



January 20th, 2017

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Re: NIRB File No. 16MN056 Application No: 124683/ NWB File No. 2AM WTP ---- : Information Requests Received from Parties Regarding Agnico Eagle Mines Ltd's " Whale Tail Pit" Project

Dear Ms. Granchinho,

Agnico Eagle thanks the Nunavut Impact Review Board, Environment and Climate Change Canada, Fisheries and Oceans Canada, Government of Nunavut, Health Canada, Indigenous and Northern Affairs Canada, Kivalliq Inuit Association, Natural Resources Canada and Transport Canada for the opportunity to address the information requests as part of the review of the Whale Tail Pit Project.

As requested, please find attached responses which are intended to address the information requests and recommendations of the NIRB regarding NIRB File No. 16MN056 Application No: 124683/ NWB File No. 2AM WTP ---- : Information Requests Received from Parties Regarding Agnico Eagle Mines Ltd's " Whale Tail Pit" Project. Agnico Eagle will continue to work with the interveners during the technical review phase of the project.

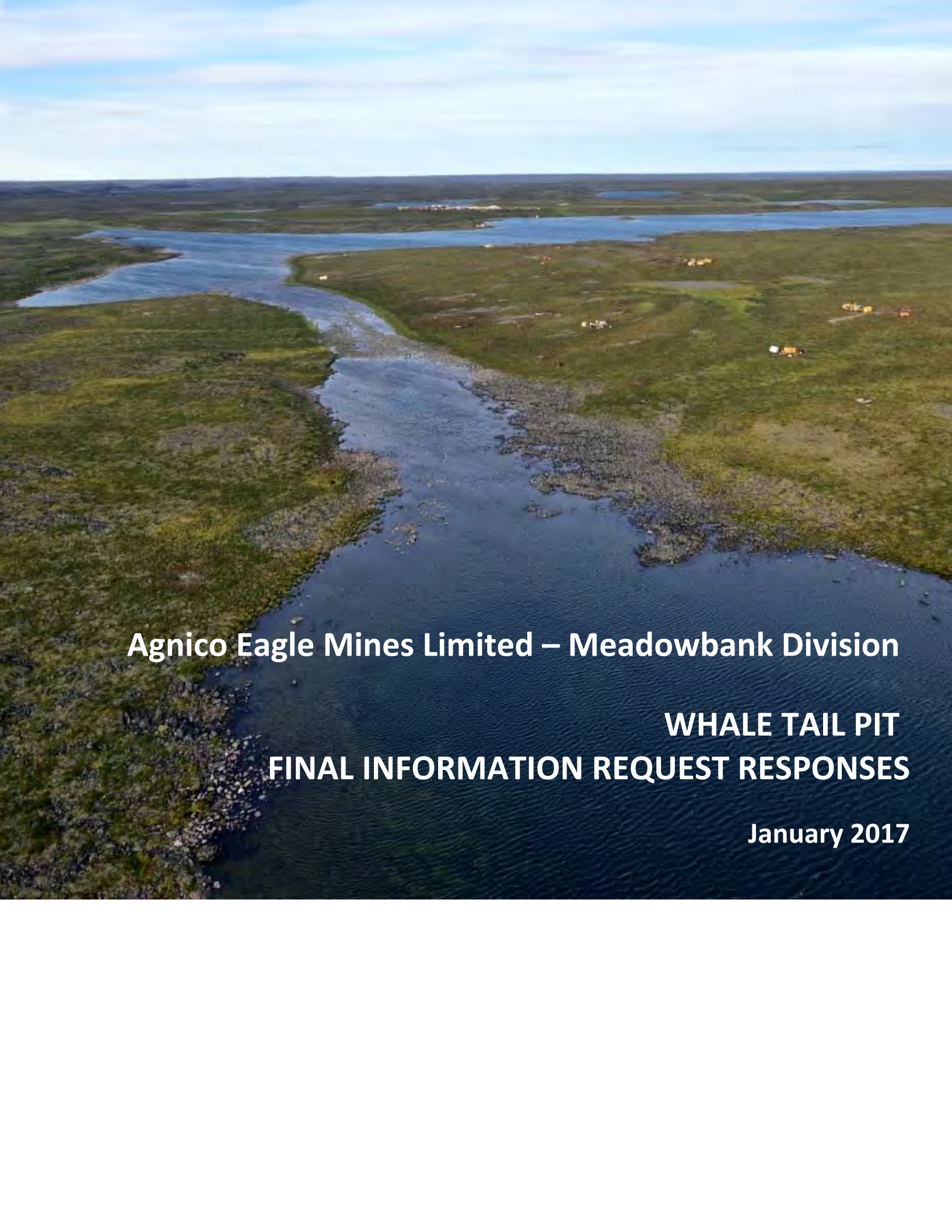
Should you have any questions or require further information, please contact the undersigned Jamie Quesnel at Jamie.quesnel@agnicoeagle.com or, Ryan Vanengen at ryan.vanengen@agnicoeagle.com.

Regards,

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cc. Ryan Barry, NIRB; Stephanie Autut, NWB; David Hohnstein, NWB; Luis Manzo, KIA; Tineka Simmons, NPMO



Agnico Eagle Mines Limited – Meadowbank Division

**WHALE TAIL PIT
FINAL INFORMATION REQUEST RESPONSES**

January 2017

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ENVIRONMENT AND CLIMATE CHANGE CANADA

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#1
Re:	Greenhouse Gases (GHG)		

Reference to FEIS: Volume 4 Atmospheric Environment, Table 4.2-1, Section 4.2.3 Climate and Project Interactions

Information Request / Recommendation Made By Interested Party:

a) ECCC requests that the Proponent provide the emission factors used to determine GHGs, broken down by equipment engine size and GHG compound.

b) ECCC requests that the Proponent provide sample calculations which show how GHG emissions were determined.

c) ECCC requests that the Proponent verify whether fugitive methane emissions were considered in the GHG emission estimate, and if not, to provide an estimate of these emissions.

Agnico Eagle's Response to Information Request / Recommendation:

Off-road Vehicle Exhaust

The CO₂ emissions from off-road mobile equipment exhaust were calculated using the U.S. EPA NONROAD model. The CO₂ emission factor was calculated as:

$$EF(CO_2) = (BSFC \times 453.6 - HC) \times 0.87 \times (44/12)$$

where: EF(CO₂) is in g/hp-hr

BSFC is the in-use adjusted fuel consumption in lb/hp-hr

HC is the in-use adjusted hydrocarbon emissions in g/hp-hr

The ratio (44/12) represents the ratio of CO₂:C molar masses

The CO₂ emissions were calculated as:

$$CO_2 = EF(CO_2) \times \text{Operating hours (hr)} \times \text{horse power (hp)} \times \text{load factor}$$

The mobile equipment are listed in Table ECCC1-1 below. An example calculation has been provided for excavators (Terex - RH120) using the following information:

- Number of equipment = 2;
- Horsepower = 1400 hp;
- US EPA emission standard = Tier 3;
- Vehicle type = Excavator;
- Load factor = 0.53;
- Annual operating hour = 7300 hours.

$$\text{In-use adjusted BSFC} = \text{Steady-state BSFC}_{ss} \times \text{BSFC Transient Adjustment Factor}$$

$$= 0.367 \times 1.01$$

$$= 0.371 \text{ lb /hp-hr}$$

In used adjusted HC = HC emission factor x Transient Factor x Deterioration Factor

$$= 0.167 \times 1.05 \times 1.027$$

$$= 0.180 \text{ g/hp-hr}$$

$$\text{EF}(\text{CO}_2) = (\text{BSFC} \times 453.6 - \text{HC}) \times 0.87 \times (44/12)$$

$$= (0.371 \times 453.6 - 0.180) \times 0.87 \times (44/12)$$

$$= 536 \text{ g/hp-hr}$$

$$\text{CO}_2 \text{ emission} = \text{EF}(\text{CO}_2) \times \text{number of equipment} \times \text{load factor} \times \text{horsepower} \times \text{annual operating hours} / 1000,000 \text{ (g/tonnes)}$$

$$= 535.78 \times 2 \times 0.53 \times 1400 \times 7300 / 1,000,000$$

$$= 5800 \text{ tonnes/year}$$

The CO₂ emissions break-down for mobile equipment is listed in Table ECCC1-2.

Table ECCC1-1: Mobile Equipment Lists for the Whale Tail Open Pit, Road to the Waste Pile, and the Ore Pad

Activity	Vehicle Name	Exhaust Type	Quantity	Spec [hp]	U.S. EPA Emission Standard	Type
Open Pit	Excavator - Terex - RH120	Non-Road	2	1400	Tier 3	Excavator
Open Pit	Wheel Loader - Cat - 992G	Non-Road	2	880	Tier 3	Rubber-tired Loader
Open Pit	Excavator - Cat - 390D L	Non-Road	1	1080	Tier 3	Excavator
Open Pit	Mining Truck - Caterpillar 777F	Non-Road	11	939	Tier 3	Crawler Dozer
Open Pit	Prod. Drill - ATLAS-DM45	Non-Road	4	630	Tier 3	Crawler Dozer
Open Pit	Motor Grader - Cat - 16M	Non-Road	3	297	Tier 3	Crawler Dozer
Open Pit	Wheel Dozer - Cat - 834H	Non-Road	1	523	Tier 3	Crawler Dozer
Open Pit	Track Dozer - Cat - D9T	Non-Road	4	464	Tier 3	Crawler Dozer
Open Pit	Excavator - Cat - 345D	Non-Road	2	380	Tier 3	Excavator
Open Pit	Water Truck - CAT - 773D	Non-Road	1	600	Tier 3	Crawler Dozer
Road to Waste pile	Mining Truck - Caterpillar 777F	Non-Road	9	939	Tier 3	Crawler Dozer
Road to Waste pile	Water Truck - CAT - 773D	Non-Road	1	600	Tier 3	Crawler Dozer
ore pad	Jaw crusher-QJ331	Non-Road	2	350	Tier 3	Crawler Dozer
ore pad	Wheel Loader - Cat - 992G	Non-Road	2	880	Tier 3	Rubber-tired Loader

Table ECCC1-2: CO₂ Emissions from Off-road Mobile Equipment

Vehicle	Load Factor	Operating Hours Per Day	Operating Hours Per Year	CO ₂ Emissions factors [g/hp-hr]	CO ₂ Emissions [tonnes/year]
Excavator	0.53	20	7,300	535.78	5,800
Wheel Loader	0.48	20	7,300	535.78	3,300
Excavator	0.53	20	7,300	535.78	2,240
Mining Truck	0.58	10	3,650	535.78	11,720
Prod. Drill	0.58	20	7,300	535.78	5,720
Motor Grader	0.58	20	7,300	535.72	2,020
Wheel Dozer	0.58	20	7,300	535.78	1,190
Track Dozer	0.58	20	7,300	535.78	4,210
Excavator	0.53	20	7,300	535.78	1,580
Water Truck	0.58	8	2,920	535.78	540
Mining Truck	0.58	10	3,650	535.78	9,590
Water Truck	0.58	8	2,920	535.78	540
Jaw crusher	0.58	20	7,300	535.78	1,590
Wheel Loader	0.48	20	7,300	535.78	3,300
Total Emission					53,340

The U.S. EPA NONROAD model only calculates the CO₂ emissions from off-road equipment. In order to evaluate the GHG emissions of CH₄ and N₂O in terms of CO₂ equivalents the IPCC AR4 global warming potential (GWP) for CH₄ and N₂O were used. This is consistent with the 2016 technical guidance provided by ECCC for the federal [GHG Reporting Program](#). These emission factors and GWPs are summarized in Table ECCC1-3.

Table ECCC1-3: Emission Factors for Off-Road Mobile Vehicles and Their Global Warming Potentials (GWPs)

GHG	Off-road mobile diesel combustion emission factor [g/L]	GWP
CO ₂	2690	1
CH ₄	0.15	25
N ₂ O	1.1	298

The GHG emissions were calculated using the following formula:

Emissions (tonnes/year) = Emission factors (g/L) x BSFCss (lb/hp-hr) x BSFC TAF x Load Factor x horsepower (hp) x number of vehicles x annual hours of operation (hours) x 0.4536 (kg/lb) / diesel density (870 [kg/m³]) x 1000 (L/m³) x 10⁻⁶ (tonnes/g)

CO₂ equivalent = CO₂ emission + CH₄ emission x GWP (CH₄) + N₂O emission x GWP (N₂O)

A sample calculation is presented for CO₂, CH₄, and NO₂ emissions for an excavator:

CO₂ = 2690 x 0.367 x 1.01 x 0.53 x 1400 x 2 x 7300 x 0.4536 (kg/lb) / 870 (kg/m³) x 1000 x 10⁻⁶
= 5632 (tonnes/year)

CH₄ = 0.15 x 0.367 x 1.01 x 0.53 x 1400 x 2 x 7300 x 0.4536 (kg/lb) / 870 (kg/m³) x 1000 x 10⁻⁶
= 0.3 (tonnes/year)

N₂O = 1.1 x 0.367 x 1.01 x 0.53 x 1400 x 2 x 7300 x 0.4536 (kg/lb) / 870 (kg/m³) x 1000 x 10⁻⁶
= 2.3 (tonnes/year)

$$\begin{aligned}\text{CO}_2 \text{ equivalent} &= 5632 + 0.3 \times 25 + 2.3 \times 298 \\ &= 6330 \text{ (tonnes/year)}\end{aligned}$$

The CO₂, CH₄, N₂O, and CO₂ equivalent emissions from off-road mobile equipment are listed in Table ECCC1-4.

Table ECCC1-4: GHG Emissions Estimated from Environment Canada Emission Factors

Vehicle	Fuel consumption [L]	CO ₂ emissions [tonnes/year]	CH ₄ emissions [tonnes/year]	N ₂ O emissions [tonnes/year]	Total GHG emission in CO ₂ equivalent [tonnes]
Excavator	2,093,620.65	5631.8	0.3	2.3	6,330
Wheel Loader	1,191,840.11	3206.0	0.2	1.3	3,600
Excavator	807,539.39	2172.3	0.1	0.9	2,440
Mining Truck	4,225,911.20	11367.7	0.6	4.6	12,770
Prod. Drill	2,062,018.82	5546.8	0.3	2.3	6,230
Motor Grader	729,070.94	1961.2	0.1	0.8	2,200
Wheel Dozer	427,950.73	1151.2	0.1	0.5	1,290
Track Dozer	1,518,693.23	4085.3	0.2	1.7	4,590
Excavator	568,268.46	1528.6	0.1	0.6	1,720
Water Truck	196,382.75	528.3	0.0	0.2	593
Mining Truck	3,457,563.71	9300.8	0.5	3.8	10,450
Water Truck	196,382.75	528.3	0.0	0.2	593
Jaw crusher	572,783.01	1540.8	1587.94	0.6	1,730
Wheel Loader	1,191,840.11	3206.0	0.1	1.3	3,600
Total Emissions		51755.2	2.9	21.2	58,140

Since the U.S. EPA non-road GHG emissions do not include CH₄ and N₂O, it is most appropriate to use the ECCC emission factors that include these GHG's. The original FEIS used the U.S. EPA non-road GHG emissions and did not consider CH₄ and N₂O for off-road emissions resulting in a total annual emissions estimate of 53 kilotonnes per year. The estimate has now been updated to include CH₄ and N₂O resulting in an estimate of 58 kilotonnes – see updated Table 4.2-1 at the end of this IR.

On road vehicle exhaust

The CO₂ emissions from on road mobile equipment were calculated from emission factors derived from U.S. EPA Mobile version 6 emission model. The annual CO₂ emissions from on-road vehicles were calculated as:

$$\text{CO}_2 \text{ emission (tonnes/year)} = \text{CO}_2 \text{ emission factor (g/VKMT)} \times \text{Daily Travel distance (km)} \times 365.25 \text{ days/year} \times 10^{-6} \text{ (tonnes/g)}$$

An example calculation for Long-haul vehicle is as followed:

$$\text{CO}_2 \text{ (tonnes/year)} = 1006.1864 \times 9702 \times 365.25 \times 10^{-6} = 3566 \text{ tonnes/year}$$

The CO₂ emissions calculated for on road vehicles were listed in Table ECCC1-5.

Table ECCC1-5: CO₂ Emissions Calculated from Mobile Emission Factors for On Road Vehicles

Vehicle Type	Average Daily vehicle passages	MOBILE Vehicle Class	Maximum Daily Travel distance, km	CO ₂ Emission factor [g/VKMT]	CO ₂ emission, kg/day	Annual CO ₂ emission, tonnes/year
Long-haul	154	HDDV8B	9,702	1006.1864	9762.0	3570
Explosive	4	HDDV8B	252	1006.1864	253.6	92.5
Fuel Truck	2	HDDV8A	126	1044.2969	131.6	48.0
Cargo	7	HDDV8B	441	1006.1864	443.7	162
Pickup	20	HDDV2B	1,260	1044.2969	1315.8	480
Bus	2	URB BUS	126	1451.2746	182.9	66.7
Oversize	1	HDDV8B	63	1006.1864	63.4	23.1

A reliable estimate of fuel consumption for the on-road vehicles is not available for the Project. To update the GHG emissions to include CH₄ and N₂O, we use the U.S. EPA emission factors for mobile combustion of on-road diesel vehicles¹.

The CH₄ and N₂O emission rates = Emission factor (g/mile) / 1.60934 (km/mile) x Daily Travel Distance (km/day) x 365.25 (days/year) x 10⁻⁶ (tonnes/g)

CO₂ equivalent = CO₂ emission + CH₄ emission x GWP(CH₄) + N₂O emission x GWP (N₂O)

An example calculation is presented for Long-haul vehicles:

CH₄ emission = 0.0051 / 1.60934 x 9702 x 365.25 x 10⁻⁶ = 0.011 (tonnes/year)

N₂O emission = 0.0048 / 1.60934 x 9702 x 365.25 x 10⁻⁶ = 0.011 (tonnes/year)

CO₂ equivalent = 3563.1 + 0.011 x 25 + 0.011 x 298 = 3,567 (tonnes/year)

The CH₄ and N₂O emissions calculated from U.S. EPA emission factors and the total GHG emission in CO₂ equivalent were listed in Table ECCC1-6.

Table ECCC1-6: The CH₄, N₂O emissions and the Total GHG Emission from On Road Vehicles

Vehicle Type	Maximum Daily Travel distance, km	CH ₄ Emission factor (g/mile)	N ₂ O Emission factor (g/mile)	CH ₄ Emissions (tonnes/year)	N ₂ O emissions (tonnes/year)	Total GHG emission in CO ₂ equivalent [tonnes/year]
Long-haul	9,702	0.0051	0.0048	0.011	0.011	3,570
Explosive	252			0.000	0.000	92.6
Fuel Truck	126			0.000	0.000	48.1
Cargo	441			0.001	0.000	162
Pickup	1,260			0.001	0.001	481
Bus	126			0.000	0.000	66.8
Oversize	63			0.000	0.000	23.2
Total Fleet	11,970			0.014	0.013	4,440

¹ US EPA 2014, Emission factors for Greenhouse Gas Inventories.

Genset and Heater

The genset and heater CO₂ emissions were calculated from Environment Canada Emission factors for diesel combustion and have been updated as part of the response to this IR.

The Emissions (tonnes/year) = Emission factor (g/L) x fuel combustion (L/hr) x 24 (hr/day) x 365.25 (days/year) x number of units x 10⁻⁶ (tonnes/g)

Fuel combustion (L/hr) = Power output (hp) / efficiency x 2546.699 (Btu/hr-hp)/ diesel heating value (19300 [Btu/lb]) x 0.454 (kg/lb)/diesel density (870 [kg/m³]) x 1000 (L/m³)

An example calculation was presented for Gensets.

Fuel combustion (L/hr) = (2481.0 / 1.0) x 2546.699 / 19,300 x 0.454 / 870 x 1000 = 170.84 (L/hr)

Genset CO₂ emission (tonnes/year) = 2690 x 170.84 x 24 x 365.25 x 2 x 10⁻⁶ = 8,057 (tonnes/year).

The GHG emissions from the Genset and heater are summarized in Table ECCC1-7.

Table ECCC1-7: GHG Emissions from Genset and Heater

GHG Gases	Emission factor [g/L]	Genset Emissions [tonnes/year]	Heater Emissions [tonnes/year]
CO ₂	2690	8,060	2,950
CH ₄	0.133	0.4	0.1
N ₂ O	0.4	1.2	0.4
CO ₂ eq		8,430	3,080

Project Total

As requested, the FEIS estimates of total GHG emissions, in CO₂ equivalents have been updated to include CH₄ and N₂O emissions with GWP of 28 and 298, respectively. The updated total Project GHG emission is 74.0 kt CO₂e which is 15% higher than the total GHG emissions provided in the original FEIS (i.e., 64.2 kt CO₂e). With the inclusion of CH₄ and N₂O emissions, Table 4.2-1 of the FEIS can be updated as follows:

Table 4.2-1: Greenhouse Gas Emissions Summary for the Project

Emissions Source	Greenhouse Gas Emissions (kt CO ₂ e)	Project Emission as a Proportion of Nunavut and Canadian Emissions (%)
Off-road exhaust	58.1	—
On-road exhaust	4.4	—
Power plant	8.4	—
Camp heater	3.1	—
Project Total^a	74.0	—
Nunavut Total^b	434	17.0
Canadian Total^b	714,000	0.01

Agnico Eagle proposes to report within its Annual Report to the Regulators on GHG and measures taken by Agnico Eagle to reduce the overall contribution.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#2
Re:	Sulphur Dioxide Standards		

Reference to FEIS: Volume 4 Atmospheric Environment, Tables 4.3-1 and 4.3-4 (Air Quality Standards)

Information Request / Recommendation Made By Interested Party:

ECCC requests a response from the Proponent on whether they will consider using the Canadian Ambient Air Quality Standards for Sulphur dioxide as a guide to assessing potential effects to air quality.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle understands that on October 3, 2016 the Canadian Council of Ministers of the Environment announced the new Canadian Ambient Air Quality Standard (CAAQS) for SO₂ (Fig. 1).

Averaging time	Numerical Value in parts per billion (ppb)		Statistical form of the standards (metric)
	Effective 2020	Effective 2025	
1-hour	70	65	The 3-year average of the annual 99 th percentile of the SO ₂ daily maximum 1-hour average concentrations.
1-calendar year (annual)	5.0	4.0	The arithmetic average over a single calendar year of all 1-hour average SO ₂ concentrations.

(<http://www.ccme.ca/en/resources/air/air/sulphur-dioxide.html>)

The maximum plus background predicted 1-hr and annual ground level SO₂ concentrations for the Project are 6.7 and 0.2 ppbv, respectively (see Volume 4, Table 4.3-4 of the FEIS). The predicted effects of the Project on local SO₂ concentrations remain well below the new CAAQS for both 2020 and 2025 and Agnico Eagle is willing to consider the new CAAQS as a guide to assessing potential effects on air quality.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#3
Re:	Haul Road Modelling		

Reference to FEIS: Volume 4 Atmospheric Environment, Figures 4.3-4 and 4-C-5 Section 4-C-7.2 Emission Sources Modelled for the Whale Tail Open Pit

Information Request / Recommendation Made By Interested Party:

ECCC requests that the Proponent clarify whether the entire haul road was included in the primary modelling scenario, as described in Section 4-C-7.2.

If the primary modelling scenario does not include the entire haul road, ECCC requests that the Proponent re-assess the modeling scenarios with the inclusion of the entire road to ensure particulate matter concentrations are adequately captured and to ensure the concentrations have not been underestimated.

