult to see clearly. Consider dividing into two figures to reduce overlap, improve clarity and accessibility.
- d) Confirm lines do not go off scale above the maximum elevation.
- e) The data are collected as pressure but are presented in elevation (heads). It is not indicated in the text whether or how the data have been corrected for TDS/density in the transformation from pressure to elevation (see NRCan-04).
- f) The table of sensor depths indicates that deeper sensors have higher sensor elevations. Confirm sensor elevations.
- g) Provide a timeline of mining progress to aid with the interpretation of the hydraulic responses.

Agnico Eagle’s Response to Request:

Agnico Eagle has updated Figure 14 of the Hydrogeology modelling report as per NRCan-IR-7. The updated figures (Figures 14A to 14D) are presented below.

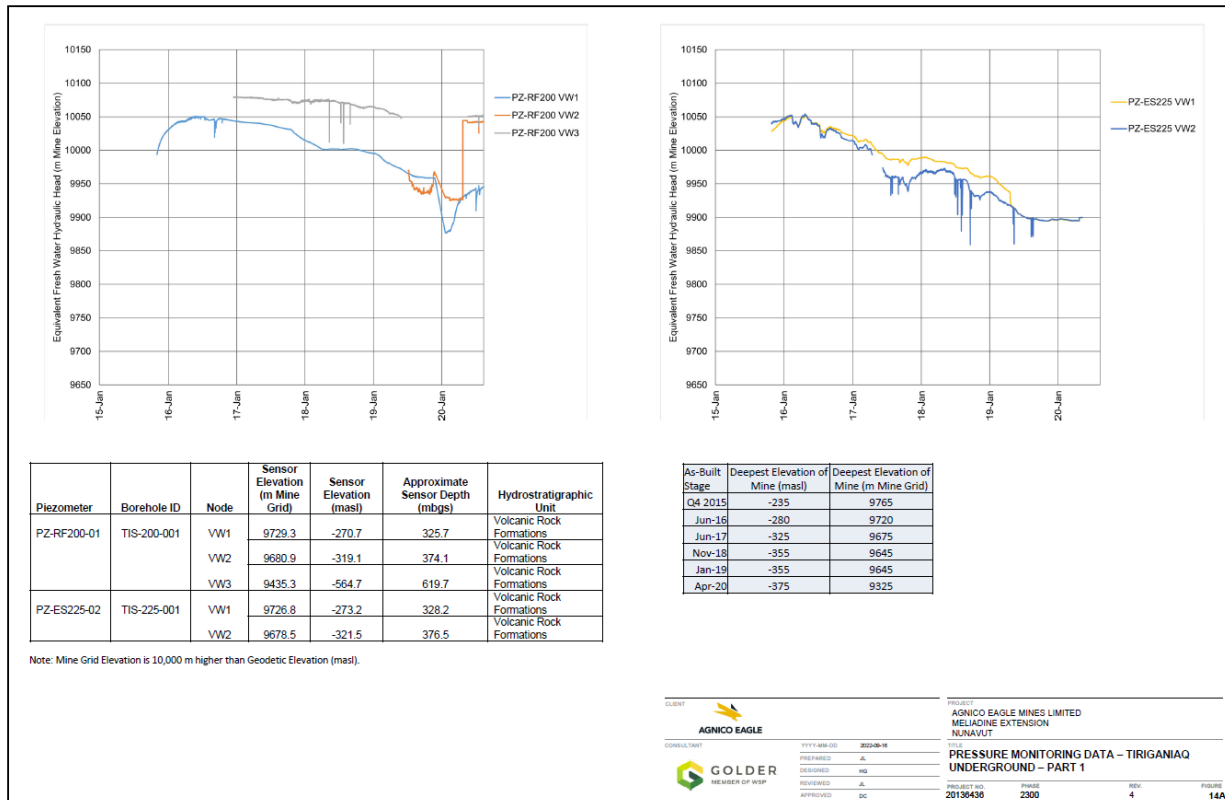


Figure 14A: Pressure monitoring data – Tiriganiaq Underground – Part 1

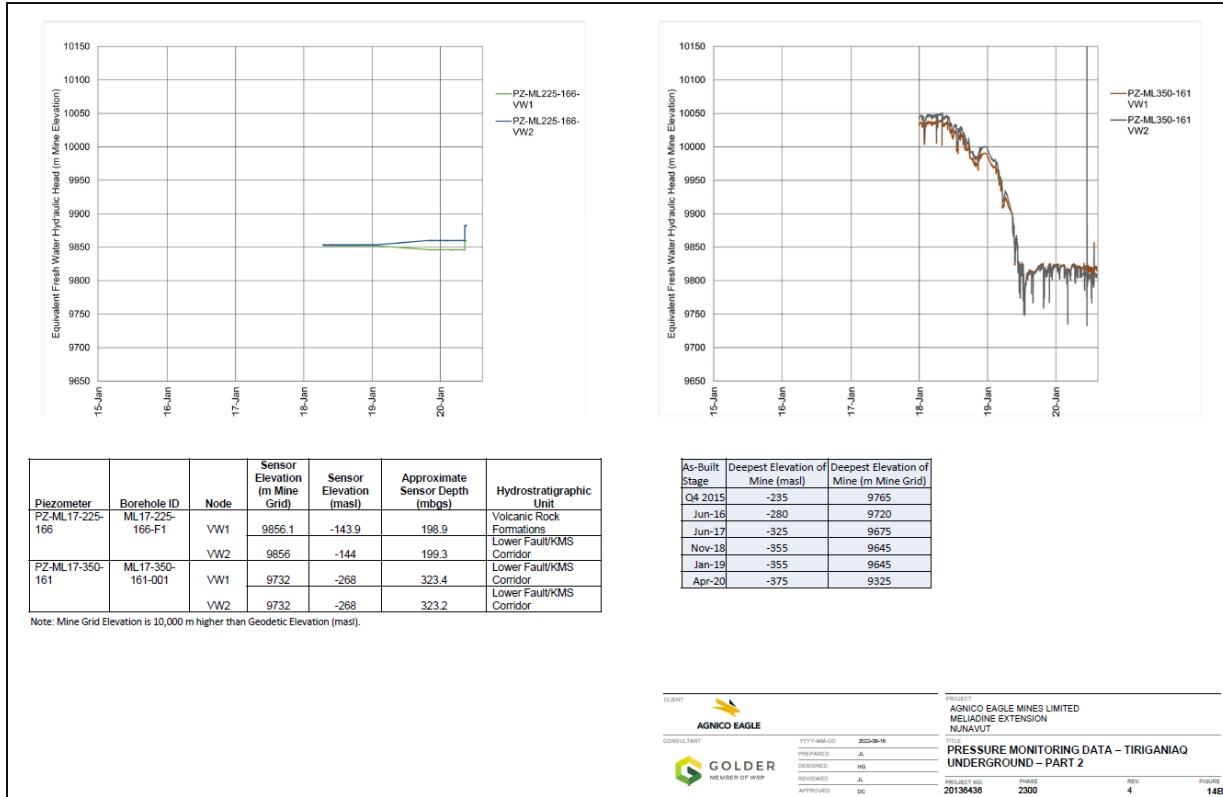


Figure 14B: Pressure monitoring data – Tiriganiaq Underground – Part 2

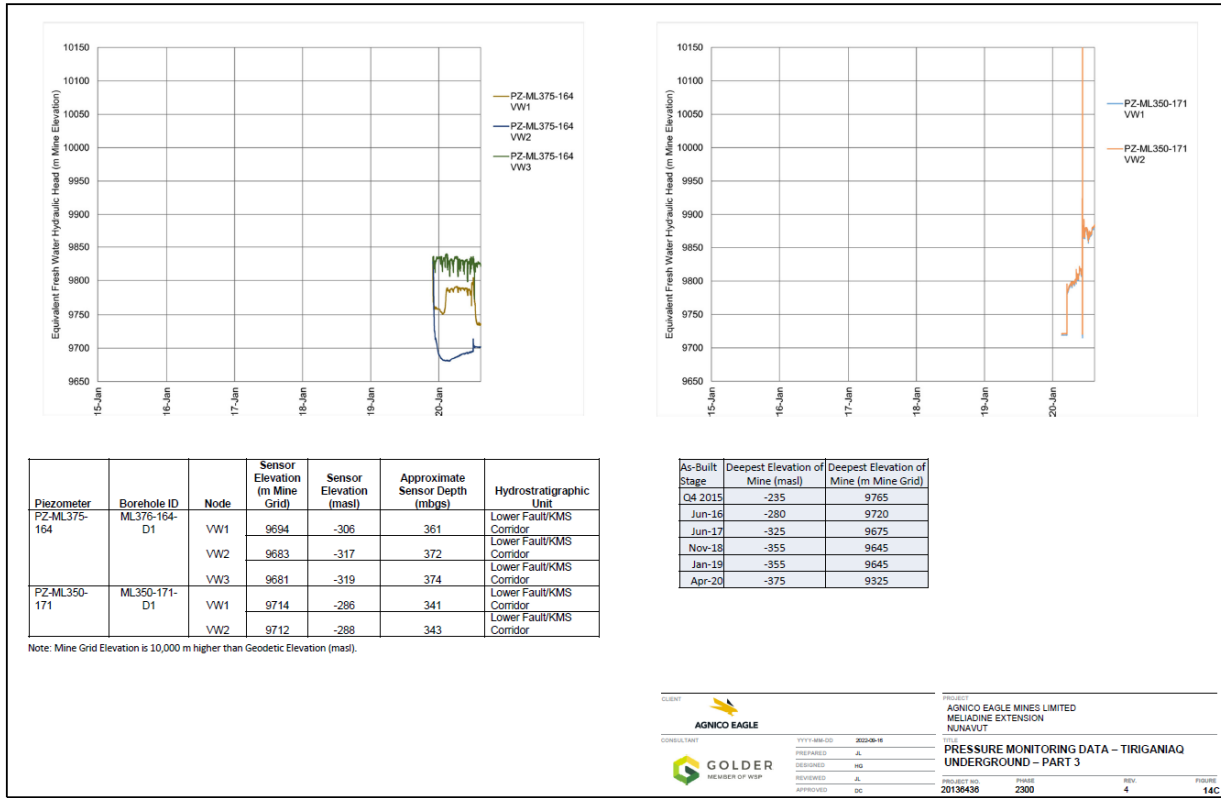


Figure 14C: Pressure monitoring data – Tiriganiaq Underground – Part 3

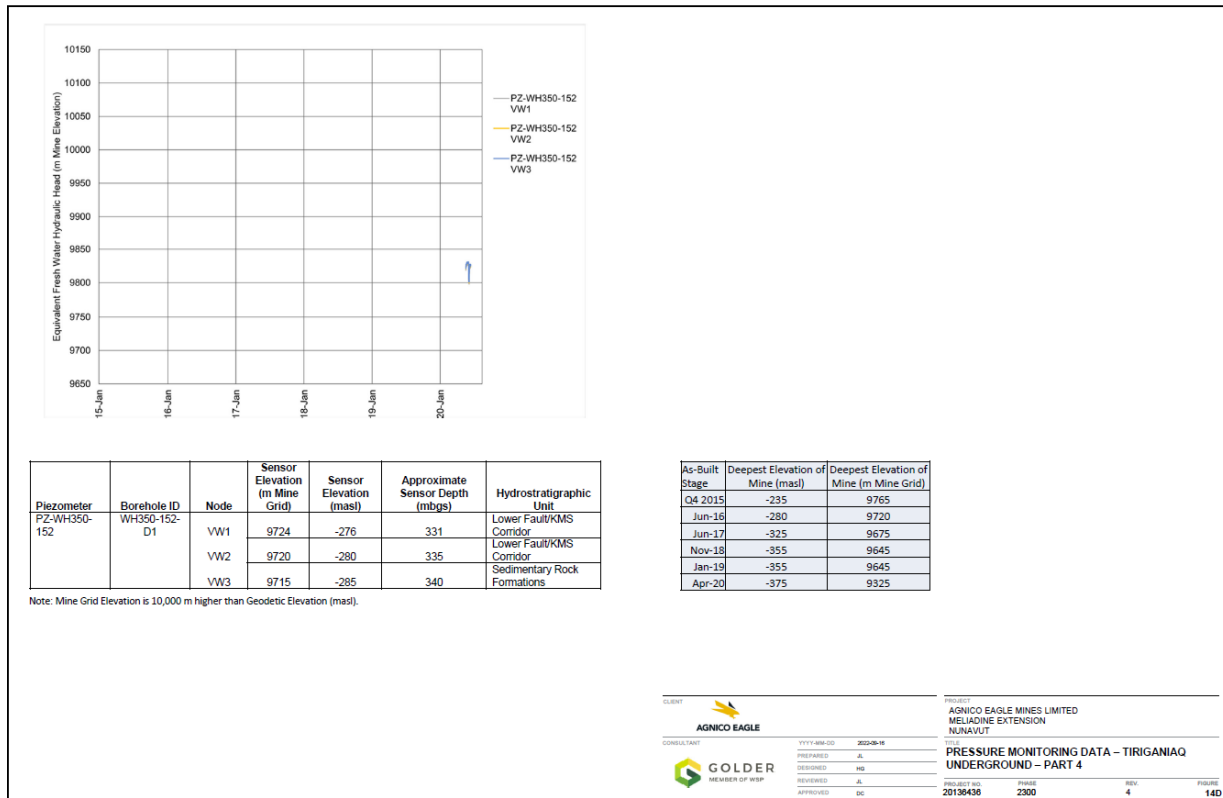


Figure 14D: Pressure monitoring data – Tiriganiaq Underground – Part 4

Interested Party:	NRCan	Rec No.:	NRCan-IR-8
Re:	Conceptual model flow directions–Groundwater Quantity		

Request Made by Interested Party:

Confirm the directions of groundwater flow arrows between lakes B7, A8 and Meliadine Lake in Figures 3 and 4.

Agnico Eagle’s Response to Request:

The corrected direction of groundwater flow is presented in Figure NRCan-8-1.