Agnico Eagle’s Response to Information Request / Recommendation:

For the purposes of the FEIS, a distinction is made between the short segment of the haul road located inside the Project boundary, and the length of the haul road between the Whale Tail Pit and Meadowbank.

For predicting effects to air quality from emissions from within the Project Boundary, combustion and fugitive road dust emissions along the segment of the haul road located inside the Project boundary are explicitly included in the air quality model predictions (for example, see Figure 4-C-14 and 4-C-15 of Appendix 4-C).

For prediction of effects to air quality from fugitive road dust emissions along the haul road, the haul road was modelled in a generic sense over a representative 1 km road segment (see Section 4.3.3.1 of FEIS). Figure 4.3-3 compares the predicted dust deposition rates, as a function of distance from the Whale Tail to Meadowbank haul road, to Aug/Sept 2014 observations of dust deposition rates adjacent to unpaved road surfaces at Meadowbank, including the AWAR to the Vault Pit (Agnico Eagle 2015). The results indicate that model predictions represent a conservative estimate of dust deposition rates, as compared to the available observations.

Modelling emissions along the entire length of the haul road from Whale Tail to Meadowbank requires a very large modelling domain and is not anticipated to produce more informative results. Finally, a new dustfall monitoring station (DF-5) has been proposed between kilometer 36 and 37 of the Haul Road (see Volume 8, Appendix 8-E.1: Air Quality Monitoring Plan). Results of the dustfall monitoring will be used to validate the predictions contained in the FEIS. Therefore, modelling of the entire Haul Road is not being undertaken at this time.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2015. 2014 All-Weather Access Road Dust Monitoring Report, Meadowbank Gold Project.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#4
Re:	Air Quality Monitoring		

Reference to FEIS: Volume 4 Atmospheric Environment, Section 4.3.7 Monitoring and Follow-up

Information Request / Recommendation Made By Interested Party:

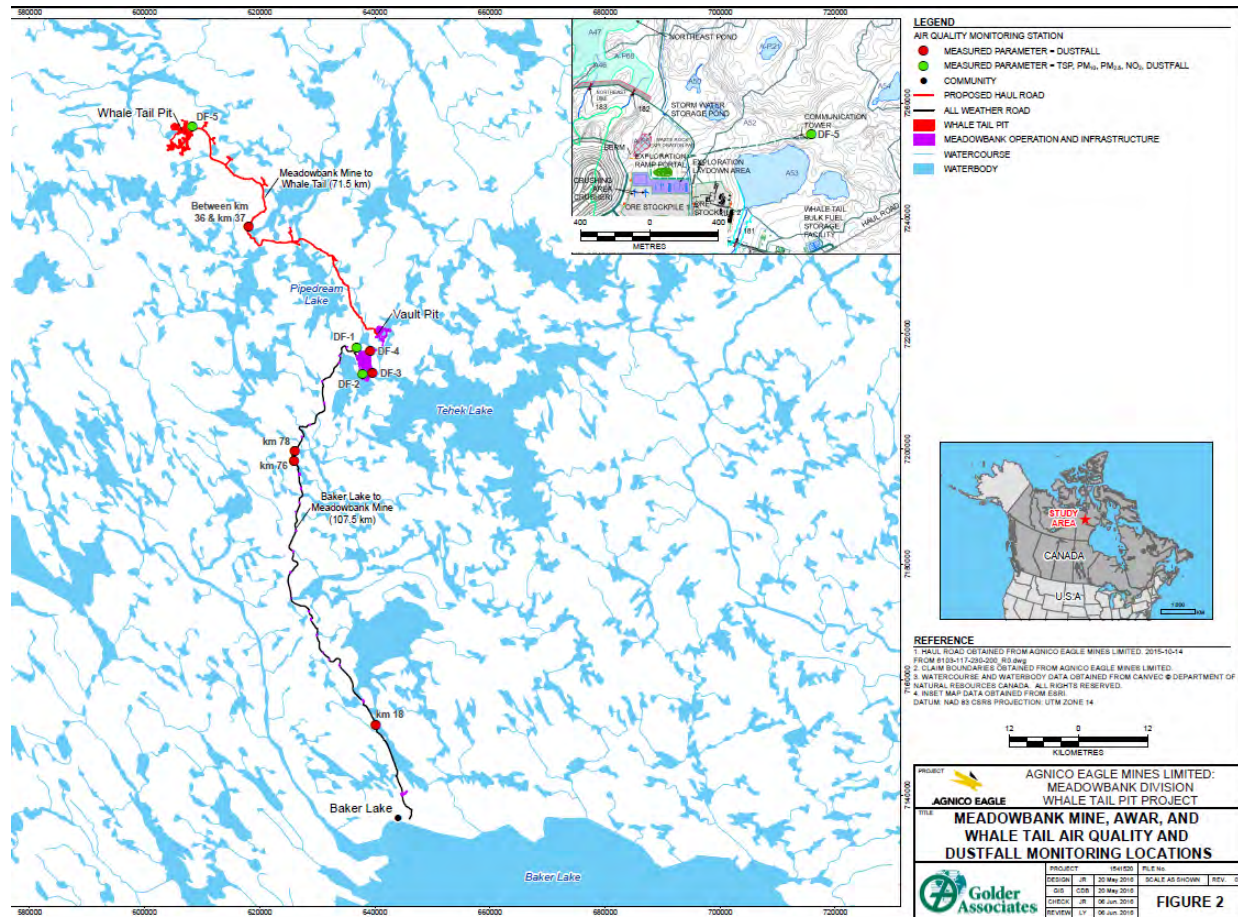
ECCC requests that the Proponent provide the information on the proposed monitoring locations.

Agnico Eagle's Response to Information Request / Recommendation:

Complete details on the proposed air quality and dustfall monitoring program can be found in Volume 8, Appendix 8.E-1. A new air quality and dustfall monitoring station is proposed at location DF-5 (Table 1 and Figure 2 of Appendix 8.E-1 included below) and between kilometers 36 and 37 of the haul road (see Figure 2 of Appendix 8.E-1).

Table 1: UTM Coordinates For the Meadowbank Air Quality and Dustfall Monitoring Locations

Monitoring locations	Measured preferences	Easting	Northing
DF-1	TSP, PM ₁₀ , PM _{2.5} , NO ₂ , dustfall	636850	7217663
DF-2	TSP, PM ₁₀ , PM _{2.5} , NO ₂ , dustfall	637895	7213049
DF-3	Dustfall	639599	7213198
DF-4	Dustfall	639233	7217074
DF-5	TSP, PM₁₀, PM_{2.5}, passive NO₂, dustfall	608242	7255970



Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#5
Re:	Overburden		

Reference to FEIS: Volume 5 Terrestrial Environment, Section 5.2.1 Geology Baseline Environment

Information Request / Recommendation Made By Interested Party:

ECCC requests that the Proponent analyse the overburden associated with the Whale Tail Pit area to understand the properties at this location in order to support the assumptions made (i.e. that overburden properties are the same at the Meadowbank Mine site).

Agnico Eagle's Response to Information Request / Recommendation:

ECCC is referred to Volume 5, Table 5.3-4 which presents total soil metal concentrations for baseline till samples from various locations across the site.

ECCC is also referred to Appendix 5-E Geochemistry of Whale Tail Mine Wastes and Road Aggregate. Section 2.1.3 describes the sampling program, when 12 samples were collected from shallow overburden within the Whale Tail Pit outline. Results of the comprehensive analytical program are presented in Section 3.0 of Appendix 5-E.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#6
Re:	Acid Rock Drainage (ARD)		

Reference to FEIS: Volume 5 Terrestrial Environment, Section 5.2.2 Waste Rock, Ore, Overburden, and Lake Sediments

Information Request / Recommendation Made By Interested Party:

ECCC requests that the Proponent explain how the lag time before onset of ARD was determined in order to substantiate the statement that the onset of ARD is expected to occur after the life of the mine. ECCC also requests that the Proponent explain how well potentially-acid generating (PAG) and non-PAG rock will be mixed in order to ensure its performance in buffering.

Agnico Eagle's Response to Information Request / Recommendation:

ECCC is referred to Appendix 5-E Geochemistry of Whale Tail Mine Wastes and Road Aggregate. Section 2.2.4.2 (subsection Actual Time Equivalency of Kinetic Leaching Tests) compares the flushing rate of the kinetic test cells with site specific conditions, and Section 3.5.1.1 (Mineral Consumption Rates and Evaluation of ARD Potential from Kinetic Tests) discusses the use of kinetic test results to determine mineral depletion rates and potential lag time to ARD. For the most reactive PAG rock tested, mineral depletion calculations indicate that the columns and humidity cell tests will be amenable to acidification in 2 to 4 years under laboratory conditions, which represents more than a decade in the field based on the field time equivalency of laboratory kinetic tests, at a minimum, and if no ARD control mechanisms were put in place. Therefore, acidification is expected to take longer than 10 years (the average of the representative PAG cells) under field conditions because the laboratory tests do not consider many site specific factors that affect mineral reaction kinetics.

As described in Volume 8, Appendix 8-A.1, waste rock will be managed in the WRSF following best practices to limit the ingress of oxygen and development of convection cells (i.e., waste rock will not be free dumped). Three main strategies will be employed and include: i) placement in layers spread using a dozer to minimize the footprint and the dust, where each bench of 20 m maximum height is going to be composed of 4 layers of 5 m thickness (Section 6.3); and ii) the use of freeze control strategies (Section 9) and iii) ensure that PAG material is either mixed or placed in the interior of the WRSF to ensure freezeback, then capped with 2 to 4 m of NPAG. The waste rock pile including PAG waste rock is expected to freeze as is documented through thermistor strings installed in the waste rock dump at Meadowbank Mine (located approximately 50 km southeast of the site). These data show an active layer development of less than 4 m yearly. Accordingly, based on these observations at Meadowbank Mine, Agnico Eagle expects a NPAG/low Metal Leaching waste rock cover of 2 to 4 m will be capable of maintaining the pile frozen, thereby controlling ARD in the long-term.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#7
Re:	Waste Rock		

Reference to FEIS: Appendix 5-E Geochemistry of Whale Tail Mine Wastes and Road Aggregate, Executive Summary – Waste Rock

Information Request / Recommendation Made By Interested Party:

ECCC requests that the Proponent clarify what is meant by the statement “static and kinetic leaching tests do not necessarily mean that water contacting this rock at site will necessarily exceed the comparative criteria”.

Agnico Eagle’s Response to Information Request / Recommendation:

It is standard practice to use laboratory testing to evaluate waste rock leachate using conservative laboratory testing and model potential impacts of waste material. However, the quality of drainage water from the WRF will depend on a number of factors that cannot be reproduced in laboratory static and kinetic leach tests, as well as small scale field tests, including, but not necessarily limited to, material exposure, grain size and grain size distribution, drainage patterns and site climate which affect the ratio of leaching solution to solid material and water-rock contact time. All of these factors have an effect on the reactivity of the material. Given the lower water to rock ratio in the field at this very dry site, the large size and coarseness of much of the material in the pile and the cold climate with 8 months of freezing temperatures, it is expected that the reactivity will be much slower at the site than reported by laboratory testing, and likely to yield lower leaching rates than what is observed from laboratory analysis. Leachate concentrations in exceedance of comparative criteria underline the propensity of the material to release metals in dissolved form when in contact with water. Although effective as a screening tool and assessment tool, laboratory leachate results require confirmation through monitoring.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#8
Re:	Overburden and Lake Sediment		

Reference to FEIS: Volume 5 Terrestrial Environment, Table 5.3-4; Appendix 5-E Geochemistry of Whale Tail Mine Wastes and Road Aggregate, Executive Summary – Overburden and Lake Sediment

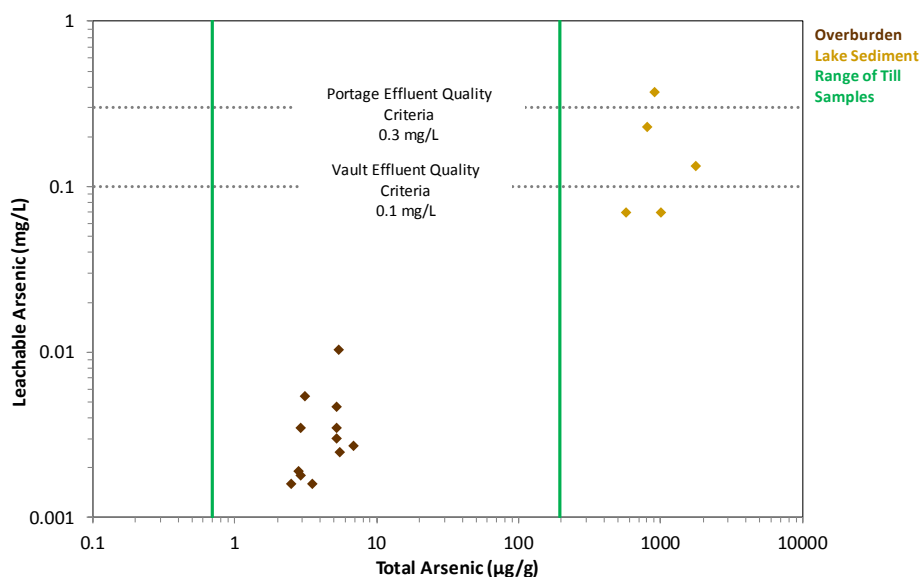
Information Request / Recommendation Made By Interested Party:

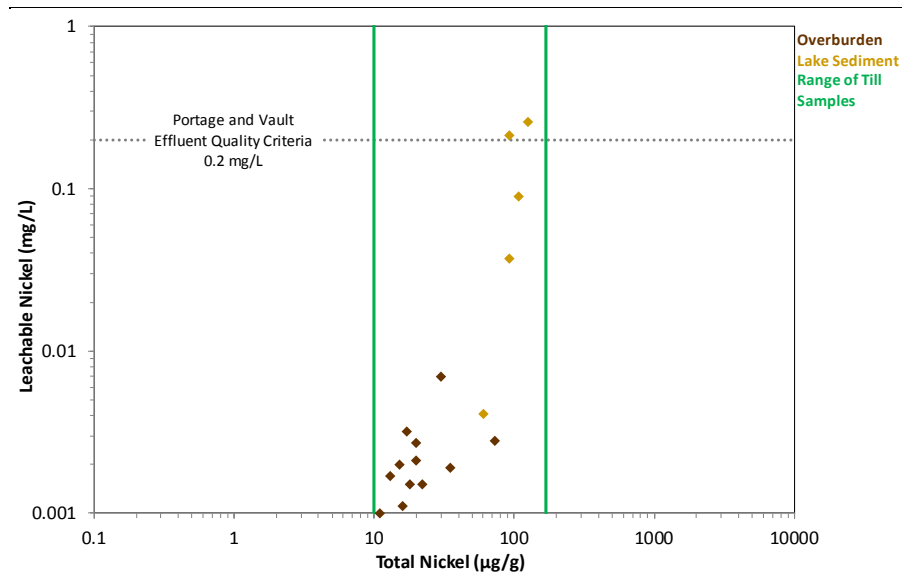
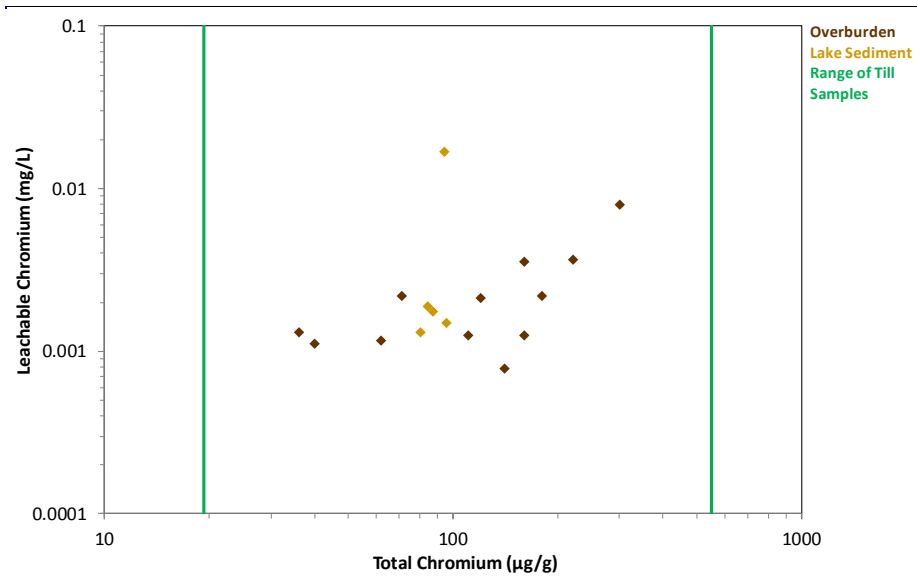
ECCC requests that the Proponent clarify/demonstrate whether erosion of the shallow overburden material would cause leaching of arsenic, chromium and/or nickel metals.

Agnico Eagle's Response to Information Request / Recommendation:

The soil data presented in Volume 5, Table 5.3-4 has been included in graphs of total versus leachable metal concentrations for arsenic, chromium, and nickel, based on Figure 14 of Appendix 5-E Geochemistry of Whale Tail Mine Wastes and Road Aggregate. These graphs are provided below; the baseline data is included as minimum and maximum (vertical green lines) as no leachate testing was completed on these samples.

The comparison of the two datasets demonstrates that the shallow overburden material reflects a similar range in total metal composition as the overburden and lake sediment samples presented in Appendix 5-E. Following the total versus leachable metal trends, it is anticipated that arsenic, chromium, and nickel will not leach from the shallow overburden in significant concentrations, nor above comparative criteria.





Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#9
Re:	Road Construction Material		

Reference to FEIS: Appendix 5-E Geochemistry of Whale Tail Mine Wastes and Road Aggregate, Section 2.1.4 Road Construction Material Samples

Information Request / Recommendation Made By Interested Party:

ECCC requests that the Proponent sample and analyse borrow materials for geochemical suitability for use in construction and to verify the assumption that the characteristics will be the same as those at Vault Pit.

Agnico Eagle's Response to Information Request / Recommendation:

The main source of crushed material for the construction of the road to Whale Tail Pit from Meadowbank includes both esker material and Vault waste rock, as described in Volume 8, Appendix 8-C, Section 1.1 and Section 7.1.

The proposed borrow materials for construction of the road to Whale Tail Pit were evaluated for acid rock drainage and metal leaching potential as documented in Appendix 5-E Geochemistry of Whale Tail Mine Wastes and Road Aggregate (Appendix A Geochemical Assessment of Proposed Construction Material for the Road to the Amaruq Deposit, Meadowbank Mine, Nunavut). For Vault Pit waste rock, the Vault operational database was used to evaluate their ARD potential in conjunction with confirmatory sampling from the Vault WRSF. This program confirmed that both the esker and Vault waste rock are suitable for construction use.

Further, in in Appendix 8-C, Section 7.3 Agnico Eagle commits to confirmatory sampling of granular material during the construction of the road.

Agnico Eagle agrees with the recommendations made by ECCC and will continue to sample borrow material for geochemical suitability for use in construction and to verify the geochemical characteristics

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#10
Re:	Surface Water Quality		

Reference to FEIS: Volume 3 Assessment Methods, Table 3.2-1 Assessment Endpoints and Measurement Indicators Associated with Valued Components

Information Request / Recommendation Made By Interested Party:

ECCC requests that Table 3.2-1 and the EIS are updated to include ‘Project-Related Substances’ as an additional measurement indicator for Surface Water Quality.

Agnico Eagle’s Response to Information Request / Recommendation:

The assessment methodology presented in Volume 3 was based on standard environmental assessment methods and considered the pathways through Project activities could affect the water quality Valued Component (VC). Further, the measurement indicators summarized in Table 3.2-1 for the water quality VC are standard indicators used in environmental assessments. Although “Project-Related Substances” (e.g., fuel, engine oil) are monitored in the receiving environment, they are not typically modelled as part of quantitative water quality analyses because these substances are not naturally found in, or released, to the aquatic environment under regular conditions of Project operation (i.e., only released as a result of a malfunction or spill), and they can be effectively managed through implementation of industry best practices (e.g., secondary containment and by following emergency response and spill contingency measures). However, the surface water quality component of Table 3.2-1 has been updated as follows to include “Project-Related Substances”.

Table 3.2-1: Assessment Endpoints and Measurement Indicators Associated with Valued Components

Valued Component	Assessment Endpoints	Measurement Indicators
Surface water quality	Protection of surface water quality for aquatic and terrestrial ecosystems, and human use	• Physicochemical water quality parameters (e.g., pH, conductivity, turbidity, suspended solids) • Major ions and nutrients • Total and dissolved metals • Project-related substances (e.g., petroleum hydrocarbons)
	Availability of the spatial and temporal distribution of water quantity for aquatic and terrestrial ecosystems	• Flow rate and the spatial and temporal distribution of water • Surface topography, drainage boundaries, waterbodies, and water pathways

Source: Modified from Volume 3, Table 3.2-1.

“Project-Related Substances” were assessed as part of the no linkage and secondary pathway assessments (Volume 3, Appendix 3-C, Table 3-C-6), and these constituents will be monitored along with the

measurement indicators summarized in Table 3.2-1. Best practices for managing “Project-Related Substances” will be adjusted based on the results of the CREMP, other water quality and flow monitoring programs, and adaptive management.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#11
Re:	Sediment		

Reference to FEIS: Volume 6 Freshwater Environment

Information Request / Recommendation Made By Interested Party:

ECCC requests that the EIS be updated to contain analysis and discussion of potential project effects on (1) sediment quality, and related water quality effects; and (2) suspended sediments, and related aquatic environment effects.

Agnico Eagle’s Response to Information Request / Recommendation:

The FEIS provided information on existing sediment quality plus mitigation and management to reduce or eliminate discharges to surface water and control of erosion and sedimentation. The FEIS also included information on potential effects to sediment and aquatic habitat.

Sediment quality was not considered as a valued component in the FEIS because potential effects to sediment quality can be managed through the implementation of mitigation measures and best management practices focussed on water quality and erosion control (Volume 6, Table 6.1-1). For example, effluent quality will be managed to achieve water quality objectives prior to discharge. Additionally, the implementation of erosion control measures is expected to limit the release of TSS to surface water and therefore limit deposition to sediments. It is anticipated that effective management of erosion and discharge quality will be protective of water and sediment quality.

Project effects on sediment quality are discussed in Volume 6, Section 6.4.3.1 (dust deposition) and Section 6.4.3.3.2.3 (results summary). Water quality effects that are expected to result from Project-related effects to sediment quality (i.e., increased TSS concentrations in surface water) are discussed in Volume 6, Section 6.4.3. Potential changes to habitats and aquatic biota that could result from increased suspended sediment concentrations were described in Volume 6, Section 6.5.3.3.2.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#12
Re:	Baseline Monitoring		

Reference to FEIS: Volume 6 Freshwater Environment, Table 6.4-1 Baseline Waste and Sediment Quality Sampling Summary

Information Request / Recommendation Made By Interested Party:

ECCC requests that data gaps in the existing baseline monitoring dataset be identified and addressed. The EIS should include a discussion of any data gaps that would compromise characterization of the baseline conditions in and around project area water bodies, describe how these gaps can be addressed in conjunction with planned (i.e., outstanding) baseline monitoring, and include a sampling schedule with locations, dates and parameters.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle believes the Water Quality and Sediment Quality baseline data presented in Volume 6 sufficiently characterizes the site for the purposes of the FEIS assessment of effects. However, based on ECCC's comments during the scoping phase, recognizes that additional temporal and winter sampling may be needed to verify the natural background variability within the project waterbodies. Consequently, in 2016, Agnico Eagle collected additional year-round water quality and biological data. As an extension of the Meadowbank Core Receiving Environmental Monitoring Program (CREMP), Agnico Eagle followed the proposed methods presented in Section 2.3 of the CREMP Appendix 8-E.2, which provides locations in Figure 2-1 to 2-5, a schedule of monitoring in Table 2-2 and monitoring parameters consistent with the Meadowbank CREMP. Where appropriate, Agnico Eagle will continue CREMP baseline data collection prior to construction of the Whale Tail Pit Project.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#13
Re:	Shipping		

Reference to FEIS: Volume 3 Assessment Methods, Appendix 3-A Marine Environment Summary ECCC's input to the Nunavut Planning Commission regarding Key Habitat Sites for Migratory Birds in the Nunavut Settlement Area. Revised May 2016.

Information Request / Recommendation Made By Interested Party:

ECCC requests that the Proponent provide the analysis used to support its determination that the effects of a major spill on marine birds is reversible through natural processes and will be of medium-term duration if affecting a key marine habitat site along the shipping route, such as Digges Sound or Akpatok Island.

Agnico Eagle's Response to Information Request / Recommendation:

The analysis used to support the determination that the effects of a major diesel spill on sensitive marine bird habitats along the shipping route (such as Digges Sound or Akpatok Island) would be reversible through natural processes and medium-term in duration took into consideration the following:

- The weathering process of diesel fuel in the marine environment (ULSD P-50 diesel).
- The behavior of a diesel spill near sensitive bird habitat areas such as Digges Sound or Akpatok Island (based on temporal and spatial plume modelling).
- The likelihood of marine birds directly/indirectly interacting with spilled diesel in the marine environment (based on known life history stages and spatial/temporal distribution patterns in RSA).
- The sensitivity of marine birds to diesel spills.

Only marine diesel spills (i.e., Ultra Low Sulphur P-50 diesel) were considered in the assessment given this was the most common fuel type by volume associated with the Project.

The effects of a major diesel spill on marine birds were considered to be 'medium-term' (impact reversible at end of closure) in duration due to relatively rapid rate of weathering of this fuel type in the marine environment, as described in Appendix 3-A, Section 3-A-8.1. The analysis was largely qualitative and described herein.

In general, diesel fuel has a low viscosity and will weather fairly rapidly when spilled in the marine environment (NOAA 2006). With a lower density than water, diesel fuel is readily dispersed by wave action. Over 90% of a small spill of diesel in the marine environment is either evaporated or naturally dispersed over a time scale of several hours to days (NOAA 2016). Similar rates of dispersion and evaporation were determined for hypothetical diesel spills modelled along the shipping route near Digges Island and Akpatok Island, as reported in Agnico-Eagle's fuel spill risk assessment conducted in support of the Meliadine Project FEIS (Agnico Eagle 2016).

As one of the possible outcomes of a major diesel spill on marine birds includes mortality, the effect at the individual level was considered irreversible. However, the effects at the population level was expected to be reversible through natural recruitment effects, meaning the number of new young birds entering the population over time would offset the number of bird mortalities potentially resulting from a spill. Although the number of potential bird mortalities from a major spill was not quantified as part of the risk assessment, it was deemed reasonable to assume that only a subset of the population would potentially be directly affected by a spill event based on the predicted spatial and temporal patterns of a major spill, and the likelihood of birds to be present within the spill footprint.

The likelihood of birds to be present in the spill footprint was qualitatively determined based on existing information on species life history stages and temporal/spatial distribution patterns in Hudson Strait during the open-water period, as reported in the literature. For example, Digges Island and Akpatok Island are considered sensitive areas for marine birds as both sites support extensive colonies of thick-billed murre during the summer breeding season, with > 1 million individuals reported at Akpatok Island and up to 1.6 million individuals at Digges Island (Gaston and Jones 1998; Mallory and Fontaine 2004). The analysis looked at the timing for arrival at breeding colonies, nesting, hatching, incubating, molting, fledgling stage, female and male behaviour after chicks have departed the nest and the swimming migration. Literature used is provided in the reference list below. The swimming migration of parent-chick pairs from Hudson Strait to their southern wintering grounds in Newfoundland/Labrador is either done alone or in small groups. Once chicks are independent of the parent, hatch-year young move south more rapidly than the adults, arriving in Newfoundland in October / November (with adults arriving in December) (Donaldson et al. 1997 in Gaston and Hipfner 2000). At-sea travel time from breeding colonies in Hudson Strait to the northern Labrador Sea occurs over a period of several days to several weeks depending on the location of the breeding site (e.g., individuals from Digges Sound arrive later than individuals from Akpatok Island; Orr and Ward 1982). Individuals from Digges Sound have been shown to travel at a rate of 40 km/day, passing the eastern entrance to the Strait within a month of leaving the colony (Gaston 1982). Based on vessel-based surveys undertaken in 2005 (McKinnon et al. 2009), seabird density (on the water) in Hudson Strait during late summer / early fall was estimated at 4.5 ± 1.4 birds / km², with the density of thick-billed murre estimated as 0.4 birds/km² (or 65 birds/165 km²) during this time.

The degree to which thick-billed murre may be affected by a major diesel spill would depend on when and where the spill occurred relative to the stage of breeding cycle at the time of the spill. As nesting areas are located on steep cliffs, individuals present at the colonies are unlikely to be directly affected by a spill reaching shore. However, chick mortality may occur if one of the parents became fouled during their at-sea foraging excursions (Eppley and Rubega 1990). Thick-billed murre would be most susceptible to a spill event if it occurred during their swimming migration stage (August and September) when individuals 1) remain at-sea for an extended period of time, 2) are less able to actively avoid spills because they cannot fly, 3) energetic demands are high due to large swimming distances involved, and 4) chicks are still being actively reared by the adult males while at-sea.

References:

- Agnico Eagle. 2016. Shipping Management Plan, Appendix E – Spill Risk Assessment. NIRB Public Registry Identification: 304814. Available at: <http://www.nirb.ca/portal/pdash/pdash.php?lang=en&appid=124106#>. Accessed January 2017.
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- Gaston, A. J. and I. L. Jones. 1998. The auks: Alcidae. New York: Oxford University Press. *In* Birds of North America (BNA), Cornell Lab of Ornithology. Available at: <https://birdsna.org/Species-Account/bna/species/thbmur/demography>. Accessed January 2017.
- Gaston A. J. and D. N. Nettleship. 1981. The thick-billed murres of Prince Leopold Island: A study of the breeding ecology of a colonial high Arctic seabird. Ottawa: Environment Canada, Canadian Wildlife Service. *In* Gaston, A. J. and J. Mark Hipfner. 2000. Thick-billed Murre (*Uria lomvia*), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America. Available at: <https://birdsna.org/Species-Account/bna/species/thbmur>. Accessed January 2017. DOI: 10.2173/bna.497.
- Gaston A. J. 1982. Migration of juvenile thick-billed murres through Hudson Strait in 1980. Can Field-Nat. 96: 30–34.
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- Gaston A. J and J. Mark Hipfner. 1998. The effect of ice conditions in northern Hudson Bay on breeding by thick-billed murres (*Uria lomvia*). Can. J. Zool. 76: 480-492.
- Gaston, A. J. and J. Mark Hipfner. 2000. Thick-billed murre (*Uria lomvia*), The Birds of North America (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America. Available at: <https://birdsna.org/Species-Account/bna/species/thbmur>. Accessed January 2017. DOI: 10.2173/bna.497.
- Mallory, M.L. and A. J. Fontaine. 2004. Key marine habitat sites for migratory birds in Nunavut and the Northwest Territories. Occasional Paper Number 109. Canadian Wildlife Service. March 2004.

- McKinnon, L., H.G. Gilchrist, and D. Fifield. 2009. A pelagic seabird survey of Arctic and sub-Arctic Canadian waters during fall. *Marine Ornithology* 37: 77-84.
- Orr, C. and R.M.P. Ward. 1982. The Autumn migration of thick-billed murre near Southern Baffin Island and Northern Labrador. *Arctic*. 35: 531-536.
- Varoujean, D. H., S. D. Sanders, M. R. Graybill and M. R. Spear. 1977. Aspects of common murre breeding biology. *Pac. Seabird Group Bull.* no. 6:28. In Gaston, A. J. and J. Mark Hipfner. 2000. Thick-billed Murre (*Uria lomvia*), *The Birds of North America* (P. G. Rodewald, Ed.). Ithaca: Cornell Lab of Ornithology; Retrieved from the Birds of North America. Available at: <https://birdsna.org/Species-Account/bna/species/thbmur>. Accessed January 2017. DOI: 10.2173/bna.497.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#14
Re:	Shipping		

Reference to FEIS: Volume 3 Assessment Methods, Appendix 3-A Marine Environment Summary

Information Request / Recommendation Made By Interested Party:

a) ECCC requests that the Proponent provide additional information about the feasibility of implementing mitigation measures to reduce injury or mortality of marine bird due to attraction to lights on vessels.

b) ECCC also requests that the Proponent provide adaptive management mitigation measures that will be implemented should negative effects to marine birds be identified during monitoring.

Agnico Eagle's Response to Information Request / Recommendation:

- a) Lights on Project vessels are necessary for the safety of vessel crew and are required by Transport Canada for safe navigation. Where practical and permissible under federal safety and navigation regulations (i.e., when the safety of the vessel and crew can also be maintained), vessel-mounted lights will be shielded and directed downward and away from the water to minimize the amount of light radiating from the ship. Any vessel-mounted spotlights used to illuminate the aft and foredeck will be designed with top- and side-shielding as birds are primarily attracted to the light sources rather than the areas they illuminate (Reed et al. 1985). Vessel operators / crew will be made aware of the necessity to reduce and/or cover light sources on the vessel, particularly on dark nights or when visibility is reduced due to fog or snow. Crew members will be encouraged to search the vessel after a bird strike event, to release birds found still alive and to keep records of all bird strike events (incl. number of birds, location and weather conditions) (as further described below).
- b) As stated in the Shipping Management Plan (Volume 8, Appendix 8-D.5), any incidence of bird mortalities associated with lighting infrastructure, construction activities, and Project vessel operations will be recorded and reported to Environment Canada (Canadian Wildlife Services) as part of the Marine Mammal and Seabird (MMSO) monitoring program. In addition to on-going monitoring of all bird-vessel interactions, immediate reporting will be required in the event that a ship strike on multiple bird collisions occur (involving more than five individuals) and the incidents appear related (i.e., similar time period, location, and weather conditions). Data collected upon determination that a bird strike has occurred will include a description of the event, bird species (as determinable), weather conditions, date and time, vessel location and photographs if possible. In the event of multiple bird collisions, the regional ECCC Wildlife Enforcement Officer will be contacted to provide advice on the implementation of adaptive management techniques (see Merkel and Johansen 2011) to attempt to reduce the likelihood of collisions occurring in the future. Adaptive measures may include:

- Avoiding high-risk bird strike areas during poor visibility.

- Replacing traditional white vessel-mounted lights (particularly searchlights) with green lights which are low in the red spectrum. Research in the North Sea has indicated that white light caused attraction, red light caused disorientation, and that green and blue light caused a weak response (Marquenie 2007).
- Using minimal light output through the replacement of high intensity lights.
- Using image enhancing ice lookout techniques² in lieu of white searchlights when scanning for ice.
- Turning off eternal deck lights when there is no activity on aft and foredeck.
- Re-arranging equipment and/or rigging on aft and foredeck (minimizing the number of vertical object (wires, working tools, etc.).
- Covering crevices and areas where birds can become lodged.

References:

- Marquenie, J.M. 2007. Green light to birds – investigation into the effect of bird-friendly lighting. Netherlands Aardolie Maatschappij. The Netherlands.
- Merkel, F.R., Johansen, K.L., 2011. Light-induced bird strikes on vessels in Southwest Greenland. Mar. Pollut. Bull. 62 (11), 2330–2336.
- Reed, J.R., Sincock, J.L., Hailman, J.P., 1985. Light attraction in endangered Procellariiform birds: reduction by shielding upward radiation. Auk 102,377–383.

² Agnico Eagle will only ship dry goods and fuel during the open water season reducing the need for searchlights to look for ice.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#15
Re:	Migratory Birds		

Reference to FEIS: Volume 5 Terrestrial Environment, Section 5.5.3.5 Primary Pathway Destruction of Nests; Volume 8 Monitoring, Mitigation, and Monitoring Plans, Appendix 8-E.7 TEMP

Information Request / Recommendation Made By Interested Party:

a) ECCC requests that the Proponent clarify whether alternative options related to flooding during the migratory bird nesting season were considered in project planning, and if so, to provide the analysis.

b) ECCC requests that the Proponent provide information about effective mitigation measures being considered to reduce the effects of flooding on nesting migratory birds that have been used elsewhere by the Proponent or at other northern mines.

c) ECCC requests that the TEMP be updated to include monitoring to measure the annual loss of terrestrial habitat loss due to flooding, verify impact predictions, and assess the effectiveness of mitigation measures.

Agnico Eagle's Response to Information Request / Recommendation:

- a) Dewatering of Whale Tail Lake (North Basin) and transfer of water to the Whale Tail Lake (South Basin) is planned to begin in February 2019 and will be continuous until 2020; water levels are expected to further raise during the spring freshet of 2021 to the final elevation of 156 masl. Although monitoring will be conducted to evaluate potential effects on shoreline birds, no alternatives are available to avoid flooding during the migratory bird nesting season. Monitoring will increase during the overlap between flooding and the migratory bird nesting season.
- b) Mitigation used at the Gahcho Kué Mine to reduce harm to migratory birds from flooding included clearing the standing vegetation in the flooding zone prior to the migratory bird nesting season, and deployment of bird deterrents. The mitigation and monitoring is documented in the Gahcho Kué Migratory Bird Nest Management Plan (De Beers 2015), developed through consultation with ECCC. Agnico Eagle will work with ECCC, KivIA, GN, and HTO to update the TEMP to include mitigation of nesting and migratory birds during flooding.
- c) As stated in Volume 5, Section 5.5.3.5, mitigation at Whale Tail to reduce the likelihood of harm to migratory birds and nests will be discussed with Environment Canada. To ensure the protection of migratory birds, Agnico Eagle will consult with the KivIA, GN, and HTO in 2017 and update the TEMP prior to construction of Whale Tail Pit and the expansion of the haul road, to reflect monitoring and mitigation recommendations from the stakeholders that are realistic and sustainable.

References:

De Beers (De Beers Canada Inc.). 2016. Gahcho Kué Mine 2015 Annual Wildlife Report. Available at <http://www.mvlwb.ca/Boards/mv/SitePages/registry2.aspx?app=MV2005C0032>

De Beers. 2015. Gahcho Kué Mine Migratory Bird Nest Management Plan. Submitted to the Mackenzie Land and Water Board, Yellowknife, NWT. June 2015.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#16
Re:	Species at Risk		

Reference to FEIS: Volume 3 Assessment Methods, Appendix 3-A Marine Environment Summary

Information Request / Recommendation Made By Interested Party:

ECCC requests that the Proponent add Harlequin Duck (Eastern population) to species potentially interacting with shipping activities in the marine LSA/RSA.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle agrees and will add Harlequin Duck to the species interacting with shipping activities.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#17
Re:	Migratory Birds		

Reference to FEIS: Volume 3 Assessment Methods, Appendix 3-B HHERA; Volume 8 Monitoring, Mitigation, and Monitoring Plans, Appendix 8-E.7 TEMP, Appendix E -Wildlife Screening Level Risk Assessment Plan (WSLRAP)

Information Request / Recommendation Made By Interested Party:

a) ECCC requests that the Proponent provide an analysis of the risks associated with ingestion of sediment or water at the TSF by waterfowl, other waterbirds, and shorebirds.

b) ECCC requests that the Semipalmated Sandpiper be added as a wildlife receptor of concern to the WSLRAP.

c) ECCC requests that the Proponent provide a specific risk assessment for ingestion of sediment and water at the TSF for all wildlife receptors of concern in the WSLRAP.

Agnico Eagle’s Response to Information Request / Recommendation:

a & c) The HHERA component of the Whale Tail FEIS was conducted to assess risk from Whale Tail Pit Project activities only. The TSF is an existing, permitted component of the Meadowbank site, and no significant changes to the TSF footprint or chemical composition of the tailings are proposed as a result of the Whale Tail Pit Project. The risk assessment conducted as part of the FEIS process in 2006 concluded that risk associated with the TSF would be negligible, due to limited accessibility and ongoing best management practices. Daily monitoring of the TSF over the past eight years supports this assessment, with no reports of ungulates drinking tailings water (Volume 8, Appendix 8-E.7, pg. 13). Daily monitoring is ongoing and use of best management practices for averting wildlife from the tailings impoundment are employed as necessary, as per the TEMP.

Environmental impacts of the TSF on wildlife and other existing facilities at the Meadowbank site were evaluated in the original FEIS and extend for the Whale Tail Pit Project. Agnico Eagle will work with ECCC to discuss the proposed recommendations in the WSLRA during the technical meetings and pre hearing conference.

b) Semipalmated sandpipers were identified as a VC in the Terrestrial Environment Impact Assessment, and were assessed as a representative species in the HHERA, but were not included in the WSLRAP. Rather, the WSLRA includes a waterfowl (Canada goose), as they are consumed as a country food, and Lapland longspur, as the most common upland bird. Agnico Eagle will discuss revising the WSLRAP with ECCC during the technical meetings and pre-hearing conference.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#18
Re:	Migratory Birds		

Reference to FEIS: Volume 5 Terrestrial Environment, Section 5.5.2.6 Waterbirds; Volume 8 Monitoring, Mitigation, and Monitoring Plans, Appendix 8-E.7 TEMP; 2010 Wildlife Monitoring Summary Report

Information Request / Recommendation Made By Interested Party:

a) ECCC requests that the Proponent provide a description of design features that make the TSF unsuitable for migrating, nesting or feeding to migratory birds, with emphasis on waterfowl, other waterbirds, and shorebirds.

b) ECCC requests that the Proponent provide information about any TSF design modifications that have been or could be implemented as adaptive management measures to prevent further mortalities.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle believes that our existing operational controls and TSF design prevent bird mortalities and this is based on the following aspects:

- a) Due to the circulation of water in the reclaim pond, the reclaim water portion of the TSF is one of the only open water areas in early spring within in the regional study area; for this reason, migrating birds sporadically land in the TSF. However, mitigative measures and design modifications have been implemented in the Meadowbank TSF design. The TSF is unsuitable for waterbirds for various reasons including, but not limited, to the following:
- It has unsuitable nesting shorelines (i.e. shorelines in the TSF are homogenous sand, with no vegetation and few boulders);
 - The water levels and therefore shorelines are dynamic and unsuitable for nesting;
 - There are few or no food sources available for bottom feeding waterbirds;
 - The shorelines are immediately adjacent to a rim road that has active equipment and is routinely used by the water management, engineering and environmental departments; and
 - As reported in the Meadowbank Annual Report, during the spring, Agnico Eagle conducts at least twice daily ground surveys to deter waterbirds and installs noise cannons to deter migrating birds from landing in the TSF.
- b) Adaptive management measures to prevent waterbird mortalities, during operations have included various design modifications. The following mitigative measures have either been implemented or will be implemented in the future:
- Reduced deposition of tailings in the north cell during the winter to decrease the number of small ponds or shallow pools that attracts waterbirds in the spring;
 - Progressively cap the shorelines;
 - Change the tailings deposition point to induce dynamic shorelines; and
 - Progressively capping the TSF.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#19
Re:	Migratory Birds		

Reference to FEIS: Volume 3 Assessment Methods, Appendix 3-C, Table 3-C-3 Potential Pathway for Terrestrial Wildlife and Birds, p. 3-C-12; Volume 5 Terrestrial Environment, Appendix 5-C Terrestrial Baseline Characterization Report; Volume 8 Monitoring, Mitigation, and Monitoring Plans, Appendix 8-E.7 TEMP

Information Request / Recommendation Made By Interested Party:

a) ECCC requests that the Proponent provide information about local conditions and/or factors contributing to the probability of mortality during the planned fish-out.

b) ECCC also requests that the Proponent provide available waterbird survey results for Whale Tail Lake for the period temporally overlapping the planned fish-out.

c) ECCC requests that the Proponent update the TEMP to include mitigation measures which will be implemented during the fish-out.

Agnico Eagle's Response to Information Request / Recommendation:

a) Agnico Eagle refers ECCC to the findings of the 2008, 2010 and 2013 [Meadowbank Annual Reports](#) that present the results of the fishouts conducted in the Northwest Arm of Second Portage Lake, Bay-Goose Basin of Third Portage Lake, and Vault Lake fishouts, respectively, and site specific details on the conditions and/or factors contributing to fishout mortality. Most recently, the fish out at Phaser Lake was the most successful fish out with respect to reduced mortality as 72 % of the fish were successfully transferred from Phase Lake to Wally Lake. This success is based on our understanding of these activities in Nunavut and key learnings during the multiple fish outs that have occurred during the different phases of Meadowbank. Based on our experience and observational data³, factors that *may* contribute to mortalities of fish during the fishout include:

- Cold and windy weather conditions that make it unsafe to be on the water which ultimately lengthens the duration of the net sets;
- Timing of fish transfer (transfer of fish in July and early August when the water is cold appears to improve fish transfer rates);
- Species type (despite efforts to protect all fish species, round white fish have higher rates of mortality during the fish out and transfer); and
- DFO requires that meristics data is collected to meet fishout protocol (Tyson et al. 2011) requirements. As a result, fishouts require Agnico Eagle to target fish in a range of fish species, sizes and sex to fulfill the prescribed data collection.

³ i.e. qualitative observations and anecdotal evidence.

Prior to the authorization phase, Agnico Eagle will work with the DFO to develop a fishout workplan that considers all of these factors that may contribute to mortalities.

- b) During the first week of July 2015 (which overlaps with the proposed fishout), Agnico Eagle conducted shoreline waterbird surveys around Whale Tail Project including the Whale Tail Lake north basin. Results are presented in Section 4.3.3.3, Figure 11.1, Appendix 5-C.
- c) Agnico Eagle agrees with ECCCs recommendation and will update the TEMP to include mitigation measures that will be implemented to protect waterbirds during the fishout.

References:

Tyson, J.D., W.M. Tonn, S. Boss, and B.W. Hanna. 2011. General fishout protocol for lakes and impoundments in the Northwest Territories and Nunavut. Can. Tech. Rep. Fish. Aquat. Sci. 2935: v + 34 p.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#1-NWB
Re:	Baseline Monitoring		

Reference to FEIS: Volume 6 Freshwater Environment, Table 6.4-1 Baseline Waste and Sediment Quality Sampling Summary

Information Request / Recommendation Made By Interested Party:

ECCC acknowledges the response provided by the Proponent and looks forward to further discussions during the technical review.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers ECCC #12 and looks forward to discussions during the technical review.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#2-NWB
Re:	Baseline Monitoring		

Reference to FEIS: Volume 6 Freshwater Environment, Table 6.4-1 Baseline Waste and Sediment Quality Sampling Summary

Information Request / Recommendation Made By Interested Party:

ECCC acknowledges the response provided by the Proponent and looks forward to further discussions during the technical review.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers ECCC #12 and looks forward to discussions during the technical review.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#3-NWB
Re:	Baseline Monitoring		

Reference to FEIS: Volume 6 Freshwater Environment, Table 6.4-1 Baseline Waste and Sediment Quality Sampling Summary

Information Request / Recommendation Made By Interested Party:

ECCC acknowledges the response provided by the Proponent. However, the Proponent has not provided the requested information in regards to identifying and addressing data gaps in the existing baseline monitoring dataset. This IR is still outstanding.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers ECCC #12 and looks forward to discussions during the technical review.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#4-NWB
Re:	Groundwater Sampling		

Reference to FEIS: Volume 6 Freshwater Environment, Section 6.2.5 Monitoring and Follow-Up

Information Request / Recommendation Made By Interested Party:

ECCC is satisfied with the Proponent's response.