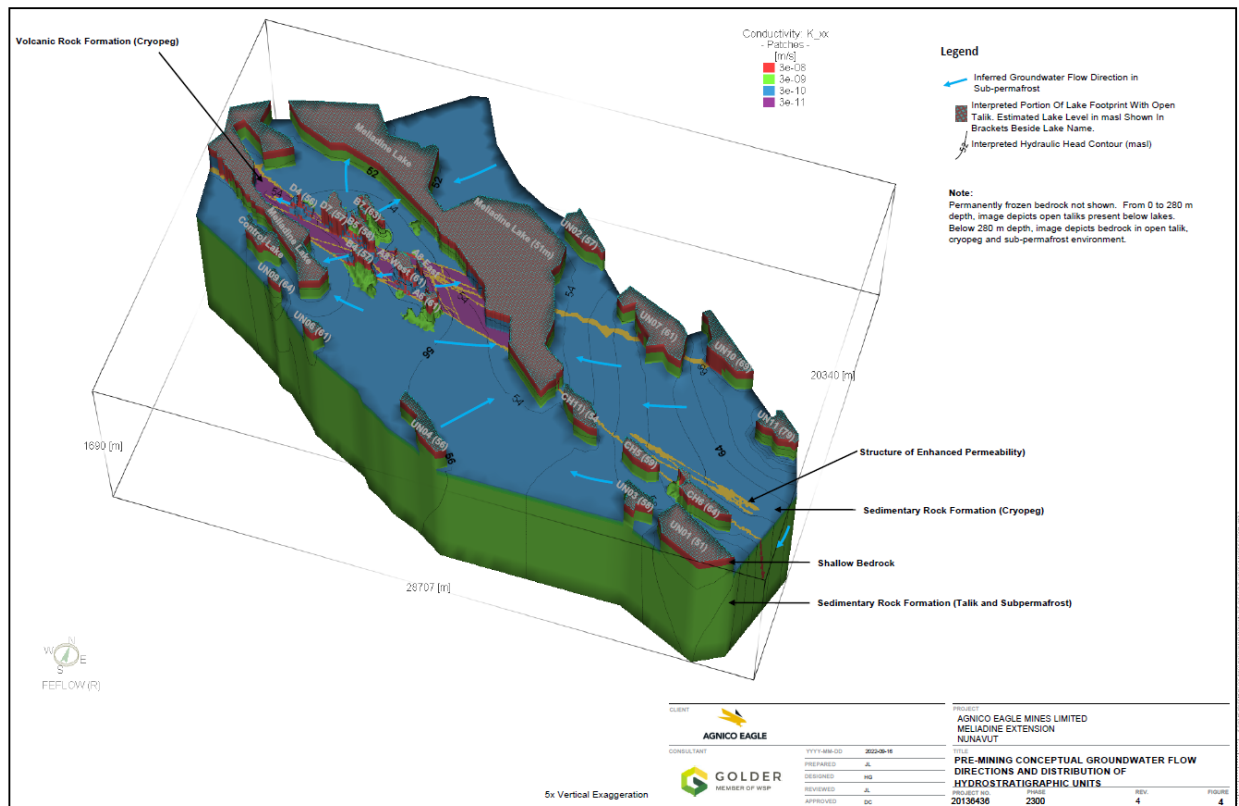


Figure NRCan-8-1: Pre-mining Conceptual Groundwater Flow Directions and Distribution of Hydrostratigraphic Units

Interested Party:	NRCan	Rec No.:	NRCan-IR-9
Re:	Hydraulic heads –Groundwater Quantity		

Request Made by Interested Party:

State the depth of the model layer for which the hydraulic head equipotentials are displayed.

Agnico Eagle's Response to Request:

On the three-dimensional images on Figure 4 and Figures 21-24, the hydraulic head contours are shown for the highest elevation of unfrozen rock conditions, along with the hydraulic head contours on the perimeter of the model, where unfrozen rock conditions are present. The highest elevation of unfrozen rock conditions is generally the top of cryopeg where cryopeg is inferred to be present (approximately 280 mbgs), or lake elevation, where open talik below the lake is interpreted to be present. Lakes without open talik are not shown on these figures.

Interested Party:	NRCan	Rec No.:	NRCan-IR-10
Re:	Modelled groundwater flow rates–Groundwater Quantity		

Request Made by Interested Party:

Provide a table of predicted groundwater flow rates in/out of lakes for lakes with open taliks (B4, B5, B7, A6, A8, D4, D7, CH6, and Meliadine Lake (north and south separated) for each modelled year including a pre-mining baseline (analogous to Appendix H6, Table 9)).

Agnico Eagle’s Response to Request:

The predicted groundwater flow rates in and out of lakes with open taliks and Meliadine Lake will be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	NRCan	Rec No.:	NRCan-IR-11
Re:	Hydrogeology modelling, no TDS results presented–Groundwater Quantity		

Request Made by Interested Party:

Provide cross-sections of predicted TDS contours (analogous to Figure 7 (Appendix H6), but moved slightly westward to intersect Tiriganiaq underground) for model times presented in Figures 21-24 (Appendix H6).