Agnico Eagle's Response to Information Request / Recommendation:

No response required.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#5-NWB
Re:	Erosion and Sediment Control		

Reference to FEIS: Volume 8 Monitoring, Mitigation and Management Plans Volume 8 Monitoring, Mitigation, and Management Plans does not contain an Erosion and Sediment Control Plan

Information Request / Recommendation Made By Interested Party:

ECCC is satisfied with the Proponent's response.

Agnico Eagle's Response to Information Request / Recommendation:

No response required.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#6-NWB
Re:	Greenhouse Gases		

Reference to FEIS: Volume 4 Atmospheric Environment, Section 4.2.3 Climate and Project Interactions

Information Request / Recommendation Made By Interested Party:

ECCC acknowledges the tabulated summary data for GHGs by emission source provided in Table 4.2-1. However, additional details are required in order to provide a thorough review of the data.

a) ECCC requests that the Proponent provide the emission factors used to determine GHGs, broken down by equipment engine size and GHG compound.

b) ECCC requests that the Proponent provide sample calculations which show how GHG emissions were determined.

c) ECCC requests that the Proponent verify whether fugitive methane emissions were considered in the GHG emission estimate, and if not, to provide an estimate of these emissions.

Agnico Eagle's Response to Information Request / Recommendation:

Please see the response to IR ECCC_01.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#7-NWB
Re:	Sulphur Dioxide Standard		

Reference to FEIS: Volume 4 Atmospheric Environment, Tables 4.3-1 and 4.3-4 (Air Quality Standards)

Information Request / Recommendation Made By Interested Party:

As no response was provided by the Proponent, this IR is still outstanding.

Agnico Eagle's Response to Information Request / Recommendation:

Please see the response to ECCC_02, the IR's are identical.

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#8-NWB
Re:	Air Quality Monitoring		

Reference to FEIS: Volume 4 Atmospheric Environment, Section 4.3.7 Monitoring and Follow-up

Information Request / Recommendation Made By Interested Party:

As no response was provided by the Proponent, this IR is still outstanding.

Agnico Eagle’s Response to Information Request / Recommendation:

Please see the response to ECCC_04, the IR’s are identical.

FISHERIES AND OCEANS CANADA

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-1
Re:	Freshwater Environment – Habitat Losses		

Reference to FEIS: Volume 6, Section 6.5.3.2.2, p.6-80

Information Request / Recommendation Made By Interested Party:

“The physical and chemical environment of the area will allow re-establishment of a healthy functioning aquatic ecosystem.”

“(Whale Tail Pit) will include an extended water column as habitat for pelagic species...(and) may remain well oxygenated through the winter due to its depth and may provide additional overwintering...”

“Most habitat functions will be recovered at the completion of refilling and before opening the dike allowing for a quick return of the productivity, abundance and distribution of fish within the refilled area.”

DFO requests AEM provide an accurate overview of the end pit lake scenario in Whale Tail Lake to also discuss the potential negative impacts that may persist following upon closure and reclamation.

Further to the above listed assumptions by AEM, it is also possible that Whale Tail Lake could have: Elevated heavy metals, poor primary productivity, winterkill, increased salinity, meromictic condition with anoxic hypolimnion, inaccessible substrate, unsuitable for invertebrates, limited littoral zone, and significant time lag and uncertainty of success.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle is confident that the evaluation of the end pit scenario in Whale Tail Lake in the FEIS was appropriate for the purposes of the environmental assessment. Potential negative effects from the Whale Tail Pit are presented, including a discussion of permanent losses of lake-bottom substrate habitat for benthic feeding or bottom dwelling species such as Round Whitefish (*Prosopium cylindraceum*) and forage species such as Slimy Sculpin (*Cottus cognatus*) (Volume 6, Section 6.4.3 and 6.4.4). Any negative effects on littoral habitat and lake productivity at post-closure are expected to be minor, in part because the pit will extend the surface area of Whale Tail Lake by 13%, and the pit is expected to represent only a small proportion (i.e., approximately 23%) of the area of Whale Tail Lake at post-closure, such that most of the littoral habitat in the lake will remain intact.

Water quality predictions for the flooded Whale Tail Pit and diked area are described in detail in the FEIS in Volume 6, Section 6.3.3 and 6.3.4, with details of the model development provided in Appendix 6-H and the predictions compared to guidelines in Appendix 6-I. Predictions, which were used to evaluate habitat conditions in the pit and the flooded area overlying the pit during post-closure, were derived from a water quality model following standard methods in environmental assessment (e.g., Golder 2011, 2014; Rescan 2013). The model reflects the variability and uncertainty in baseline water quality, modelled site flows, geochemical characterization, mine development, and water management plan.

As stated in Section 5.2.1 in Appendix 6-H, the fully mixed pit scenario showed that for modelled parameters there will be no exceedances of the CCME Canadian Environmental Quality Guidelines for the Protection of Aquatic (CCME 1999; CEQG-AL) or the Site-specific Water Quality Objective (SSWQO) for arsenic (Volume 6,

Appendix 6-N). Although DO concentrations were not included in the model, the expectation is that the upper level of the Whale Tail Pit may remain well-oxygenated and may provide additional overwintering refugia for fish and thermal refugia for fish in summer (Volume 6, Section 6.5.3.2.2).

As per NWB Type A Water Licence Part E Item 6 and consistent with Agnico Eagle operations at the Meadowbank Mine, Agnico Eagle will continue to evaluate the actual interaction between the two water types (water within the pit versus the water above the pit in Whale Tail Lake) as well as possible chemical stratification of the flooded pit (which would result in improved water quality in the top layer of the shallow pit). Further discussion on the stability of the pit and overlying water of Whale Tail Lake (North Basin) is provided in response to INAC-2. Uncertainty in the water quality predictions and subsequent predictions of habitat conditions will also be evaluated using results from the Core Receiving Environment Monitoring Program (CREMP; Volume 8, Appendix 8-E.2), and the Water Quality and Flow Monitoring Plan (Volume 8, Appendix 8-B.3). Additionally, site-wide water balance information and modelled predictions of water quality in the pit will be updated as required by the licence.

It is also important to note that, consistent with Agnico Eagle operations at the Meadowbank Mine as per NWB Type A Water Licence Part E Item 6, the dikes shall not be breached until water quality in the flooded area meets discharge criteria. Based on this approach and the assumptions in Appendix 6-H, water quality conditions in the fully flooded Whale Tail Lake at Post-closure will be suitable to support aquatic life. Upon breach of the dike, natural currents and fish will be able to move in and out of the area allowing for a return of the abundance and distribution of fish within the back-flooded area. Furthermore, if meromictic conditions prevail at post-closure, the top mixolimnion layer of the flooded pit is expected to provide water quality conditions similar to shallow waters of unaltered areas of Whale Tail Lake, and is expected to be deep enough to provide additional overwintering and refugia habitat for adult, large-bodied fish species (e.g., salmonids). This is consistent with other studies that have demonstrated that populations of fish can persist within end pit lakes (Tones 1982; reviewed in Gammons et al. 2009; reviewed in Sonnenberg 2011).

References:

- CCME (Canadian Council of Ministers of the Environment). 1999 (with updates to 2015). Canadian Environmental Quality Guidelines for the Protection of Aquatic Life – Summary Table. Available at: <http://st-ts.ccme.ca/>. Accessed: February 2016.
- Gammons CH, Harris LN, Castro JM, Cott, PA, Hanna, BW. 2009. Creating lakes from open pit mines: processes and considerations, with emphasis on northern environments. Canadian Technical Report of Fisheries and Aquatic Sciences 2826: ix + 106 p.
- Golder (Golder Associates Ltd.). 2011. Guidance Document on Water and Mass Balance Models for the Mining Industry. December 19, 2011.
- Golder. 2014. Jay Project Mine Water Management Plan. Prepared for Dominion Diamond Ekati Corporation, Yellowknife, NT.
- Rescan (Rescan Environmental Services Ltd.). 2013. KSM Project Mine Site Water Model Report REV C.1. Prepared for Seabridge Gold Inc., Toronto, ON.
- Sonnenberg R. 2011. Development of aquatic communities in high-altitude mine pit lake systems of west-central Alberta. Master of Science Thesis. University of Lethbridge. 240 p.

Tones PI. 1982. Limnological and fisheries investigation of the flooded open pit at the Gunnar Uranium Mine. Saskatchewan Research Council. Publication No. C-805-10-E-82. 78 pp.

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-2
Re:	Freshwater Environment – Fish Out		

Reference to FEIS: Volume 6, Section Fish Out, p.6-81

Information Request / Recommendation Made By Interested Party:

Further to DFO's Scoping Comments Oct.6, 2016, DFO requests AEM provide a fish out plan to DFO for discussion.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle will submit for discussion a Whale Tail Pit fishout work plan to DFO by February 28, 2017.

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-3
Re:	Freshwater Environment – Valued Components		

Reference to FEIS: Volume 6, Section 6.12, Table 6.1-2, p.6-2

Information Request / Recommendation Made By Interested Party:

DFO requests AEM re-evaluate assumptions of valued fishery components to include all the fish species listed as likely occurring in the area of the project.

Agnico Eagle’s Response to Information Request / Recommendation:

The FEIS includes all fish species in the Local Study Area (LSA) that may be affected by the Whale Tail Project. There are two key places in the FEIS where this demonstrated. Volume 6, Table 6.1-2 of the FEIS lists the common and scientific names of all fish species captured in the LSA, including those that are commercial, recreational or aboriginal fishery species and those that support the local fishery. Secondly, due to the nature of the selection of Valued Components (VCs), which considers all species in a system commensurate to their importance within both the aquatic food web and to local fishers, the VCs provide a surrogate measure of all fish species in the Local Study Area, as per Volume 6, Section 6.1.2 of the FEIS. Forage species occurring in the LSA did not meet the criteria used to select Valued Components; however, they were considered as a measurement endpoint (as fish habitat) (see Volume 6, Section 6.1.2.2, and Volume 3, Table 3.2-1). Furthermore, the assessment of impacts on the predatory species VCs, such as lake trout, incorporates expected effects on forage species, because Project-related adverse effects on forage fish specifically used for food by the predatory species would be reflected in decreased growth and survival of the VCs. In other words, consideration of alternate criteria to include all fish species as VCs would not change the outcome of the assessment.

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-4
Re:	Freshwater Environment – Habitat Alteration		

Reference to FEIS: Volume 6, Section Habitat Alteration, p.6-82 & 6-83 & 6-87

Information Request / Recommendation Made By Interested Party:

DFO requests AEM provide additional information, with references, regarding the disruptive impacts of flooding extending over multiple waterbodies, eliminating streams and the impacts to the fish, while simultaneously lowering the water level in an equally important lake (Mammoth) and reducing available habitat elsewhere. Such losses should also be evaluated in the Offsetting Plan.

Agnico Eagle’s Response to Information Request / Recommendation:

The results of the impact assessment for the project area including flooded streams and fish habitat are described in Section 6.5.2.2 of Volume 6 – Freshwater Environment Assessment and summarized in Figure 6.5-2. Habitat alteration from flooding is presented in Section 6.5.3. Agnico Eagle has included the gains of all waterbodies as a result of flooding during operation and will provide the requested information related to stream habitat losses in the final offsetting plan. Agnico Eagle will continue to work with the DFO during the authorization phase of the project to complete a final offsetting plan that is acceptable to the DFO, HTO, and KivIA. As per KivIA IR-Aquatic Ecology-01, Agnico Eagle will work with the DFO to complete a tentative schedule to ensure a final offsetting plan is acceptable to DFO, KivIA, and HTO and completed in a timely fashion and finalized no later than November 2017. Once the schedule is agreed upon by DFO, a tentative schedule will be provided to the KivIA, NWB, and NIRB prior to the prehearing conference.

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-5
Re:	Freshwater Environment – Changes to Lake Ecosystem Productivity		

Reference to FEIS: Volume 6, Section Changes to Lake Ecosystem Productivity, p.6-88

Information Request / Recommendation Made By Interested Party:

DFO requests AEM provide further information, with references, discussing the changes from oligotrophic lake condition to eutrophic lake condition and back again, and how this will result in an increase in fishery productivity, and how such a hypothesis will be tested and verified by AEM. AEM provided the example of Saqvaquac - “The Saqvaquac studies found increases in primary production and secondary production and increases in the abundance of fish populations;” However, it is noted in that study that it takes several years to become stable and predictability is very poor. It is also not clear at what level AEM is predicting to increase nutrient concentrations and whether they would be comparable to the levels introduced in the Saqvaquac example

Agnico Eagle’s Response to Information Request / Recommendation:

Effects to fish and fish habitat valued components (i.e., Arctic Char, Lake Trout, and Round Whitefish) through changes in water quality in Whale Tail, Mammoth Lake and downstream lakes during the operational period and closure are evaluated and described in the FEIS. The following pathway is assessed in Volume 6 Section 6.5.3.3.2: “Operational activities and discharge (e.g., discharge of treated domestic wastewater, altered drainage, runoff from facilities, including waste rock storage areas, pit inflows, dike seepage, release of nitrogen compounds from blasting residues) may change trophic status, affecting fish and fish habitat in Whale Tail Lake, Mammoth Lake, and downstream waterbodies.” The assessment is based on water quality predictions for the Project (mine site and receiving environment), derived from a GoldSim™ mass balance model for Operations through Post-closure (for additional details see Section 6.4.3; Appendix 6-H).

Predicted dissolved phosphorus concentrations for Mammoth Lake, Lake A15, and Lake A12 during operations through to post-closure are provided in Appendix 6-I of the FEIS. Concentrations are predicted to be highest in operations and decrease through closure and post-closure. Predicted average phosphorus concentrations represent a four to five-fold increase above the oligotrophic trigger level (CCME 2004) and up to a 15 -fold increase compared to baseline concentrations for these lakes.

Evidence from other northern oligotrophic lakes enriched with nutrients suggest that lakes can return to baseline concentrations within a couple of years after the cessation of nutrient enrichment (Schindler 1974, 2012; Welch et al 1989; O’Brien et al. 2005; ERM 2015).

As indicated in the assessment (Section 6.5.3.3.2), the effect of increased primary and secondary production on fish from changes in nutrient concentrations is complex. However, numerous studies documented in the literature support the model of “bottom up” control of ecosystem processes, which suggests the maximum potential biomass of each trophic level is controlled by nutrient availability (Colby et al. 1972; McQueen et al. 1986; Downing et al. 1990; Plante and Downing 1993; Downing and Plante 1993; Ware and Thompson 2005). Downing et al. (1990) showed that fish production is closely correlated with annual phytoplankton

production and mean total phosphorus concentration, and suggested that conversion of phytoplankton into fish production is more efficient in oligotrophic lakes (versus eutrophic lakes). A comprehensive study by Downing and Plante (1993) on fish production data for 100 fish populations from 38 lakes and reservoirs in a range of lake representing oligotrophic to hypereutrophic lakes provides additional supporting evidence. Modelling results from this study suggested that a change in total phosphorus from 0.01 to 0.1 mg/L would be correlated with a three-fold increase in fish production.

Plante and Downing (1993) also found a general positive relationship between trophic status and salmon, char, and trout production. In their study, an order of magnitude increase in TP concentrations (from 0.01 to 0.1 mg/L) was observed to correspond to approximately a 10-fold increase in salmonine production. Blair et al (2013) demonstrated that trout growth rates increase with increasing indices of lake productivity, through analysis of a long-term mark-recapture dataset of fish in deep oligotrophic and mesotrophic lakes. Salmonid survival and size has also been observed to increase with addition of nutrients in boreal lakes of British Columbia and Alaska (Hyatt et al. 2004). The link between factors influencing primary production and salmonine populations may be stronger than that for other species because food chains tend to be simple in lakes in which salmonines dominate (Plante and Downing 1993).

Consistent with numerous previously completed studies, including those referenced in this response and FEIS, the predicted effect of increased nutrients in Mammoth Lake and downstream lakes during operations and closure may include an increase in productivity of lower trophic levels. Agnico Eagle continues to evaluate phosphorus treatment options to reduce downstream nutrient inputs. Nevertheless, using worst case scenarios, biomass of phytoplankton, zooplankton, and benthic invertebrates is expected to increase, as described in Section 6.5.3.3.2, and due to the increased food base, there may also be an increase in growth and reproduction rates in fishery species, and the forage fish that support the fishery. Any observed effects to the lake ecosystem components through changes to water quality are expected to be reversible during post-closure, following the breach of the dikes. As described in Section 6.5.3.3.2, the majority of water quality parameters in the affected lakes are expected to return to near baseline values during post-closure.

As presented in the FEIS, under “conservative-case” scenarios there is no reason to expect that predicted or actual changes in nutrient concentrations during operations and closure will impact the long-term stability of the fishery or populations of valued components such that there is a risk of collapse. For comparison, the predicted increases at the Whale Tail Project are similar to increases observed by Plante and Downing (1993), but higher than the two to three-fold increase from baseline conditions reported in the Saqvaqujac studies (e.g., Jorgenson et al. 1992) that were described in the assessment. Both studies showed a corresponding increase in salmonine production, and neither study provided evidence of an unstable salmonine fishery resulting from nutrient enrichment. However, Jorgenson et al. did note that population responses (e.g., growth rates, size structure) had not stabilized during the time of the study (approximately 4 years post-fertilization), in part, because of the long life cycles of the study species. It is unknown whether increased fish production can be sustained by salmonine populations over long periods given that other factors related to trophic status can influence populations, as reviewed in Section 6.5.3.3.2 (also see Plante and Down 1993). For the Whale Tail Project, nutrient concentrations in the affected lakes are expected to be elevated for a duration of up to 11 years, much less than the potential lifespan of Arctic Char, Lake Trout, and Round Whitefish in Arctic lakes (see Scott and Crossman 1993).

Agnico Eagle intends to treat, test and verify the phosphorus predictions through ongoing monitoring conducted as part of the Water Quality and Flow Monitoring Program (Volume 8, Appendix 8-B.2) and the Core Receiving Environment Monitoring Program (CREMP; Appendix 8-E.2). Direct monitoring of nutrient concentrations and phytoplankton biomass will be conducted according to the CREMP Study Design described in Appendix 8-E.2 of the FEIS. Actual water quality will largely depend on the mine plan and management practices followed during mining and on-site conditions related to water movement and chemical loading (Appendix 6-H), and Agnico Eagle will commit to the implementation of water treatment or other mitigation options if phosphorus concentrations are observed to increase to unacceptable levels that may affect the local fishery.

References:

- Blair JM, Ostrovsky I, Hicks BJ, Pitkethley RJ, Scholes P. 2013. Growth of rainbow trout (*Oncorhynchus mykiss*) in warm-temperate lakes: implications for environmental change. *Can. J. Fish. Aquat. Sci.* 70: 815–823.
- Colby PJ, Spangler GR, Hurley DA, McCombie AM. 1972. Effects of Eutrophication on Salmonid Communities in Oligotrophic Lakes. *J Fish Res Board Can.* 29:975-983.
- Downing JA, Plante C, Lalonde S. 1990. Fish production correlated with primary productivity, not the morphoedaphic index. *Can. J. Fish. Aquat. Sci.* 47:1929-1936.
- Downing JA, Plante C. 1993. Production of fish populations in lakes. *Can. J. Fish. Aquat Sci.* 50:110-120.
- ERM (ERM Consultants Canada Ltd.) 2015. Ekati Diamond Mine: 2014 Aquatic Effects Monitoring Program Part 1 – Evaluation of Effects. Prepared for Dominion Diamond Ekati Corporation. Yellowknife, NT.
- Hyatt KD, McQueen DJ, Shortreed KS, Rankin DP. 2004. Sockeye salmon (*Oncorhynchus nerka*) nursery lake fertilization: Review and summary of results. *Environ. Rev.* 12: 133-162.
- Jorgenson JK, Welch HE, Curtis MF. 1992. Response of Amphipoda and Trichoptera to Lake Fertilization in the Canadian Arctic. *Canadian Journal of Fisheries and Aquatic Sciences.* 49: 2354-2362.
- McQueen DJ, Post JR, Mills EL. 1986. Trophic Relations in Freshwater Pelagic Ecosystems. *Can J Fish Aquat Sci.* 43:1571-1581.
- O'Brien JW, Barfield M, Bettez N, Hershey AE, Hobbie JE, Kipphut G, Kling G, Miller M. 2005. Long-term response and recovery to nutrient addition of a partitioned arctic lake. *Freshwater Biol* 50: 731-741.
- Plante C, Downing A. 1993. Relationship of salmonine production to lake trophic status and temperature. *Can. J. Fish. Aquat. Sci.* 50: 1324-1328.
- Schindler DW. 1974. Eutrophication and recovery in experimental lakes: implications for lake management. *Science* 184: 897-899.
- Schindler DW. 2012. The dilemma of controlling cultural eutrophication of lakes. *P Roy Soc B-Biol Sci* 279: 4322-4333.

Ware DM, Thompson RW. 2005. Bottom-Up Ecosystem Trophic Dynamics Determine Fish Production in the Northeast Pacific. *Science*. 308: 1280-1284.

Welch HE, Legault JA, Kling HD. 1989. Phytoplankton, nutrients, and primary production in fertilized and natural lake at Saqvaquac, N.W.T. *Can J Fish Aquat Sci* 46: 90-107.

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-6
Re:	Freshwater Environment – Monitoring and Follow-up		

Reference to FEIS: Volume 6, Section 6.5.8, p.6-98, AEM Response to Whale Tail Pit Project Completeness Review

Information Request / Recommendation Made By Interested Party:

As requested by DFO in the Scoping Comments for Whale Tail October 6, 2016, and November 3, 2016 to the NWB, DFO requests a separate Fisheries Monitoring Plan for the Whale Tail Project. This Plan should also discuss blasting activities and extend into closure and reclamation. An addendum to the Meadowbank Monitoring Plan is not acceptable.

Agnico Eagle’s Response to Information Request / Recommendation:

On December 7, 2016 in correspondence to the NWB regarding scoping comments Agnico Eagle reaffirmed that it is important that the Meadowbank operational and monitoring plans (which will be extended to include Whale Tail Pit) remain holistic, operationally seamless, and functional. Agnico Eagle believes these objectives to apply to the Blast Monitoring Plan and Fisheries Habitat Compensation Plan. Agnico Eagle considers the offsetting concepts and therefore monitoring techniques and data analysis directly transferable between locations.

Agnico Eagle is open to discussion on this topic either in person or via teleconference with DFO personnel to understand their rationale for requesting a separate plan and should it be deemed appropriate to create a plan that the content of such plan be consistent with the Meadowbank Plan. Agnico Eagle will continue to work with the DFO during the authorization phase of the project to complete a Fisheries Habitat Compensation Monitoring Plan that is acceptable to DFO, HTO, and KivIA.

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-7
Re:	Monitoring, Mitigation and Management Plans – Conceptual Offsetting Plan		

Reference to FEIS: Volume 8, Appendix 8-E, p.7, AEM Whale Tail EA Overview Presentation to DFO and AEM Technical Memorandum Nov.25, 2016

Information Request / Recommendation Made By Interested Party:

While there appear to be very minor differences in the July and August satellite photos, there are more significant differences in water levels in June. DFO requests AEM provide imagery from June for all the impacted waterbodies (including Mammoth Lake which was not included originally), and from an average representative year of water levels over the last decade (e.g., 2007).

Agnico Eagle’s Response to Information Request / Recommendation:

On November 25, 2016 Agnico Eagle provided additional information to the DFO regarding shoreline determination. As discussed with DFO by Webex on October 13, 2016, and again in the meeting of November 16, 2016 (Winnipeg, MN), Agnico Eagle has proposed to use shorelines from a DEM derived from 2011 PhotoSat imagery for the purposes of fish habitat offsetting for the Whale Tail Pit site. Agnico Eagle believes that the information that has been provided to DFO supports the use of shoreline mapping derived from July, 2011 imagery for the purposes of fish habitat offsetting calculations related to the Whale Tail site.

Agnico Eagle provided to the DFO the following information, which is a review of the best available data to address this uncertainty, which has been found to include total precipitation records from Environment Canada’s Baker Lake A station, along with water levels measured in Third Portage Lake, on the Meadowbank site.

Total precipitation in 2010 and 2011 was 210 and 199 mm, respectively (Table DFO7-1). These values are slightly lower than the 10-yr (2006 – 2015) average of 232 mm, but within the range of measured values (130 mm – 313 mm). Daily total precipitation values are presented in Figure DFO7-1. Based on this data, 2010 and 2011 are not considered to have been extremely dry or wet years in the recent history of the area.

Table DFO7-2. Total precipitation (mm) as measured at Environment Canada’s Baker Lake A station

Year	Total Precipitation (mm)
2006	262
2007	229
2008	313
2009	275
2010	210
2011	199
2012	130
2013	186
2014	236
2015	278

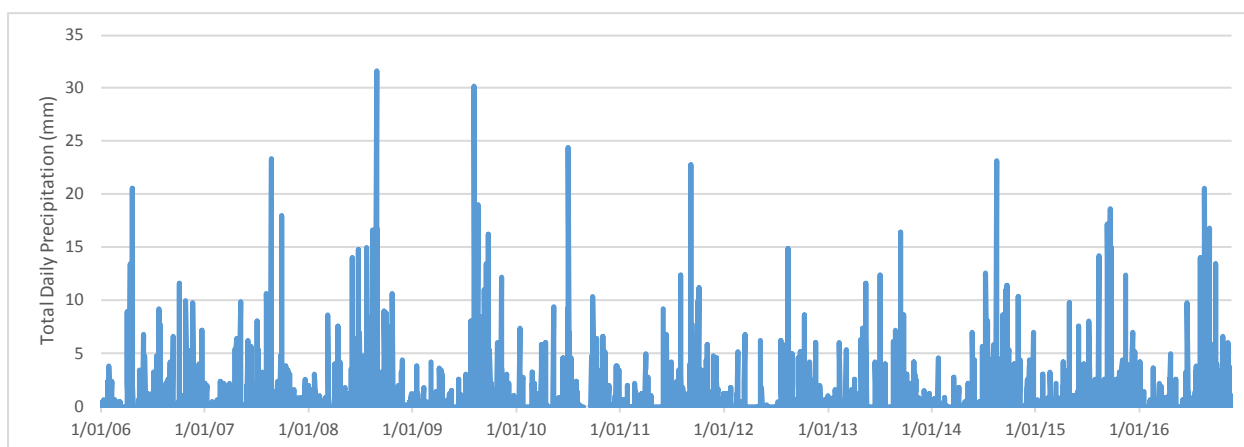


Figure DFO7-1. Total daily precipitation for 2006 – Nov 20, 2016 as measured at Environment Canada’s Baker Lake A station

Agnico Eagle has also reviewed water levels as measured in Third Portage Lake since 2009 (Figure DFO7-2). Water levels are presented in Agnico Eagle’s Annual Report to the NIRB (for example, for 2015 data, see 2015 Annual Report - Figure 4.2). Although mine-related activities such as dike construction, freshwater intake, and effluent discharge have occurred in Third Portage Lake since that time, none of these activities were expected to impact water levels due to the very large size of this lake (approx. 3980 ha; see Meadowbank Gold Project - Physical Ecosystem Impact Assessment, Cumberland Resources Ltd. October, 2005). Based on this data, water levels in 2011 do not appear to have been exceptionally low or high.

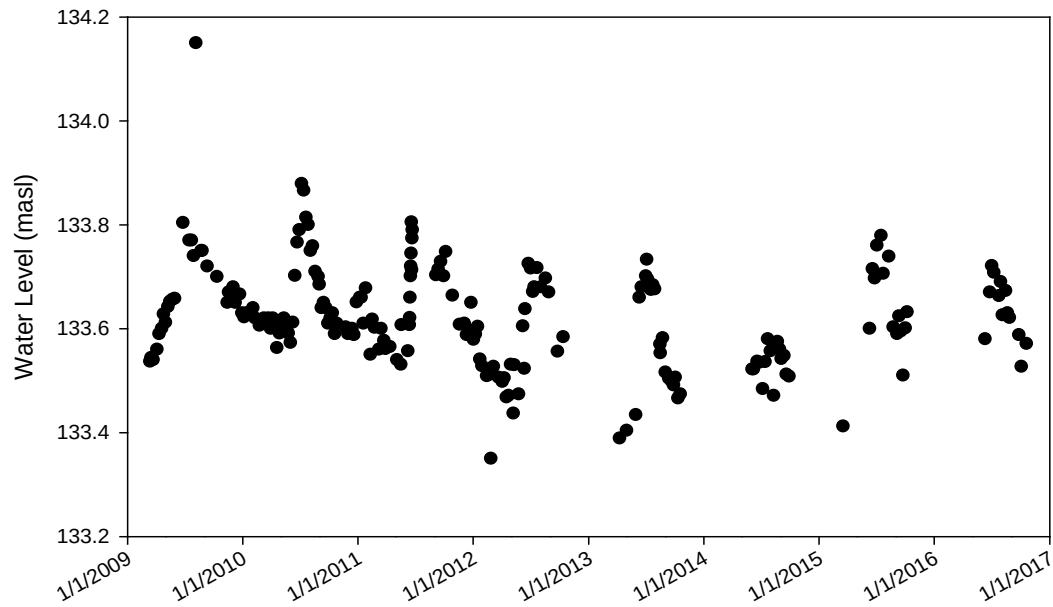


Figure DFO7-1. Water levels in Third Portage Lake

Agnico Eagle believes that this information supports the use of shoreline mapping derived from July, 2011 imagery for the purposes of fish habitat offsetting calculations related to the Whale Tail site and therefore the June imagery is not needed.

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-8
Re:	Monitoring, Mitigation and Management Plans – Conceptual Offsetting Plan		

Reference to FEIS: Volume 8, Appendix 8-E, Section 4.2, p.35

Information Request / Recommendation Made By Interested Party:

DFO requests AEM re-evaluate the conceptual offsetting plan to remove potential gains associated with flooding activities, and that AEM calculate losses associated with diverting water from Mammoth Lake, and the elimination of streams due to flooding of Whale Tail Lake.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle will calculate the associated losses with diverting water from Mammoth Lake and eliminating streams due to flooding of Whale Tail Lake. Agnico Eagle believes that the potential gains associated with flooding activities are valuable as this offsetting concept will:

- “start the offsetting as soon as possible to help reduce the overall impacts to fisheries productivity” (DFO 2013);
- offset the losses due to dewatering and mining the Whale Tail Lake North Basin during operations;
- provide an advantage and a net environmental benefit, as compared to pumping or other alternatives presented in Appendix 1-E – Water Management Multiple Accounts analysis in Volume 1;
- provides “like for like” habitat gains; and
- creating new habitat during operations which is consistent with the “DFO fisheries productivity investment policy: a proponent’s guide to offsetting” (DFO 2013) and can be maintained with low maintenance costs under care and maintenance scenarios, during active closure and perhaps post closure, prior to breaching the Whale Tail Dike.

References:

DFO (Fisheries and Oceans Canada). 2013. Fisheries Productivity Investment Policy: a proponent’s guide to offsetting. Published by: Ecosystem Programs Policy Fisheries and Oceans Canada. Ottawa ON, November 2013.

Interested Party:	Fisheries and Oceans Canada (DFO)	Rec No.:	DFO-9
Re:	Monitoring, Mitigation and Management Plans – Conceptual Offsetting Plan		

Reference to FEIS: Volume 8, Appendix 8-E

Information Request / Recommendation Made By Interested Party:

DFO requests AEM review DFO's 2016 HEP Model Report and incorporate recommendations into the Whale Tail Offsetting Plan.

Agnico Eagle's Response to Information Request / Recommendation:

On October 14, 2016 Agnico Eagle provided comments to DFO on the HEP followed by an in person meeting held on November 15, 2016; follow-up and final comments from DFO are pending. Agnico Eagle will continue to work with the DFO during the authorization phase of the project to finalize a HEP model that is agreeable to DFO, KivIA, and HTO. Once the schedule is agreed upon by DFO, a tentative schedule will be provided to the KivIA, NWB, and NIRB prior to the prehearing conference. As per KivIA IR-Aquatic Ecology-01, Agnico Eagle will work with the DFO to complete a tentative schedule to ensure a final offsetting plan is acceptable to the DFO, KivIA, and HTO and completed in a timely fashion and finalized no later than November 2017. Agnico Eagle has proposed a follow-up meeting with DFO in advance of a NIRB Technical Meeting on March 23, 2017.

GOVERNMENT OF CANADA

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-01
Re:	Employment opportunities between AEM mining projects		

Reference to FEIS: Volume 7, Section 7.4.3.3, p. 7-53

Information Request / Recommendation Made By Interested Party:

The GN requests a further breakdown of projected employment opportunities between the Meadowbank, Whale Tail, and Meliadine projects. If possible, this breakdown will include:

- i. A table comparing the size, skill composition, and origin of hire (Kivalliq, Nunavut, Other) of the projected workforce at all three projects; and*
- ii. Transition plan for how and when AEM employees could expect to move between project sites, broken down by skill level and origin of hire.*

Agnico Eagle's Response to Information Request / Recommendation:

- i. The FEIS presents the following scenario with regard to total operational employment, by year, at the Meadowbank, Meliadine, and Whale Tail projects. As Agnico Eagle's regional Project planning advances, additional detail regarding the composition of the Project workforce becomes available. Information regarding the point of origin and skill level of the Project's operational (i.e., 2019) workforce was presented in the FEIS Table 7.2-3.

Scenario 1: Project advances as planned, no gap between Meadowbank Mine closure and operations at Whale Tail Pit

Project	Operations Labour	2016	2017	2018	2019	2020	2021	2022
Meadowbank	693	693	493	193	-	-	-	-
Meliadine	700	-	-	-	500	700	700	700
Whale Tail Pit ^a	931	-	200	500	931	931	931	-
Total^b		693	693	693	1,431	1,631	1,631	700

^a Estimated to be a three to four year extension to Meadowbank Mine.

^b totals are representative of estimates from purposes of the FEIS.

Agnico Eagle refers the GN to Table GN01-1 which provides the most current projected employment opportunities based on skill levels for the Meadowbank Mine until 2018 and Meadowbank Mine extension through the Whale Tail Pit until 2022.

Table GN01-1: Agnico Eagle Meadowbank and Whale Tail Pit Project Workforce needs*

SKILLS LEVEL**	2017	2018	2019	2020	2021	2022
TOTAL MANAGEMENT	68.00	57.33	69.33	69.00	69.00	73.00
TOTAL PROFESSIONAL	89.74	82.93	94.03	92.43	92.43	97.07
TOTAL SEMI-SKILLED	334.97	236.45	360.50	409.50	417.50	417.50
TOTAL SKILLED	163.00	152.78	191.60	191.67	192.00	172.00
TOTAL UNSKILLED	103.05	96.17	125.50	120.50	115.50	115.50
TOTAL***	759	626	841	883	886	875

* this table does not include contractors

**skill level description is attached to this response

*** totals represent a revised estimate of projected actual workforce needs as of January 2017

- ii. As presented in Section 7.4 of Volume 7 and the above Table GN01-1, the Whale Tail Pit project will be an extension of the currently operating Meadowbank Mine. Therefore employees of the Meadowbank Mine will automatically maintain their employment link and will naturally transition to Whale Tail Pit. During construction and early operations, the total labor force at Whale Tail Pit will be greater than the current Meadowbank labor force, as there is expected to be employment growth and therefore new employment opportunities that will need to be filled. Recruitment will be focused at filling heavy equipment operator and heavy duty technician jobs as these will be the two positions with the most opportunities. These will be staffed with qualified candidates selected and appointed on the basis of education, experience, knowledge, abilities, suitability and, when appropriate, seniority and residency. The Whale Tail Pit project as any other Agnico Eagle projects is committed to the principles of being an equal opportunity employer and will ensure that non-discriminatory practices respectful of Human Rights are adopted in all employment-related programs.

To ensure a smooth transition period, Agnico Eagle will make best efforts, when technically possible, to complete predevelopment and early construction work for Whale Tail Pit with our internal workforce and align the schedule of predevelopment work with workforce availability.

Finally our vision is to develop and execute initiatives to leverage synergy between business units in Nunavut (i.e., Meadowbank, Meliadine, Construction and Exploration). Therefore workforce planning will be developed to ensure optimization of personnel based on project needs and take advantage of synergy opportunities between all Nunavut entities will be put in place. Transfers between projects are planned to be made available to all hourly employees starting in Q2 2017. Currently available salaried positions are already being made available to employees of Meadowbank through job postings. Our recruitment and selection practices will also respect our IIBA obligations in regards to hiring and employment practices.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-02
Re:	Spatial Boundaries of Local Study Area and Buffer Zone		

Reference to FEIS: Volume 7, Section 7.1.3.1 p. 7-3. Heritage Resources Spatial Boundaries

Information Request / Recommendation Made By Interested Party:

The Government of Nunavut is recommending that the proponent reword the first paragraph of Section 7.1.3.1 to only discuss the extent of the LSA.

The proponent should address the 30 meters buffer zone in a section relating to the avoidance and mitigation of archaeological sites.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle agrees with the recommendation of the GN. Agnico Eagle refers the GN to Table 1 of Appendix 8-E.8 – Archaeology Management Plan which describes the distance of the haul road or esker borrow source to the archaeological site and the mitigation measures to ensure the protection of the known archaeological sites. Furthermore, the final Archaeological Impact Assessment⁴ report was submitted to the GN Department of Culture and Heritage on January 9, 2017. It describes the mitigation measures implemented in 2016 that include archaeological site staking and mitigation studies (inventory and assessment), to ensure the archaeological sites are protected during construction and operation. This included staking a minimum of a 30 m buffer around archaeological sites to ensure avoidance.

⁴ A confidential report issued to the GN department of Culture and Heritage and completed by Stantec Consulting Ltd. to meet conditions of permit 2016 -020A.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-03
Re:	Archaeology Management Plan		

Reference to FEIS: Volume 8, Appendix 8-E.8 Archaeology Management Plan

Information Request / Recommendation Made By Interested Party:

The Department of Culture and Heritage (CH) recommends that an updated version of the Archaeological Site Status including all sites (new or previously recorded) up to the submission of the FEIS be provided.

CH also suggests that the distances between the outer limit of the sites and the outer limit of the proposed project component should be systematically indicated in the column Relationship to Project.

With reference to the Proposed Mitigation Measures the following information should be provided: (1) Reference to the archaeological permit if the site was excavated; (2) Monitoring inspection date(s) and current status if a site is marked for avoidance and protection. This could be addressed in two separate columns: Mitigation and Monitoring.

Agnico Eagle's Response to Information Request / Recommendation:

The Annual Archaeological Impact Assessment Report was submitted to the GN Department of Culture and Heritage on January 9, 2017, which describes the mitigation measures implemented in 2016 to ensure the archaeological sites are avoided and protected during construction and operation of the road and future site construction. As requested, Table 5-1 has been updated to include the above information outlined by the GN. As required under the Archaeology permits issued by CH, Agnico Eagle will submit an annual Archaeological Site Status and Management Plan to the CH on or before February 28, annually. The next iteration of the Annual Report will address recommendations made during the environmental assessment process for the Project.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-04
Re:	Terminology: inuksuk/inuksuit-marker		

Reference to FEIS: Volume 7, Section 7.2 Heritage Resources

Information Request / Recommendation Made By Interested Party:

As CH acknowledges the complex semantic of inuksuit (singular: inuksuk) and the particular cultural significance and meaning of those cairns, we suggest that the terminology inuksuk/inuksuit be preferred. This will not only allow to move from a somewhat non culturally significant pile of rocks it will also reconcile and highlight clear cultural identity indicative of past way of life and the relationship with the land. For instance, descriptive terminology such as caribou crossing inuksuk, directional inuksuk, or window-inuksuk could be used. The noted terminology update should be acknowledged by the Proponent and considered for inclusion in further submissions.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle agrees with the recommended terminology; future submissions will use these terms.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-05
Re:	Monitoring sites: Mitigation and/or avoidance/protection status		

Reference to FEIS: Volume 8, Appendix 8-E.8 Archaeology Management Plan

Information Request / Recommendation Made By Interested Party:

In order to assist in monitoring the mitigation and/or protection status of archaeological resources within the proposed development area CH is requesting that the Proponent provides:

Mid-to-large scale maps, containing:

- i. All sites inventoried in the proposed development area – Pit Area/ Roads/borrow sources, etc.*
- ii. Archaeological sites mitigated (different color each year 2014, 2015, etc.).*
- iii. In this instance “mitigated” refers to archaeological actions other than avoidance and protection. The Table should include reference to the archaeological permit (s).*
- iv. Archaeological sites planned for mitigation (year –different color each year).*
- v. Archaeological sites designated for avoidance/protection. Identified by a different shape and color symbol. The Table should include a column indicating the status and dates of monitoring inspections.*
- vi. The information in i, ii, iii and iv overlaid onto an updated map of all the project components. For instance for this first series, it will be the current and/or planned infrastructure as of summer 2016-2017. The scale of the maps has to be such that: 1) the limits of individual infrastructure component are well defined and; 2) the location of the archaeological sites within those limits is precise. The overall look should be uncluttered.*

A textual description of the map contents in table form.

The purpose of this request is to highlight the progress of the development activities, which will assist CH in providing appropriate recommendations for the protection and management of heritage resources.

This documentation will be submitted to CH on February 28, of each year in advance of the Archaeological Permit Application and report submission. This will be a standalone document which will be an ongoing status report and the document will be evolving over time.

Agnico Eagle’s Response to Information Request / Recommendation:

The Annual Archaeological Impact Assessment report was submitted to the GN Department of Culture and Heritage on January 9, 2017, which describes the mitigation measures implemented in 2016 to ensure the archaeological sites are avoided and protected during construction and operation of the road and future site construction. As required under the Archaeology permits issued by CH, Agnico Eagle will submit an annual Archaeological Site Status and Management Plan to the CH on or before February 28th, annually. This report will include the above mentioned recommendations to highlight the progress of the development activities; this will assist CH in providing appropriate recommendations for the protection and management of the heritage resources.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-06
Re:	Whale Tail Pit Haul Road		

Reference to FEIS: • Volume 1, Section 1.2.7; • Volume 4, Appendix 4-B; • Volume 8, Appendix 8-C
Infrastructure Management Plans / Appendix 8-C.1: Whale Tail Pit Haul Road Management Plan / 7.7.3
Projected Whale Tail Traffic on the Whale Tail Haul Road and Bypass Lanes

Information Request / Recommendation Made By Interested Party:

The GN requests that the proponent clarify the use of the haul-road road and of the AWAR, including their use for the exploration activities in the Amaruq property, by providing the following information:

- i. *The number of vehicles that will be used for the Project, by type and their carriage capacities (in tons);*
- ii. *The daily number of one-way haul-truck passages required to feed the Meadowbank mill at daily rates of 9.000 t/day and 12.000 t/day;*
- iii. *The tonnage of ore hauled per operation year, and estimates of annual and seasonal variations of haul-truck movements, including minimum and maximum rates;*
- iv. *The types and volumes of goods transported, including fuel, materials and consumables and explosives;*
- v. *The number, frequency and timing of passages for all types of vehicles and for all phases of the project (construction, operation, closure) and seasons, and for all needs, including: personnel and contractors, supply trucks, service vehicles, exploration activities, fuel and road maintenance.*
- vi. *Estimates on the frequency of one-way daily passages considering for instance bad weather and varying road conditions (e.g. freshet period where loads might be lower than vehicle capacity), and any seasonal and daily peaks and through in traffic rates.*
- vii. *Indicate if haul-trucks would operate on 24h basis, and if not, what would be the daily timing and how this would affect variation in traffic rates (peak rates versus minimum rates);*
- viii. *The operational and maintenance plans, such as grouping of vehicles (convoys), partial and complete closures, snow-removal and snow-bank heights, etc.;*
- ix. *Details on how traffic rates, types of vehicles and timing of transportation will be monitored and how and when this information will be reported.*
- x. *Clarify whether the traffic rates indicated in table 4.B-15 (Appendix 4.B-8 Haul Road Emissions) represent the maximum possible level of traffic on the haul-road during the assessed mine phases and the proposed mine lifespan.*
- xi. *Indicate if these traffic rates were the basis for assessing the impacts of the haul-road traffic on wildlife, as these are not mentioned in the Terrestrial Environment Volume. The assessment should be revised to clearly relate traffic rates with assessment criteria magnitude and frequency.*

Agnico Eagle's Response to Information Request / Recommendation:

Exploration vehicles will continue to use the haul road. Information related to the Amaruq Exploration Road traffic use was provided to the NIRB on March 31, 2015 in Table 7.2 of the Amaruq Exploration Access Road Management Plan (2016) and the associated impact of the access road has previously been screened by NIRB and therefore was not included in the Whale Tail Pit and Haul Road Project impact assessment. As per Table 7.2 of the March 31, 2015 submission, exploration traffic use along the haul road is expected to include, pick-up trucks, cube vans, buses, fuel trucks, tractor-trailers, snowplows and graders. Summer traffic is expected to be moderately higher than winter traffic as more contractual work can be expected over the summer. Fuel deliveries and passenger van/bus traffic are not expected to vary a great deal between winter and summer.

Adapted from Table 7-1 (Agnico Eagle, 2015). Estimated Average Daily Exploration Related Traffic on the Proposed Haul Road

Type of vehicle # of vehicles	Winter		Summer	
	Week Days	Weekends	Week Days	Weekends
Pick-up Trucks	4-8	2-4	10-14	4-8
Cube Vans	2	1	3	1
Passenger Vans/Buses	1	0	2	1
Fuel Trucks ¹	1	0	1	0
Transport Trucks ²	1	1	Up to 10	1

1 Transport of fuel will be continuous, year round. A fuel truck will carry on average 45,000 litres.

2 Transport of dry goods, which arrive annually via the sea lift, will largely take place over a 4-month period, from August to November.

i.– v. The projected traffic volumes along the Whale Tail Pit haul road are presented in Volume 4 Appendix 4 B, Table 4-B-15 – Daily Traffic on the Haul Road and Table 4-B-16 – Vehicle Information⁵ which includes carriage capacities. As an extension of the Meadowbank operation and milling, the traffic along the Baker Lake to Meadowbank AWAR is expected to remain the same as is currently reported.