Agnico Eagle’s Response to Request:

The cross-sections of predicted TDS contours can be provided as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	NRCan	Rec No.:	NRCan-IR-12
Re:	Assessment of closure and post-closure phases–Groundwater Quantity		

Request Made by Interested Party:

- a) *Conduct hydrogeological modelling of closure and post-closure groundwater flow.*
- b) *Assess the time required to reach steady state groundwater flow conditions (a drawdown cone appears to persist into 2043 on Figure 24, Appendix H6).*
- c) *Tabulate groundwater flow in/out of lakes and pit lakes.*
- d) *Assess vertical groundwater flow in all exhausted pits refilled with tailings and waste rock storage during closure and post-closure phases.*
- e) *Estimate hydraulic properties of refilled underground mines, and open pits infilled with tailings or waste rock.*

Agnico Eagle’s Response to Request:

Agnico Eagle appreciates the NIRB’s direction provided; however, Agnico Eagle feels this should be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	NRCan	Rec No.:	NRCan-IR-13
Re:	Effect of saline water storage in B7 (and others)–Groundwater Quantity		

Request Made by Interested Party:

a) Evaluate the infiltration of saline water (flow, concentration and depth of saline intrusion) into the open talik beneath B7 as a result of its operation as a saline pond (2025-2043).

b) Ensure a saline boundary condition is implemented for saline pond B7 when conducting hydrogeological modelling of closure and post-closure groundwater flow (see NRCan-12).

Agnico Eagle’s Response to Request:

Agnico Eagle appreciates the NIRB’s direction provided; however, Agnico Eagle feels this should be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	NRCan	Rec No.:	NRCan-IR-14
Re:	Post-closure groundwater flow–Groundwater Quantity		

Request Made by Interested Party:

Provide a table of planned lake/pit lake elevations for post-closure conditions

Agnico Eagle’s Response to Request:

These details are included in the Interim Closure and Reclamation Plan which is updated as part of the Water Licence Amendment. The planned lake/pit lake elevations for post-closure conditions will be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	NRCan	Rec No.:	NRCan-IR-15
Re:	Tailings and waste rock disposed in pit lakes–Groundwater Quantity		

Request Made by Interested Party:

Discuss whether or not a barrier or cover material is planned to isolate tailings or waste rock from the overlying pit lake water for both open and closed talik lakes. Describe the proposed water/sediment contacts in pit lakes

Agnico Eagle’s Response to Request:

The need of a barrier or cover material to isolate tailings or waste rock will be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Interested Party:	NRCan	Rec No.:	NRCan-IR-16
Re:	Timetable of refilling mines and pits–Groundwater Quantity		

Request Made by Interested Party:

Provide a timetable/timeline for the refilling of underground mines and exhausted pits and their flooding.

Agnico Eagle’s Response to Request:

Agnico Eagle acknowledges that NRCan is in support of in-pit disposal. The alternative of in-pit disposal including the timing of disposing tailings and waste rock in exhausted pits and their flooding will be further evaluated as part of the Type A Water Licence Amendment with the NWB. It should be noted that only pits not connected to the underground and with low to no potential of talik development would be evaluated.

In the case that NRCan requested the timeline for the refilling of underground mines and exhausted pits without in-pit disposal, please refer to the Water Balance and Water Quality Model report (Appendix H-7, Section 3.8 - Closure and Post-closure assumptions), which states that pit filling proceeds over 7-years (2044-2050) during the active closure phase and the underground filling starts from October 2043 onwards.

Interested Party:	NRCan	Rec No.:	NRCan-IR-17
Re:	Post-closure open talik–Groundwater Quantity		

Request Made by Interested Party:

Discuss how the post-closure configuration of lakes and pit lakes may alter the long-term extent of open talik beneath pit lakes.

Agnico Eagle’s Response to Request:

As per NIRB’s reconsideration report and recommendations regarding the “In-Pit Tailings Disposal Modification” to the Meadowbank Gold Mine (NIRB 2018), NIRB has responded to similar NRCan’s recommendations and has stated that the Nunavut Water Board is a more appropriate venue for the in-depth consideration of these topics. Therefore, the post-closure configuration of lakes and pit lakes will be further evaluated as part of the Type A Water Licence Amendment with the NWB.