The below table has been adapted from Table 4-B-15 to address the GN information requested i) - v), which includes the number of one-way minimum, average and maximum haul truck passages to feed the Meadowbank Mill. These data were generated based on a road traffic simulation which determined a minimum or lower 5% of 64 passages (which is approximately 5,000 tpd) and up to a maximum of 173 passages (which is approximately 13,000 tpd) or the upper 95%. It also includes estimates of trucks responsible for transporting fuel, materials and consumables⁵. As presented in Volume 1, Table 1.2-1: Summary of Mine Life Material Balance,

⁵ The vehicle information that was selected was used to conservatively estimate emissions to complete environmental impact assessment and based on the best available information. As the project feasibility is completed prior to operations, more detailed information will become available.

operations will ramp up to 9,000 -12,000 tpd milling 2.29 to 3.35 million tonnes annually between 2019 and 2022.

Table 4-B-2: Daily Vehicle Traffic on the Haul Road

Category	Lower 5%	Average	Upper 95%
<i>Approximate mill throughput</i>	<i>5,000 tpd</i>	<i>9,748 tpd</i>	<i>13,000 tpd</i>
Long haul	64	154	173
Explosives	2	4	5
Fuel	1	2	4
Cargo	4	7	10
Pickup	12	20	26
Bus	0	2	4
Oversize	0	1	4
Maintenance	0	2	4

Table 4-B-3: Vehicle Information

Make	Model	Year	Weight Empty	Weight Loaded	Type
Cat	777F	2008	450,000 lbs	1,000,000 lbs	Tow haul
Western Star	4800SB	2012	66,000 lbs	92,048 lbs	Explosive truck
Blue Bird	VISION SL	2014	27,507 lbs	+ 54 passenger	Bus
Kenworth	T800	2013	40,000 lbs	126,000lbs	Fuel truck
Ford	F250	2013	10,000 lbs	+4 passengers +light equipment	Pickup
Kenworth	C500B	2006	128,000 lbs	172,000 lbs	Truck w/float
Western Star	6900XD	2015	188,100 lbs	573,100 lbs	Road haul truck

lbs = pounds.

- vi. As presented in Table 4.B-15, Agnico Eagle has estimated the frequency of one way traffic passages along the Whale Tail Pit haul road. At a pre-economic assessment level, we assume traffic will be continuous along the haul road however Agnico Eagle has accounted in our project engineering and economics for 28 x 24 hour (672 operating hours) “blizzard or wildlife protection days” that may result in reduced hauling due to in-climate weather or hauling stoppages due to caribou migrations.
- vii. At a pre-economic assessment level, we have assumed haul trucks will operate on a 24 hour basis, conditions permitting.
- viii. As per the above response, at a pre-economic assessment level, we have assumed haul trucks will operate on a 24 hour basis. Based on our experience operating the Meadowbank AWAR, it is expected the haul road may be partially or completely closed at times. Standard best management

practices for snow removal will be implemented to reduce snow windrows or banks that may cause large snowbanks to develop.

- ix. Traffic will be monitored by Meadowbank operations dispatch and security staff; information will be tracked daily and reported as part of the annual reporting.
- x. The Upper 95% presented in Table 4.B-15 above represents the maximum traffic rates on the haul road during the proposed mine lifespan. This hauling evaluation used in the road traffic simulation assumes the highest throughput at the mill of approximately 13,000 tpd (which in reality means up to 12,000 tpd of throughput and the additional 1,000 tpd of ore would be stockpiled near the mill.
- xi. These same traffic rate assumptions were used for assessing haul-road traffic impacts on wildlife and subsequently the assessment does not require revision. Assessment criteria should be linked to the effect, not to the mechanism causing the effect (i.e., assessment should be linked to the effects to wildlife, not to traffic levels). The assessment of effects to wildlife considered the observed effect of existing Meadowbank operations, and information collected at other mining operations in barren-ground caribou range. The assessment made conservative assumptions regarding the possible impacts of the road, considering not only traffic but also the barrier to movement and changes to access.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-07
Re:	Raptor nests and mitigation for raptors		

Reference to FEIS: • Volume 3, Section 5.5.3 Project Related Effects Analysis / Table 3-C-3; • Volume 5, Appendix 5-C Terrestrial Baseline Characterization Report, Section 4.2.2.6 Raptor Nest Surveys; • Volume 8, Appendix 8-E.7 Terrestrial Ecosystem Management Plan • Section 2.2.5.2 Mitigation Measures for Raptors • Section 3.1 Overview / Table 10: Summary of Terrestrial Ecosystem Monitoring Activities for the Meadowbank and Whale Tail Project • Section 3.6 Raptors / Table 15: Monitoring Approach for Raptors for the Meadowbank and Whale Tail Project • Section 3.6.2.2 Nest Monitoring

Information Request / Recommendation Made By Interested Party:

For raptors nests, the GN recommends that the Proponent:

- Provide additional rationale for exclusion of sensory disturbance of raptors from the assessment, including available literature on impacts of sensory disturbance on nest productivity and abandonment.
- Provide additional information on nest survey design and effort.
- Provide maps of nest locations and locations of haul-road alignment and quarry/borrow sites that will be used during road widening.
- Identify which and how many of these known nests will be removed by the Project footprint, and how far are these nests from the Project footprint?

For mitigation measures for raptors, the GN recommends that the Proponent provide the following information:

- What are the methods by which active nests are detected? Would the only method be incidental observations?
- Clarify what disturbance buffers will be applied to active raptor nests and how these compare to the scientific literature on disturbance of nesting raptors? Provide a specific distance derived from literature on disturbance of raptor nests.
- Define what is meant by “within vicinity” and “area of concern”.
- Will any nest monitoring outside the areas of concern and within the RSA be conducted?

If monitoring of active raptors nests is limited to the "vicinity" of the Project, how will the distinction be made between natural nest failures and Project induced? If not monitoring nest success at "impacted" versus control sites how does Proponent plan to achieve the mitigation objective that nesting success is unaffected by the Project?

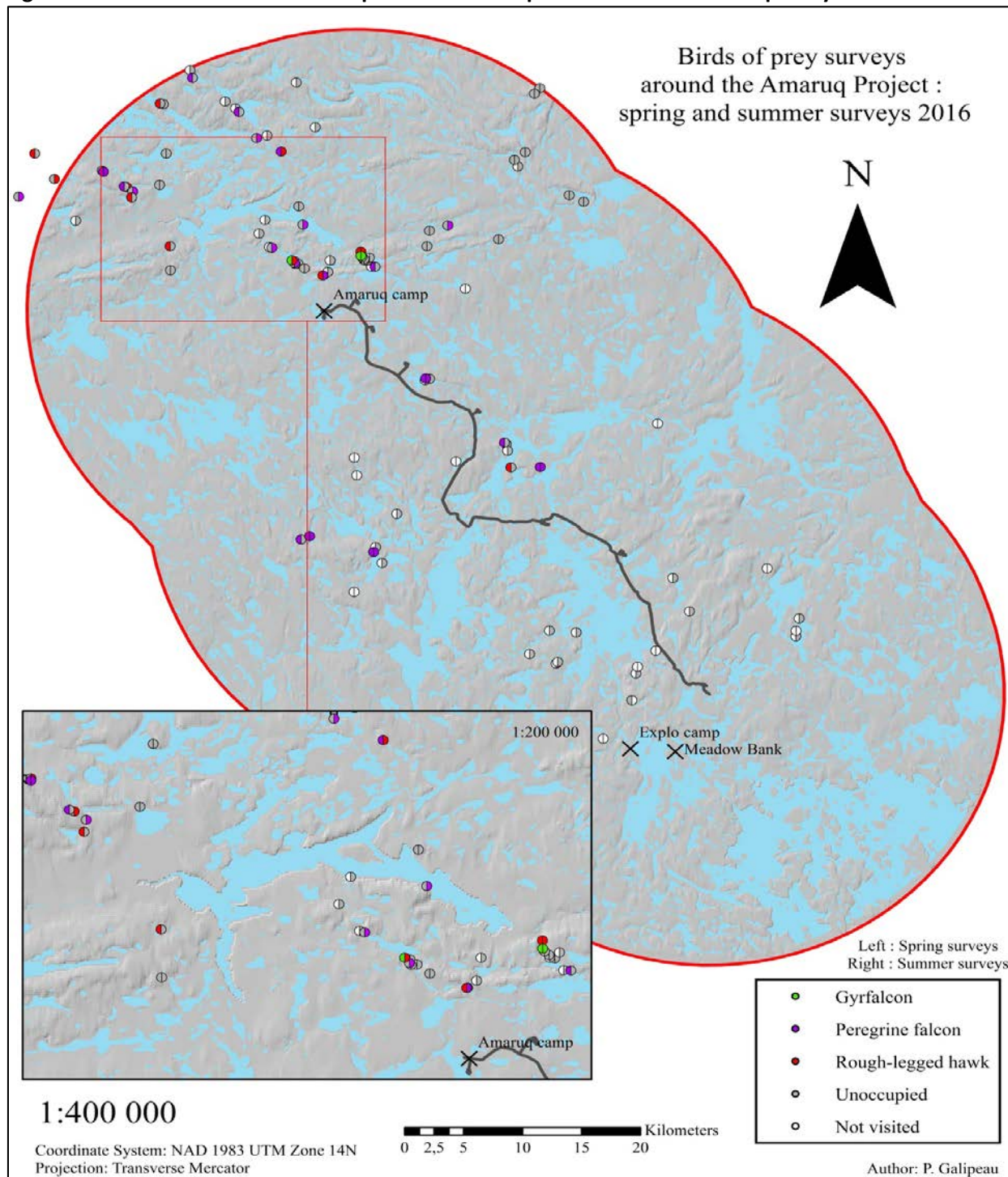
Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers the GN to Volume 5 Appendix 5C- Terrestrial Baseline Characterization, and more specifically to Section 4.3.3.7 – Raptor Nest Surveys, Table 4-14 on page 4-21 and Figure 9 which documents the raptor nest locations in proximity to the Whale Tail Pit site, haul road and infrastructure. Raptor surveys were conducted by Alastair Franke's Arctic Raptor research group and followed standard procedures and included aerial and ground surveys to determine the presence of white wash (scat) on rock faces, orange patches of lichen on rock outcrops, or presence of grassy ledges as these are good indicators of raptor nests. All GPS tracks were recorded to ensure search of available habitat was uniform, to calculate effort (hours flown and distance covered) and record unoccupied locations. Searches were also conducted by snowmobile, ATV and on foot. Raptor Surveys were conducted in 2015, 2016 (refer to the below Figure GN07-1) and are planned to continue in 2017 prior to Whale Tail Pit operations and will be followed in accordance to Section 3.6 – Raptor Monitoring and Adaptive Management presented in the TEMP in Section 3.6.2.

Given the distance of the identified nests from the road, site infrastructure and borrow sources, no known nests will be removed by the Project footprint as most of the nests are more than ~500m from proposed site infrastructure. Given this distance, and the tendency of raptors to nest on mine infrastructure, the effects pathway of sensory disturbance to raptors was classified as a secondary pathway (Table 3-C-3)

Furthermore, based on operational experience at the Meadowbank Mine and along the AWAR, mitigation measures to protect raptors are highly site specific. As a result, Agnico Eagle has presented an overarching methodology in Section 3.6 of the TEMP to protect raptor nests. If a nest is encountered, protective measures including a suitable buffer distance will be established and documented in a site specific raptor nest specific management plan, which will be reviewed by the KivIA, HTO, GN and a subject matter expert (i.e., Alastair Franke). As in the past operational experience, Agnico Eagle is confident that this will ensure construction and operations will not cause impacts nor significantly alter raptor nesting site selection, nest productivity and abandonment of raptor nests. All interactions with raptors are included in Annual Reporting.

Figure GN07-1: Distribution of Occupied and Unoccupied Cliffs in the Amaruq Study Area in 2016



Note: Green, Purple and Red symbols indicate cliffs occupied by Gyrfalcons, Peregrine Falcons and Rough-legged Hawks respectively. Symbols with two colors indicate that two species occupied the site, once in the spring (left side) and another in the summer (right side).

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-08
Re:	Assessment endpoints and measurement indicators for caribou		

Reference to FEIS: • Volume 3, Section 3.2.2: Assessment Endpoints and Measurement Indicators; • Volume 5, Section 5.5.3.1: Primary Pathways Effects Analysis; • Volume 5, Section 5.5.2.2: Caribou; • Volume 5, Appendix 5-D: Caribou Residency and Crossing; • Volume 5, Section 5.5.3.4: Primary Pathway Barriers to Migration; • Volume 8, TEMP Appendix 8E.7, Section 3.1 Overview, Table 10: Summary of Terrestrial Ecosystem Monitoring Activities for the Meadowbank and Whale Tail Project.

Information Request / Recommendation Made By Interested Party:

A more complete assessment of the potential for the Whale Tail Project to impact the movement of migratory caribou is needed. As part of this assessment additional analyses of caribou collar data requested include, but are not necessarily limited to, the following:

1) A study of the movements of caribou, at local and regional scales, in relation to the existing Meadowbank AWAR that includes metrics to assess changes in speed, direction, and crossing time upon approach to or movement away from the road. This should look at seasonal movements before and after the construction and operation of the road. This will provide a useful reference point for assessing potential impacts of the Whale Tail haul road;

2) A synopsis of caribou movement metrics (similar to those used for the AWAR analysis noted above) in the LSA and RSA around the Whale Tail pit and haul road that provides a predevelopment baseline for any future monitoring if the Project proceeds;

3) Calculations of the proportion of collared individuals from each herd that have interacted with (i.e. entered and/or crossed) the LSA and RSA for the Whale Tail project during migratory periods. This metric will provide an estimate of the proportion of each herd that is likely to interact with the Project; a useful means to assess the herd level magnitude of any effects.

4) With respect to request #1 above, it should be noted that the GN has recently initiated an analysis of collar data to examine the movements of caribou in relation to the AWAR. Results of this analysis will be made available to all parties involved in review of the Whale Tail Project in-order to further inform the assessment of the project. At this time, to avoid potential duplication of analyses, the GN invites the Proponent to participate fully in this analysis and requests from the Proponent the following data:

- Vehicle traffic on the AWAR: Dates, times (exact times), vehicle class and size (dimensions), purpose (Hunter/non-hunter, hauling, inspection etc.), number of caribou harvested, speed, color (if possible), engine type (gas or diesel).*
- the polygon for the no shooting zone around the Meadowbank road and camp (point on road where no shooting zone begins).*
- A digital elevation model of the entire road bead (i.e. exact altitude above surrounding terrain).*

- *Exact GIS coordinates (can be a precise line shape file) of the road and any spurs.*
- *Exact areas, heights, and waypoints for any structures along the road and within the camp.*

In-order to make use of these data and provide the most informative analysis possible, access to these data is needed by early February. If the Proponent has already begun a similar analysis of its own, the GN requests that the results of the analysis be provided as part of the response to this IR.

5) The GN further requests that the Proponent:

- *Clarify why changes in survival and reproduction of caribou were not assessed as part of the EIS and have not been included in the proposed follow-up monitoring scheme.*
- *Clarify whether the current Hunter Harvest Study (HHS) can be used to monitor trends in the total level of caribou harvest by residents of Baker Lake or an index of harvest level.*
- *If suitable data are available from the HHS, provide an analysis to examine whether the AWAR has had effects on the level of caribou harvest (i.e. total number harvested or an index of) by residents of Baker Lake in-order to support the assumption in the EIS that public access via Project roads does not increase harvest pressure on herd*

Agnico Eagle's Response to Information Request / Recommendation:

1. Based on comments during the November 18, 2016 workshop, and the ongoing renewal of the Caribou Monitoring Memorandum of Understanding between the GN and Agnico Eagle, Agnico Eagle will work with the GN to make data availability, analysis and collaboration with the GN in 2017. Furthermore, to ensure the protection of ungulates, Agnico Eagle will consult with the KivIA, GN and HTO in 2017 and update the TEMP (including Chart 2) prior to construction of Whale Tail Pit and the expansion of the haul road, to reflect monitoring and mitigation recommendations from the stakeholders that are realistic and sustainable. Collar locations are typically collected daily (Agnico Eagle 2016). Based on the data that is made available to Agnico Eagle through the MOU, it is our opinion that the requested analysis is not feasible considering the frequency of collar locations collected by the GN. Average annual movement rates calculated for Bathurst caribou ranged from approximately 7 to 17 km per day (DDEC 2014) and therefore, one location per day does not provide sufficient detail to investigate road crossing behavior.
2. Similarly to response Item #1, it is Agnico Eagle's opinion that the available collar data does not provide sufficient detail to estimate movement metrics at a scale where Project effects may be detectable. Agnico Eagle will discuss this requested analysis with the GN during upcoming TEMP review workshop.
3. Appendix 5-D Table 5-D-1 includes both the number of collared caribou that entered the RSA (i.e. may interact with the Project) and the total number of collared caribou in the herd, by season, year and herd.

4. Agnico Eagle looks forward to working with the GN to make provide the requested data, analysis and will continue to collaborate with the GN in 2017. These data will be provided to the GN during the February 2017 TEMP review workshop.
5. Effects pathways that may affect caribou survival were considered, as detailed in Appendix 3-C, Table 3-C-3. None were found to be primary pathways to caribou. Monitoring to detect caribou mortalities are described in the Terrestrial Ecosystem Monitoring Program (Appendix 8-E.7, Section 3).

The Hunter Harvest Study is undertaken in association with the Baker Lake HTO to monitor and document spatial distribution, seasonal patterns and harvest rates of hunter kills after construction of the AWAR from Baker Lake to the Meadowbank Mine. The Study is not intended to monitor trends in total harvest, but it may provide a line of evidence to estimate trends in total harvest. A recent summary of the Hunter Harvest Study data is available in the 2015 Wildlife Monitoring Summary Report (Agnico Eagle 2016). It should be noted that the FEIS investigated the effects pathway of improved access leading to increased harvesting (Appendix 3-C, Table 3-C-3) and found it to be a secondary pathway largely because the proposed haul road from Meadowbank to Whale Tail Pit will not be open to public use and because residents of Baker Lake have access on the AWAR to km 85 and traditionally have accessed the RSA with snowmobile and ATVs.

References:

- Agnico Eagle (Agnico Eagle Mines Limited). 2016. Meadowbank Mine 2015 Wildlife Monitoring Summary Report. March, 2016.
- DDEC. 2014. Jay Project Developer's Assessment Report. Section 12, Barren-Ground Caribou. October 2014.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-09
Re:	Hunter Harvest Study		

Reference to FEIS: • Volume 8, Appendix 8E.7, Terrestrial Environment Monitoring Plan (TEMP), section 3.1: Overview; • Volume 8, Appendix 8E.7, Terrestrial Environment Monitoring Plan (TEMP), section 3.3.3.4: Project-Related Mortality – Hunting by Baker Lake Residents

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Clarify how or if data from the current Hunter Harvest Study can be used to assess whether access granted by the Meadowbank Project's roads has resulted in a significant increase in caribou harvest rates by residents of Baker Lake. This information will be useful in assessing the potential impacts of the Whale Tail haul road.*
- *Clarify how, if the current design of the Hunter Harvest Study does not support this type of analysis, the study will be redesigned in-order to measure caribou harvest levels, support monitoring of Project effects and the proposed adaptive management strategy.*
- *Provide some discussion on what "additional [haul road] access control measures" are contemplated in section 3.3.3.4 of the TEMP.*

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers the GN to the Meadowbank Mine Annual Report – 2015 Wildlife Monitoring Summary (Gebauer et al. 2016) which presents the Hunter Harvest Survey (HSS) data, results and approach since 2007. These data can be used to calculate changes in caribou harvest within the project RSA, but does not include broader evaluation of hunting pressures at a territorial level. Unfortunately, the HHS has seen a decline in participant rates which may cause interpretation of data to become more challenging because of the inherent biases of a smaller sample set. Nevertheless, as discussed during the recent caribou monitoring workshop hosted by Agnico Eagle in Winnipeg on November 18, 2017, Agnico Eagle are welcoming input on how best to design and continue the Hunter Harvest Study in collaboration with the GN, HTO, and KivIA.

As reported in 2015, the percent of harvest within the RSA was 84%, higher than the average from 2007 to 2014 (79%; see Table 8.2 of the 2015 annual report). As compared to the historical data from the NWMB study (i.e., baseline conditions) which showed caribou harvest within the Meadowbank Mine RSA to be 67%, to date, the threshold level of 20% change in hunting patterns within the RSA has not been exceeded. As a result, Agnico Eagle does not believe continued access on the AWAR by hunters during the operation of Whale Tail Pit and haul road will cause a significant increase in caribou harvest. Furthermore, it is important to note the AWAR is currently not accessible to the public including hunters beyond km 85. This will continue to be enforced and the proposed haul road will be a private road and will not be accessible to the public; control measures will include security enforcement and reporting by haul truck drivers.

The Project area was used more frequently by Baker Lake community members in the past as a travel corridor between Baker Lake and the Back River to access traditional land use sites. The area is still used opportunistically today as people travel through the region; however, studies with Baker Lake hunters in 2001-02 and 2008 have indicated that caribou harvesting activities occurred between approximately 10 to 40 km and 64 km from town, respectively, with some hunters travelling up to 300 km northwest of town (Kendrick and Manseau 2008, Areva 2011).

References:

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2016. Meadowbank Mine: 2014 Wildlife Monitoring Summary Report. Can be found in Agnico Eagle Mines Ltd. 2015 Annual Report.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-10
Re:	Discretionary Mitigation Action for Caribou		

Reference to FEIS: • Volume 8, Appendix 8E.7, Terrestrial Environment Monitoring Plan (TEMP), Section 3.3, Chart 2: Adaptive Management for Caribou in Proximity to Project Facilities and Roads

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Provide a list and details of the mitigation actions that may be implemented at level 3 at the discretion of the Environmental Supervisor.*
- *Provide details of the scope of the Environmental Supervisor's discretion in this matter and the criteria/rules that will govern when and how these mitigation actions are to be implemented.*

Agnico Eagle's Response to Information Request / Recommendation:

TEMP Mitigation Action Plan

Since 2008 Agnico Eagle has implemented effective monitoring management and mitigation of effects to wildlife through implementation of an approved TEMP at the Meadowbank Mine. This being said, Agnico Eagle acknowledges that any effective plan needs to be continually updated to reflect success and lessons learned through operations and feedback from experts as new approaches and learnings are realized. Agnico Eagle believes that a holistic approach to the revision of the TEMP will provide a solid foundation for mitigation, monitoring and management for wildlife as part of the Whale Tail Project and other Agnico Eagle operations within the region. Therefore, Agnico Eagle proposes an Action Plan for Wildlife Mitigation, Monitoring, and Management planning. The revised TEMP will reflect realistic and sustainable monitoring and mitigation recommendations from stakeholders.

Agnico Eagle acknowledges the various IR received from the parties related to Wildlife and Wildlife Management as such Agnico Eagle proposes the following path forward to addressing these IRs and in some cases technical comments already on file.