Reference:

NIRB (Nunavut Impact Review Board). 2018. Nunavut Impact Review Board Reconsideration Report and Recommendations In-Pit Tailings Disposal Modification Agnico Eagle Mines Ltd. NIRB File No.: 03MN107. August 31, 2018.

Interested Party:	NRCan	Rec No.:	NRCan-IR-18
Re:	Climate information utilized for thermal modelling-Permafrost		

Request Made by Interested Party:

Please clarify whether climate change scenarios utilized in thermal models have been updated based on the most recent information available and/or whether the Proponent will utilize the most recent climate change scenarios available in their thermal modelling to determine the thermal evolution of the mine waste storage facilities as design advances

Agnico Eagle’s Response to Request:

Climate change scenarios used in thermal models for Meliadine Extension reflect IPCC’s Fifth Assessment Report (IPCC 2013). Downscaled gridded datasets from the Sixth Assessment Report (IPCC 2021) became available in December 2021 at which time thermal modelling was well underway.

References:

- IPCC. 2013. Climate Change 2013: The Physical Science Basis. Contribution of Working Group I to the Fifth Assessment Report of the Intergovernmental Panel on Climate Change. Stocker, T.F., D. Qin, G.K. Plattner, M. Tignor, S.K. Allen, J. Boschung, A. Nauels, Y. Xia, V. Bex and P.M. Midgley (eds.). Cambridge University Press. Cambridge, United Kingdom and New York, NY, USA.
- IPCC. 2021. Climate Change 2021: The Physical Science Basis. Global Daily Downscaled Projections (NEX-GDDP-CMIP6. December 21, 2021.

Interested Party:	NRCan	Rec No.:	NRCan-IR-19
Re:	Ground thermal regime in the project area		

Request Made by Interested Party:

Please indicate whether any suitable data have been acquired from new thermistor cables installed in 2020 in the vicinity of the Discovery deposit. If data have been acquired, update the thermal and groundwater models and assessments of mine water inflow.

Agnico Eagle's Response to Request:

Agnico Eagle appreciates the NIRB's direction provided; however, Agnico Eagle feels this should be further evaluated as part of the Type A Water Licence Amendment with the NWB with new suitable data that has been acquired in the vicinity of the Discovery deposit.

Interested Party:	NRCan	Rec No.:	NRCan-IR-20
Re:	Thermal evolution of the Tailing Storage Facility (TSF)		

Request Made by Interested Party:

Please provide the supporting information on the TSF design and the thermal analysis/modelling completed to support conclusions regarding the thermal evolution of the TSF. This might include (but not limited to) reports such as Tetra Tech (2018).

Agnico Eagle’s Response to Request:

Agnico Eagle refers NRCan to Tailings Storage Facility (TSF) Design Report and Drawings, submitted as part of Water Licence 2AM-MEL1631, Part D, Item 1 (Agnico Eagle 2018).

The thermal and seepage analysis modelling completed to support conclusions regarding the thermal evolution of the TSF for Meliadine Extension is presented in Appendix IR-6 (Okane 2022) of this response package.

Reference:

Agnico Eagle (Agnico Eagle Mines Limited). 2018. Tailings Storage Facility (TSF) Design Report and Drawings. Reference 6515-583-163-REP-001. 30-day Notice to Nunavut Water Board in Accordance with Water Licence 2AM-MEL1631, Part D, Item 1. November 2018. Available at: <ftp://ftp.nwb-oen.ca/registry/2%20MINING%20MILLING/2A/2AM%20-%20Mining/2AM-MEL1631%20Agnico/3%20TECH/D%20CONSTRUCTION/Tailings%20Storage%20Facility/>

Okane (Okane Consultants Inc.). 2022. Meliadine Tailings Storage Facility Thermal Modelling. Prepared for Agnico Eagle. February 14, 2022.