- **Step 1 – Initial Draft** of a revised TEMP – Agnico Eagle is committed to revision of the existing TEMP to include and address all IRs received as well as any follow-up on issues raised during the November 2017 workshop. The revision of the TEMP will be completed by Agnico Eagle with support from subject matter experts in February 2017.
 - The revised draft will be provided to the NIRB and any interested parties at least two weeks in advance of NIRBs deadline for technical comments from the Parties. Allowing for additional time and consultation to be brought forth by the parties to the NIRB.
- **Step 2 – Agnico Eagle to formally present the Initial Draft Plan** concepts to interested parties at a February 2017 Workshop to be held in Ottawa. The agenda will address the following key areas of concern highlighted in the Irs, including but not limited to the following:

- o Adaptive Management and monitoring tools;
 - o Caribou mitigation and monitoring measures (see below);
 - o Data availability, analysis, and collaboration;
 - o Triggers and thresholds for adaptive management;
 - o Blasting management, including zone of influence;
 - o Site infrastructure, including the haul road;
 - o Road access/traffic, harvesting, and caribou deflections;
 - o Cumulative effects.
- **Step 3** – Agnico Eagle acknowledges some issues related to wildlife monitoring requires a multifaceted team approach of jurisdictional authorities. Ongoing collaboration and next steps will be discussed at the workshop (Feb 2017)
- **Step 4** – The technical comments received during the NIRB review process and the results of the workshop will be incorporated into an **initial draft** of the TEMP with Agnico Eagle’s final submission in advance of the **technical meeting or immediately following the technical meeting** with sufficient time for parties to provide any final statements with respect to its content in their final submission to the NIRB prior a final hearing (March/April 2017)
- **Step 5** – Agnico Eagle anticipates that **sufficient progress and confidence** is provided in the revised or second draft of the TEMP prior to the **final hearing** such that the NIRB can make a fully informed and confident decision as it relates to wildlife management and mitigation measures to be applied by Agnico Eagle. (September 2017)
- **Step 6 – Final revision of the TEMP for implementation following issuance of a Project Certificate to capture any recommendation made by the parties and NIRB. (January 2018)**

For example some of the caribou mitigations measures and monitoring tools to be discussed at the workshop include:

- Application and revision to Chart 2 (Attachment GN10-A),
- Adaptive Management of Caribou such as:
 - o Implementation of convoys of haul trucks;
 - o Haul truck speeds;
 - o Haul truck and blasting activities;
 - o Potential restrictions to operations.
- Caribou collaring data;
- Ground surveys;
- Height of Land surveys; and
- Caribou sightings and security.

Specifically in relation to this IR, Level 3 actions will be implemented if >50 caribou observed 500m from the site, or area of operation. These criteria and the rules that govern these decisions are based on the previously accepted TEMP criteria and are:

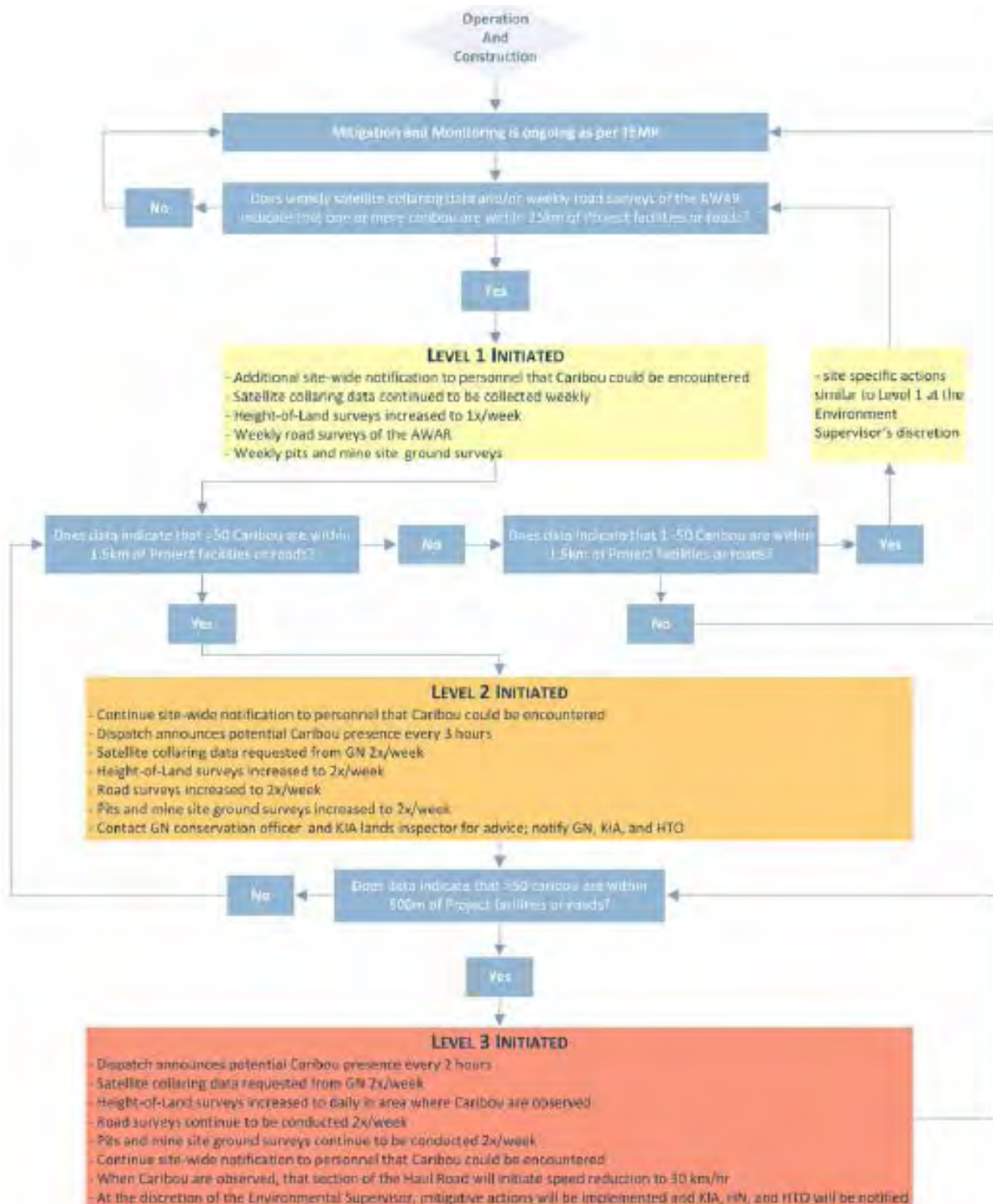
- described in Chart 2 of the TEMP;
- akin to the Mobile Caribou Conservation Measures presented by the KivIA (Poole and Gunn, 2016); and
- were developed in consideration that the project is not located in caribou post calving or calving areas.

The distance of 500 m is based on realistic observational distances using height of land surveys and road surveys; these surveys will increase in frequency as caribou collaring data and operator notifications indicate when herds may be entering into the operational area. The basis for 50 animals was agreed upon during the 2005 review of the original 2006 Meadowbank TEMP and has been found to be an effective trigger that allows operational flexibility while protecting caribou.

References:

Poole, K., and Gunn, A. 2016. Management of caribou post-calving areas in the Kivalliq Region, Nunavut. November 15, 2016

Attachment GN10-A: CHART 2: Adaptive Management for Caribou in Proximity to Project Facilities and Roads



Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-11
Re:	Hunting threshold for caribou		

Reference to FEIS: • Volume 8, Appendix 8E.7, Terrestrial Environment Monitoring Plan (TEMP), section 3.3, table 12: Monitoring Approach for Ungulates for the Meadowbank and Whale Tail Project

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Provide a precise explanation as to how this metric is calculated and the data that are required to do so.*
- *Explain the ecological relevance of this metric and the threshold of <20% change in the context of the assessment pathways and residual impact classification criteria used in the EIS. How was the significance of this threshold determined?*

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle refers the GN to the Meadowbank Mine Annual Report – 2015 Wildlife Monitoring Summary (Gebauer et al. 2016) which presents the Hunter Harvest Survey data, results and approach since 2007. The “harvest intensity in the Meadowbank RSA will increase <20%” was discussed and agreed upon during the 2005 review of the Meadowbank Project and TEMP. The calculation is based on the number of caribou harvests recorded within the RSA from annual data collected as part of the HHS (i.e., participants provide date, location on a map and number of caribou harvests). Using an example of data taken from 2015 HHS, it was reported that the percent of harvest within the Meadowbank Mine RSA was 84%. As compared to the historical data from the NWMB study (i.e., baseline conditions), which showed caribou harvest within the Meadowbank Mine RSA to be 67%, to date, the threshold level of 20% change in hunting patterns within the RSA has not been exceeded (e.g., in 2015, 67% baseline compared to 84% = 17% change, which is less than 20%). Agnico Eagle believes the threshold of 20% change, the methods, calculations and how the annual HHS data is compared to baseline conditions are appropriate.

The threshold of 20% change was not used in the determination of significance.

References:

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2016. Meadowbank Mine: 2014 Wildlife Monitoring Summary Report. Can be found in Agnico Eagle Mines Ltd. 2015 Annual Report

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-12
Re:	Problem carnivores		

Reference to FEIS: • Volume 8, TEMP Appendix 8E.7, Appendix A - Wildlife Protection and Response Plan: Meadowbank Division

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

Provide a list of measures (including criteria for use) that are planned to adjust/manage Project operations in response to the presence of bears, in-order to reduce disturbance of these animals.

Agnico Eagle's Response to Information Request / Recommendation:

Although bears and sporadic bear tracks have been observed within the Whale Tail Pit LSA area, no active bear dens were identified and are not expected to be encountered during construction and operation. If bears are encountered, during the phases of the Whale Tail project, Agnico Eagle will follow TEMP Section 3.4 including predatory mammal monitoring approach, associated adaptive management and the Den Protection and Management Plan listed and found in Appendix F of the TEMP, that will be followed to ensure the protection and reduce project disturbance on bears and their dens.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-13
Re:	Road closures for caribou		

Reference to FEIS: • Volume 5, Section 5.5.3.4 – Primary Pathway Barriers to Migration; • Volume 8, Appendix 8-C.1, Whale Tail Haul Road Management Plan, Section 7.7.2 - Other Access Control Procedures

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- i. Clarify what is meant by “activities will cease” and be “curtailed” on the road. Does this mean that vehicles on the road at the time this measure is implemented will complete their journeys but no new road-use trips will be initiated or will vehicles on the road stop at their location on the road until further notice?*
- ii. Clarify/define what constitutes a “large aggregation” or “large number” of caribou?*
- iii. Define adjacent to the road? How far from the road?*
- iv. Provide estimates of the time required to cease activities, clear the road of traffic and close it once a decision is made to do so; taking into account the length of the haul road and the proposed speed limits.*
- v. Using the available data on movement rates of caribou and estimates of time required to cease or curtail activities on the road, provide estimates of the how far from the road could a large aggregation of caribou be (at the time a decision is made to close the road) and still interact with traffic during efforts to clear the road of vehicles?*
- vi. Outline what monitoring/surveillance methods are proposed in-order to detect aggregations of caribou at this distance?*
- vii. Clarify how far away from the road an aggregation of caribou needs to move before activities on the road resume?*

Agnico Eagle’s Response to Information Request / Recommendation:

Refer to GN-10 Agnico Eagle’s TEMP Mitigation Action Plan, which includes Chart 2.

Based on comments during the November 18, 2016 workshop and as per Agnico Eagle response to GN-08, Agnico Eagle will work with the GN to make data availability, analysis and collaboration with the GN.

- ii. A “large aggregate” or “large number” of caribou is >50 caribou as per Chart 2.*
- iii. Agnico Eagle refers the GN to Chart 2. During Level 1 monitoring “adjacent to the road” refers to caribou that are observed through satellite collaring, are caribou that are 1.5 km from the road.*
- iv. Assuming a haul truck left Whale Tail Pit to travel to the mill and a road closure was initiated immediately thereafter, the haul truck would proceed and take up to approximately 3 hours to complete its’ trip and therefore “clear the road” of traffic.*

- v. For further discussion in conjunction with Agnico Eagle's Action Plan, refer to GN-10.
- vi. For further discussion in conjunction with Agnico Eagle's Action Plan, refer to GN-10 which includes a variety of monitoring tools for discussion.
- vii. Agnico Eagle refers the GN to Chart 2 of the TEMP. As described in Level 3, if an aggregate of >50 caribou are 500 m away from the road or infrastructure activities, Level 2 monitoring will continue until the caribou are 1.5 km away from the area.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-14
Re:	Helicopters		

Reference to FEIS: • Volume 1, Project Description, Executive Summary and Figure 1.2-1; • Volume 8, Appendix 8-E Addendums for Environmental Protection and Monitoring Plans / Section 2.2.2.1 Mitigation Measures for Ungulates - Table 4

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Map showing the location of the heli-pad.*
- *Frequency and timing of flights from the Whale Tail Pit, including flights for the exploration activities in the Amaruq property.*
- *Flying routes or itineraries.*
- *Mitigation measures to avoid or minimize impacts on wildlife.*

The GN also requests that the Proponent submit the Access and Air Traffic Management Plan.

NIRB's comment regarding the Information Request/ Recommendation

The NIRB notes that the specific Plan identified in the table may be referenced in error; the Proponent would either be expected to supply the Plan or detail where the specific information requested in this IR would be provided.

Agnico Eagle's Response to Information Request / Recommendation:

The Whale Tail Pit Project proposes to extend the use of the airstrip located at the Meadowbank Mine site, transport equipment and employees to Whale Tail Pit via the proposed haul road and does not intend to use helicopters or fixed wing airplanes for transportation to the Whale Tail Pit site. Helicopter transport and fixed wing transport to the Amaruq exploration site will continue to be used for exploration activities.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-15
Re:	Winter road		

Reference to FEIS: • Volume 1, Section 1.2.7 – Haul Roads, All-Weather Roads, and Winter Roads; • Volume 8, Appendix 8-C.1: Whale Tail Pit Haul Road Management Plan

Information Request / Recommendation Made By Interested Party:

The GN requests that the proponent provide the following information on winter roads:

- *Intended uses;*
- *Routes or alignments;*
- *Dimensions;*
- *Design, timing and duration of construction;*
- *Type of vehicles that will use the winter roads;*
- *Operation and management;*
- *Mitigation measures to avoid or minimize impacts on wildlife.*

Agnico Eagle’s Response to Information Request / Recommendation:

The Whale Tail Pit Project proposes to extend the use of the airstrip located at the Meadowbank Mine site, transport equipment and employees to Whale Tail Pit via the proposed haul road and does not intend to use winter roads for transportation to the Whale Tail Pit site. The use of winter roads is exclusively for transportation of material and fuel to the Amaruq exploration site.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-16
Re:	Project phases		

Reference to FEIS: • Volume 1, Section 1.4 - Pace, scale and timing of project

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent clarifies the phase's sequence and activities of the Project presented in table 1.4-2 and indicate when the mining operations and hauling of ore to Meadowbank will start.

Agnico Eagle's Response to Information Request / Recommendation:

In addition to Table 1.4-2, Agnico Eagle refers the GN to Volume 1, Section 1.2.2, Table 1.2-1 which presents a "summary of mine life materials balance".

As shown in Table 1.2-1, Whale Tail Pit ore mined steadily increases beginning in 2018, ramping up production in 2020 and will continue until 2022. Although the scheduling of pre-stripping, quarrying and mining is highly dependent on regulatory approvals and the timing of the licensing, at a prefeasibility level, Agnico Eagle plans to begin expansion of the Amaruq Exploration Access Road to a haul road, site road construction and dike material preparation as early as November 2017 and no later than Q1 2018. As presented in column 2 of Table 1.2-1, the majority of the volume of Waste Rock excavated in 2018 will be suitable for use in road and dike construction; these activities are planned to begin in Q1 2018. This will allow dike construction to begin immediately when the Type A license, leases and authorizations are received and the Whale Tail Lake is thawed (between June 15 – July 15, 2018). Ore that is encountered in 2018 during quarrying will be stockpiled and when the haul road expansion is complete by Q1 2019, will be hauled back for milling. Dewatering is scheduled to begin in Q1 2019, following the construction of the Whale Tail Dike. Operations of the Whale Tail Pit will begin in Q3 2019 and will continue for 3 to 4 years, or until 2022. Active closure of the Whale Tail Pit Project and the haul road is proposed between 2022 and 2029.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-17
Re:	Lifespan of Whale Tail Pit mining installations and haul road / Impact assessment scenario, including cumulative effects		

Reference to FEIS: • Volume 1, 1.8 Potential Future Developments; • Volume 3, Appendix 3-D Cumulative Effects Study Area and Reasonably Foreseeable Future Development; • Volume 8, Appendix 8-C.1: Whale Tail Pit Hauk Road Management Plan

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent submit further information on the lifespan of the Whale Tail Pit mine and the haul-road, including present and on-going exploration projects conducted in the Amaruq Property and foreseeable future deposits development. Impact assessment scenarios and cumulative effects assessment should be revised accordingly.

Agnico Eagle’s Response to Information Request / Recommendation:

Following NIRB screening and under a Type B license (8BC-AEA1525) issued in 2015, the Amaruq Exploration Access Road construction began in Q1 2016; construction will continue until Q1 2018. This will allow the transportation of fuel and equipment needed to begin the exploration ramp and portal (Type B License 2BB MEA1318) to conduct advanced exploration and explore the deeper portions of the deposit located on the Amaruq property. Exploration activities and foreseeable deposits are described in Volume 1, Section 1.8. As previously discussed with the GN, if Whale Tail Pit or other future Amaruq mining projects are not approved, Agnico Eagle intends to continue to use Amaruq exploration road until at least 2025 to support Amaruq exploration drilling and perhaps other regional exploration activities.

Beginning as soon as permits are received, the Amaruq exploration access road will be expanded to a haul road as early as November 2017. As per Agnico Eagle’s response to GN-16, the Whale Tail Pit mine will begin dike construction in 2018, mining in Q3 2019 until 2022 and closure from 2022 to 2029. Currently, with the exception of Whale Tail Pit, none of these foreseeable deposits have sufficient exploration drilling to begin engineering design nor economic evaluations and therefore are not considered as part of the NIRB Review and NWB Type A application. The cumulative impacts of any additional mine infrastructure in the Amaruq property will be considered if and when they are proposed for development.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-18
Re:	Alternatives analysis		

Reference to FEIS: • Volume 1, Section 1.10.5 - Overburden and Waste Rock Disposal

Information Request / Recommendation Made By Interested Party:

The GN requests that the proponent submits a complete alternative analysis for the waste rock storage facility that would include other environmental components such as vegetation and a habitat quality criterion.

Agnico Eagle's Response to Information Request / Recommendation:

Based on scale and size of the WRSF the vegetation type and potential habitat would not change the outcome of the alternatives analysis as they are not decision making criteria/drivers. Agnico Eagle refers the GN to Volume 1, Section 1.10.5. Agnico Eagle believes the decision criteria, quality of the evaluation and level of analysis to determine the best location for the Whale Tail Pit Waste Rock Storage Facility and overburden is complete, comprehensive and meets engineering best practices.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-19
Re:	Local Study Area		

Reference to FEIS: • Volume 5, Section 5.3.1.1.3 Terrain, Permafrost, and Soils, Section 5.1.3.1.2 Vegetation and Wildlife

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent provides clarity on local study areas. The terminology used to define them should be the same. A table presenting the areas of all the local and regional study areas (for the Project facilities and the haul-road) should be submitted, as well as a single map delineating them.

The GN also recommends that the Proponent present the rationale that supports the establishment of the Whale Tail Pit mining site local study area.

Agnico Eagle's Response to Information Request / Recommendation:

The study areas developed for the Project are different for the various terrestrial disciplines because the impact of the Project on these disciplines will differ. For example, the local study area around the Project facilities is the same for terrain, soils, vegetation, and wildlife (a 1.5 km wide buffer); however, for the haul road, a 500 m wide corridor (250 m either side of the centerline) was an appropriate area to assess for terrain and soils as there will be little or no direct impact expected on terrain or soils beyond this. Table GN19-1 presents the areas of all the local and regional study areas for the Project facilities and the haul road. Refer to project footprint of RSA and LSA in GN-21.

For the regional study area, terrain and permafrost did not require a regional study area as any impact to terrain will occur only within the local study area. The regional study area for soils, vegetation, and wildlife is based on a 25 km radius around Whale Tail Pit site, and 25 km on either side of the road, esker borrow sites and esker borrow site access roads.

Table GN19-1: Local and Regional Study Areas for the Project Facilities and the Haul Road

	Local Study Area		Regional Study Area
	Project Facilities	Haul Road	
Terrain/Permafrost	7,722 ha ^a	3,182 ha ^b	n/a
Soils	7,722 ha ^a	3,182 ha ^b	501,700 ha ^c
Vegetation/Wildlife	7,722 ha ^a	20,493 ha	501,700 ha ^c

^a based on a 1.5 km buffer around proposed Whale Tail operations

^b based on a 500 m wide corridor centered on haul road footprint

^c based on a 50 km wide buffer centered on the study area (i.e. 25 km radius around Whale Tail Pit site and 25 km on either side of the haul road, esker borrow sites and esker borrow site access roads)

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-20
Re:	Species at risk / Predatory mammals		

Reference to FEIS: • Volume 5, Section 5.5.2.1 - Species of Concern, Section 5.5.2.4 - Predatory mammals

Information Request / Recommendation Made By Interested Party:

The GN requests that the proponent revise table 5.5.2.1 in light of the recent COSEWIC assessment for barren-ground caribou. Wolf mortality causes should also be identified.

Agnico Eagle's Response to Information Request / Recommendation:

There is no plan to update the FEIS; however, in any relevant and future documentation the recent COSEWIC assessment for barren-ground caribou (threatened, but without SARA status) will be referenced. As barren-ground caribou were already identified as a VC, this change in status does not affect the EIS pathways or conclusions. Wolf mortalities at Meadowbank are summarized in the below table.

Table GN20-1: Wolf mortalities at the Meadowbank Mine and AWPAP from 2007 to 2015

Year	Number	Location	Cause
2008	1	Meadowbank Landfill	The behaviour of the wolf suggested that it was ill, either due to natural causes (i.e., parasite or viral/bacterial infection) or as a result of ingestion of landfill waste.
	1	Near Meadowbank Mine Site	Euthanized - did not illicit a fear response when quickly approached on snowmobile, suggesting it had become habituated to human contact
2009	1	Meadowbank Mine Site	Euthanized at the mine site as a preventative measure following close monitoring.
	1	AWPAR	
	1	Meadowbank Mine Site	All of the wolves euthanized at the mine site were solitary animals.
	1	Meadowbank Landfill	
2010	1	Meadowbank Mine Site	Euthanized as a preventive measure
2011	1	Meadowbank Mine Site	Euthanized, roaming on the mine site
	1	Meadowbank Mine Site	Euthanized, roaming on the mine site
	1	Meadowbank Mine Site	Euthanized, roaming on the mine site
	1	AWPAR	Hit by a vehicle
2012	1	Meadowbank Mine Site	Euthanized, roaming on the mine site
2014	1	Meadowbank Mine Site	Euthanized, roaming on the mine site. The wolf was moving slowing and staggering.
2015	1	Meadowbank Vault Pit	Euthanized, naturally injured

Source: Gebauer et al. (2009-2016).

References:

Gebauer, M.B., C. Lee, J. Boulanger and J. Shaw. 2009. *Meadowbank Mine: 2008 Wildlife Monitoring Summary Report*. Can be found in Agnico Eagle 2008 Annual Report.

Gebauer, M., C. Lee, I. Laing, and J. Shaw. 2010. *Meadowbank Mine: 2009 Wildlife Monitoring Summary Report*. Can be found in Agnico Eagle 2009 Annual Report.

Gebauer, M., C. Lee, J. Shaw, and I. Laing. 2011. *Meadowbank Mine: 2010 Wildlife Monitoring Summary Report*. Can be found in Agnico Eagle 2010 Annual Report.

Gebauer, M., A. Crampton, C. Lee, J. Boulanger, J. Shaw, and I. Laing. 2012. *Meadowbank Mine: 2011 Wildlife Monitoring Summary Report*. Can be found in Agnico Eagle 2011 Annual Report.

Gebauer, M., A. Crampton, M. Huntley, J. Boulanger, J. Shaw, and I. Laing. 2013. *Meadowbank Mine: 2012 Wildlife Monitoring Summary Report*. Can be found in Agnico Eagle 2012 Annual Report.

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2014. *Meadowbank Mine: 2013 Wildlife Monitoring Summary Report*. Can be found in Agnico Eagle 2013 Annual Report.

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2015. *Meadowbank Mine: 2014 Wildlife Monitoring Summary Report*. Prepared for Agnico Eagle Mines Ltd.

Gebauer, M., A. Crampton, J. Shaw, and I. Laing. 2016. *Meadowbank Mine: 2015 Wildlife Monitoring Summary Report*. Prepared for Agnico Eagle Mines Ltd.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-21
Re:	Project footprint		

Reference to FEIS: • Volume 5, Section 5.3.3.1 Effects of the Project on Terrain, Permafrost and Soils
Primary / and subsequent sections

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent provide a detailed breakdown of the Project footprint and include (but not limited to):

- *The Whale Tail Pit;*
- *The Whale Tail mining site, including local roads, stockpiles, waste rock storage facility and other facilities;*
- *Flooded areas and water management structures;*
- *The Haul-road and spurs;*
- *Borrow-pits, including their access roads.*

In the case where indirect impacts are identified, for instance the zone of influence (100 m) of the haul-road where dust deposition is maximal and habitat is assumed to be lost, such areas should be included as such in the Project Footprint.

Agnico Eagle's Response to Information Request / Recommendation:

Figure 5.1-1 of Volume 5 defines the Project footprint as 820.1 ha. The Project facilities are shown in Figure 1.2-1 (Volume 1, Project Description).

Monitoring at the Meadowbank Mine shows that wildlife continue to use habitat immediately adjacent to the mine footprint, and occasionally are found on the mine footprint, as has been found at other mines. Therefore, it is not appropriate to consider the zone of influence as part of the mine footprint as there is no direct habitat loss. The footprint is used to quantify the amount of direct habitat loss due to mining infrastructure (e.g., pit, stockpiles, waste rock storage area, and flooded areas, among others). It would be inaccurate to complete the analysis with the zone of influence as equivalent in effects to direct habitat loss, in addition, Agnico Eagle is not familiar with this approach ever being done previously for a northern EIA, or from any other jurisdiction. The zone of influence is considered as part of indirect effects to VCs, which includes indirect habitat loss to wildlife. This activity of wildlife near the mine footprint occurs regularly at Meadowbank, and mitigation to reduce effects on wildlife adjacent and on the mine property are outlined in the TEMP (Volume 8, Appendix 8-E.7). Specific examples of monitoring programs that investigated wildlife activity immediately adjacent to a mine footprint included monitoring of migratory birds at Ekati, which failed to detect a difference in species abundance or diversity (Smith et al. 2005; ERM Rescan 2010) or nesting success on birds in close proximity to an active mine footprint (Male and Nol 2005).

References:

- ERM Rescan. 2014. Ekati Diamond Mine: 2013 WEMP Addendum — Wildlife Camera Monitoring Summary Report. Prepared for Dominion Diamond Ekati Corporation by ERM Rescan: Yellowknife, Northwest Territories.
- Male, S.K., and E. Nol. "Impacts of roads associated with the Ekati Diamond Mine, Northwest Territories, Canada, on reproductive success and breeding habitat of Lapland Longspurs." *Canadian journal of zoology* 83.10 (2005): 1286-1296.
- Smith, A.C., J.A. Virgl, D. Panayi, and A.R. Armstrong. Effects of a diamond mine on tundra-breeding birds. *Arctic*, 295-304.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-23
Re:	Whale Tail Pit Haul-Road Design		

Reference to FEIS: • Volume 8, Appendix 8-C.1: Whale Tail Pit Haul Road Management Plan

Information Request / Recommendation Made By Interested Party:

The GN requests that the proponent indicate if they intend to design the road or sections of it, (material size, and slopes) and maintain it in order to facilitate caribou crossings. The GN also request that the Proponent indicate the locations or sections of the road where these design enhancements are proposed.

Agnico Eagle’s Response to Information Request / Recommendation:

Overall, the road has been designed to reduce as much as possible impacts to the environment, including but not limited to the protection of the freshwater environment, to ensure reduced permafrost thaw susceptibility and as best possible, maintain a low profile that facilitates caribou crossing. Although many sections of the road have been designed with a low profile, due to topographical limitations, sections of the road have steep banks which may not be conducive to caribou crossing. In consultation with the GN, HTO, and KivIA, in 2017, prior to the expansion of the haul road, Agnico Eagle will evaluate zones along the road with highest caribou density of crossing along the Whale Tail Pit haul road⁶. Following consultation with the GN, HTO, and KivIA, and prior to operations in 2018 and 2019, Agnico Eagle will finalize the most suitable locations of the caribou crossing areas, design and grade the slopes of the road in specific sections to improve the ability of caribou to cross the haul road.

⁶ Using survey and other monitoring data, this type of evaluation has been completed for the Meadowbank All Weather Access Road since 2008. Agnico Eagle refers the GN to the Meadowbank Annual Reports – Appendix G14 - Wildlife Summary Report – Figure entitled “Caribou density along AWAR (2008 to 2015).

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-24
Re:	Mitigation measures for ungulates		

Reference to FEIS: • Volume 8, Appendix 8-E Addendums for Environmental Protection and Monitoring Plans Section 2.1 General Mitigation Measures, Section 2.2.2.1 - Table 4, Section 3.3 Ungulates - Table 12

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent provide the following information, details and clarifications:

- i. Stop work policy, minimizing traffic and convoys: provide more details on these adaptive management measures and explain what triggers them and when normal activities would resume?*
- ii. How will speed limits be monitored and enforced?*
- iii. How will the no-hunting zone be implemented and enforced?*
- iv. How will engine noises be minimized? These measures should be added to Chart 2.*
- v. The Proponent must clarify what “special measures” (as referred to in section 3.3 Ungulates) would be implemented if ungulates are in close proximity to Project facilities and roads?*
- vi. Define the expression “distribution” and unnatural caribou use patterns that are used for caribou in Table 12. How are these estimated?*
- vii. Provide details on what are “operation adjustments” and “appropriate actions” are and how they would be implemented (section 3.3.3.2).*
- viii. Clarify the distance thresholds that trigger adaptive management by giving coherent examples with Chart 2.*

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle has addressed work activity cessation and other adaptive management responses to caribou in Agnico Eagle’s response to GN-10 and GN-13. Information previously provided in these responses apply to GN-24 i), v) to viii). To ensure the protection of ungulates, Agnico Eagle will consult with the KivIA, GN, and HTO in 2017 and update the TEMP (including Chart 2) prior to construction of Whale Tail Pit and the expansion of the haul road, to reflect monitoring and mitigation recommendations from the stakeholders that are realistic and sustainable.

In response to GN-24

- ii. Agnico Eagle security department enforces speed limits based on random radar checks and clocking start and finish times.*
- iii. the security department will continue to monitor no-hunting zones; if hunting occurs within the no hunting zone, the GN conservation officer will be contacted and will deal with the occurrence as deemed suitable on a case by case basis.*

- iv. all machinery will be equipped with noise abatement technology (i.e. mufflers) and will be maintained to ensure noise emissions are within industry standards.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-25
Re:	Predatory mammals		

Reference to FEIS: • Volume 8, Appendix 8-E Addendums for Environmental Protection and Monitoring Plans / Section 2.2.3.1 Summary of Potential Effects

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent substantiates the assertion cited above. The DEIS needs to explicitly, where appropriate, draw connections to mitigate measures for prey where these are also intended to benefit predatory mammals.

Agnico Eagle's Response to Information Request / Recommendation:

The TEMP (Volume 8, Appendix 8-E.7) describes mitigation relevant to ungulates (TEMP Table 4), some of which are General Measures as they have benefit that extend to other VCs such as predators (examples include maintaining speed limits and minimizing noises).

The environmental design features and mitigation relevant to each Effects Pathway are described in Volume 3, Appendix 3-C, Table 3-C-3, and specific examples of how particular environmental design features and mitigation apply to each VC are provided in the text of Volume 5 of the FEIS. To ensure the protection of predatory mammals, Agnico Eagle will consult with the KivIA, GN, and HTO in 2017 and update the TEMP prior to construction of Whale Tail Pit and the expansion of the haul road, to reflect monitoring and mitigation recommendations from the stakeholders that are realistic and sustainable.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-26
Re:	Dustfall monitoring program		

Reference to FEIS: • Volume 8, Appendix 8-E Addendums for Environmental Protection and Monitoring Plans / Appendix D - AWAR and Haul Road Dustfall Monitoring Plan

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent provide the following information:

- i. *Provide a rationale for a single transect dust sampling station along the haul road. Why was this site in particular chosen, what are its characteristics (for instance, is it more exposed relative to other sections of the road)? Is it representative of other sections of the road?*
- ii. *Climate averages (precipitations, dominant winds) must be included in order to justify the location of the sampling transect and that there will be only one month of dust sampling (August).*
- iii. *Justify the use of Alberta's guideline for dustfall for recreation and residential areas in the biophysical context of the Project, and in particular for vegetation and habitat quality.*
- iv. *What level of dust accumulation triggers supplementary monitoring? How is this exceedance determined?*
- v. *What is contemplated as "of other chemical suppressants"?*
- vi. *What could be the speed limit reduction?*
- vii. *How would speed enforcement be increased?*

Agnico Eagle's Response to Information Request / Recommendation:

The dust monitoring study design for Whale Tail Pit and Haul Road builds on the experience, knowledge and reliability of data gained while developing identical studies along the Meadowbank AWAR. Agnico Eagle refers the GN to the Meadowbank Mine Annual Report, Appendix G13 – All Weather Access Road Dust Monitoring Report to provide the GN with context for design decisions for the Whale Tail Pit and Haul Road monitoring plan.

The following more specifically respond to the GN-27 IRs.

- i. The rationale for sample location is presented in Section 1.3, General Approach and Section 2 Methods of the Appendix D of the TEMP entitled – All-Weather Access Road and Whale Tail Haul Road Dust Monitoring Plan.
- ii. The timing of dustfall sampling and spatial distribution of sample locations were selected with general consideration of climate averages and dominant winds. As described in Section 2.1, sampling will *typically* be conducted in August. Among months where the AWAR and the proposed haul road is completely snow-free and therefore has the greatest potential to produce dust (generally mid-June through mid-September), August sees the heaviest traffic rates due to shipments of material from the marine barge docked in Baker Lake. Therefore dustfall rates are

expected to be highest during this time, and represent the greatest potential for environmental impact. It should be noted that samples are collected over a period of 30 days, so the sampling period may extend into July or September, depending on other programs and technician availability. A transect approach to sampling was chosen with locations on both the dominant up- and down-wind sides of the road in order to understand impacts of wind on dustfall rates.

- iii. The justification of the use of Alberta guidelines is provided in Section 3 of the Appendix D of the TEMP. This guideline is referenced for context only as there are no GN guidelines. As indicated, it was determined to have been derived based on aesthetic or nuisance concerns to address concerns from Baker Lake community members.
- iv. Supplemental dustfall monitoring for the haul road will be initiated in the event that FEIS predictions for dustfall are exceeded (see Appendix 4-C, Section 4.C-8). Further necessity for additional supplementary studies (e.g. vegetation or wildlife studies) will be determined in consultation with the NIRB inspector based on weight-of-evidence results from the dustfall monitoring program, wildlife risk assessment, and terrestrial ecosystem monitoring studies (which are detailed in Appendix 8-E.7).
- v. Currently Agnico Eagle is evaluating the effectiveness of various products along the AWAR. At present, “other chemical suppressants” is limited to calcium chloride (which has been proven effective and economical along the AWAR) or other GN-approved dust suppressants.
- vi. If necessary, speed could be reduced from 50km/hr to 40km/hr⁷ in sections of the road during the period when total dustfall deposition levels are greatest.
- vii. The Security department could increase random radar checks and *all* vehicles could be immediately evaluated by security for “total trip or cycle time” along the road.

⁷ It should be noted that preliminary evaluations of speed reductions during the 2016 dust suppression monitoring trials along the Meadowbank AWAR have not demonstrated an appreciable reduction in total dustfall; GN approved dust suppressants appear to be the most effective.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-27
Re:	Blasting Management: Mitigation for wildlife		

Reference to FEIS: • Volume 4, Appendix 4-D Baseline Noise, Section 4; • Terrestrial Ecosystem Management Plan (TEMP) Appendix 8-E.7, Table 4; • Appendix I1 - Noise Monitoring and Abatement Strategy Plan, Section 4.2, Table 2S.

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Provide information on daily rates of blasting (maximum and minimum) that will occur during the construction and operations phases of the Whale Tail pit and haul road, including any seasonal variation that is anticipated.*
- *Clarify what is meant by blasting delays and maintaining blasting windows? What are the criteria for implementing these measures? Are there specific species, group sizes and distance of wildlife from blast sites to which these measures apply or don't apply?*
- *Clarify what if, if any, measures will be taken to establish no blasting buffers for both the safety of wildlife (i.e. the fly rock zone) and to minimize disturbance effects; including the size of buffer(s) and animals numbers/group size that will trigger no blasting.*
- *Provide additional text discussing suitable no blasting buffers for the different wildlife VECs, based on the results of the noise modelling and the available literature on wildlife responses to noise.*
- *Clarify how the presence of wildlife within blasting buffers will be determined. For example, will pre-blasting wildlife surveys be conducted? What methods of survey will be employed? Over what spatial scale? Will these surveys be conducted before charges are set so that new blasting activities are not initiated when wildlife are present?*

Agnico Eagle's Response to Information Request / Recommendation:

Since 2008, Agnico Eagle has been operating and managing an effect blast management program at the Meadowbank Mine. It is common practice that the blast supervisor is responsible for making sure no people or wildlife are present in the blast zone. Blasts are typically conducted once or twice daily at approximately 1200 h or 1800 h (as operations are stopped for lunch or supper). Refer to GN-10 for mitigation measures.

The criteria and rules that govern these decisions are based on the previously accepted TEMP criteria of >50 caribou observed 500m "buffer" from the site and are described in Chart 2 of the TEMP and is akin to the Mobile Caribou Conservation Measures presented by the KivIA (Poole and Gunn, 2016), and was developed in consideration that the project is not located in caribou post calving or calving areas.

References:

Poole, K., and Gunn, A. 2016. Management of caribou post-calving areas in the Kivalliq Region, Nunavut. November 15, 2016

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-28
Re:	Air Traffic		

Reference to FEIS: • Terrestrial Ecosystem Management Plan (TEMP) Appendix 8-E.7; • Noise and Vibration Assessment, Volume 4, Appendix 4-E

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Provide estimated rates of helicopter take-offs and landings at the Whale Tail site including potential maximums and minimums, and any anticipated seasonal variation in those rates. All sources of helicopter traffic are requested including those associated with both Whale Tail pit operation and exploration activities within the region that are supported by the Whale Tail site.*
- *Clarify what, if any, mitigation/management measures will be applied when it is not practical to maintain a 610m altitude buffer from wildlife, in particular groups of ungulates. For example, will a flight suspension protocol applied when groups of ungulates are within a specified distance of take-off and landing sites? If so, what is the horizontal buffer distance and how does this related to the available literature on ungulate responses to noise?*
- *Clarify if there will be any fixed-wing air traffic to the Whale Tail site during any portion of the Project's life span.*
- *Provide details of the criteria governing the herding of ungulates from airstrips including the maximum ungulate group sizes that this measure will be applied to, how close to the strip they must be for this measure to be applied and methods of herding.*

Agnico Eagle's Response to Information Request / Recommendation:

As per Agnico Eagle's response to GN-14, the Whale Tail Pit Project proposes to extend the use of the airstrip located at the Meadowbank Mine, transport equipment and employees to Whale Tail Pit via the proposed haul road and does not intend to use helicopters or fixed wing airplanes for transportation to the Whale Tail Pit site. Although the flight safety of employees and the aircraft will be paramount, protection measures outlined in the TEMP for ungulates will also apply for the Meadowbank Airstrip.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-29
Re:	Caribou group sizes for triggering adaptive management		

Reference to FEIS: • Terrestrial Ecosystem Management Plan (TEMP) Appendix 8-E.7, Chart 2

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Provide a frequency distribution of caribou group sizes that are expected to interact with the Whale Tail site and haul road; including any notable seasonal variation in group sizes.*
- *Provide frequency distributions of caribou group sizes that have been recorded during monitoring for the Meadowbank project (and AWAR) and during baseline studies for the Whale Tail project, as well as any relevant information from available literature, including seasonal variations in these frequency distributions.*
- *Clarify the definition of the threshold of >50 caribou used in chart 2 which states ">50 caribou are within 500m of Project facilities or roads". Does this mean >50 caribou in total within a 500m radius of the Project or does it refer to a group of 50 or more?*
- *Clarify, that should the Project proceed, whether there are plans to collect data on caribou group sizes interacting with the Project and*
- *Provide details of the methods that would be employed to collect group size data (e.g. observation method(s), timing, duration of sampling, spatial scale and distribution of sampling).*

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle has addressed monitoring methods, work activity cessation and other adaptive management responses to caribou in Agnico Eagle's response to GN-10, GN-13 and GN-24. Information previously provided in these responses apply to GN-29.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-30
Re:	Cumulative effects assessment (CEA) for caribou: Methods and conclusions		

Reference to FEIS: • Volume 5, Section 5.5.4.2 Cumulative Effects; • Volume 3, Section 3.D-3., Past and Present Development; • Volume 5, Section 5.5.4.4, Uncertainty; • Volume 5, Section 5.5.4.3, Assessment of Significance

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Clarify what methods were used in the CEA for terrestrial wildlife, in particular caribou, and provide details of those methods and the results, including any quantitative analyses of measurement indicators.*
- *Clarify how CE conclusions for terrestrial wildlife were derived in the absence of an analysis of CE?*
- *Elaborate on how and specifically what “cumulative effects to caribou may become a concern” in future and how this conclusion was reached?*
- *Provide the methods and results of analysis that were conducted to support the statement that “direct disturbance from previous, existing, and future development footprints was calculated to be a small proportion of their [caribou] range”.*
- *Provide a list and details of the available information (ordered by VEC) that constitutes the “weight of evidence” to support the conclusion that CE on wildlife will not be significant.*

Agnico Eagle’s Response to Information Request / Recommendation:

The cumulative effects assessment included qualitative and quantitative methods. As illustrated in Volume 5, Figure 5.1-1 and Volume 3, Appendix 3-D, Figure 3-D-1, the only other existing development in the RSA is the Meadowbank Mine. The calculated loss of Ecological Land Classification Units for the LSA and RSA (Volume 5, Tables 5.4-1 and 5.4-3) include all existing disturbance, as do the derived Habitat Suitability Areas for caribou (Volume 5, Table 5.5-10). Thus, these data represent cumulative effects to date from previous, existing, and proposed development. Beyond the RSA, past and present development within each caribou herd range was described in Appendix 3-D, Section 3.D-3.2, indicating very limited active development within overlapping caribou ranges.

Effects pathways that overlap with reasonably foreseeable future developments are considered in Appendix 3-D, Section 3.D-4. This exercise did not identify any reasonably foreseeable future developments within the RSA, but some were identified within overlapping caribou ranges.

The conclusions regarding cumulative effects also included qualitative information from the observed effect of the existing mining operations on the environment, discussed in Volume 5, Sections 5.5.4.1 and 5.5.4.2. Considering caribou in particular, traditional knowledge and science both describe how caribou require large areas to forage and calve and that migratory routes vary from year to year (Cumberland

2005; Agnico Eagle 2014; Volume 7, Appendix 7-A, Volume 5, Appendix 5-C). The current level of development on the landscape does not preclude caribou from using their range as they always have. Further, this proposal does not include development on the calving grounds, and traditional knowledge indicates that there were times prior to development when caribou populations were lower than they are now (Agnico Eagle 2014). One area of concern for caribou is the possible increase in harvesting that results from improved access by snowmobile and ATV, and the ability to purchase hunting supplies (Volume 7, Appendix 7-A).

Agnico Eagle does not speculate that cumulative effects will be a concern as the nature of the cumulative effects would be dependent upon the nature of the development. For example, developments near calving grounds, developments that have a large footprint, or developments that create new access may lead to concerns about the cumulative effect on reproduction, habitat loss or harvesting respectively.

The statement ‘direct disturbance from previous, existing, and future development footprints was calculated to be a small proportion of their [caribou] range should be clarified. Direct disturbance was calculated and constitutes a small proportion of the RSA (i.e., approximately 0.2%, Volume 5, Table 5.4-1). Direct habitat loss within the caribou ranges was not calculated, but the list of known past and present developments (see Appendix 3-D, Table 3-D-2) indicates that there is very little other development within the range of overlapping herds and that developments are typically small (including mineral exploration camps, tourism camps, research camps). Considering the low number and small size of other developments, the conclusion in the FEIS regarding the cumulative effect to caribou of previous and existing development is unchanged.

The weight of evidence used to form conclusions regarding cumulative effects are described in the relevant sections of the FEIS. For example, the information used to draw conclusions on the cumulative effect of direct habitat loss to wildlife is described in Volume 5, Section 5.5.4.1 and 5.5.4.2. No additional information was used that is not described in the FEIS.

References

- Agnico Eagle (Agnico Eagle Mines Limited). 2014. Proposed All-weather Exploration Road from the Meadowbank Mine to the Amaruq Site Baseline Traditional Knowledge Report. Version 2. December 2014.
- Cumberland (Cumberland Resources Ltd.). 2005. Meadowbank Gold Property Project Baseline Traditional Knowledge Report. January 2005. Cumberland Resources Ltd. Vancouver, BC.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-31
Re:	Monitoring to support adaptive caribou management		

Reference to FEIS: • Volume 8, Terrestrial Ecosystem Monitoring Plan (TEMP), Appendix 8E.7, Section 3.1, Table 10: Summary of Terrestrial Ecosystem Monitoring Activities for the Meadowbank and Whale Tail Project

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Provide additional information on the methods that will be used to conduct road surveys including the number of observers involved, methods of observation and data collection, duration of each survey and the anticipated effective detection range.*
- *Provide additional information on the methods that will be used to conduct height-of-land surveys including how the number and location of the survey points was determined, the number of observers involved, methods of observation and data collection, the average expected duration of each survey, factors affecting the duration of each survey and the effective caribou detection range that is anticipated from this method*
- *Provide a map of the Whale Tail Pit and haul road illustrating the area(s) over which surveillance for caribou is expected to extend by using these two methods (i.e. the spatial extent of coverage provided by these methods).*
- *Clarify what surveillance methods will be in place to detect caribou in areas that are not within the observation range of HOL survey locations.*
- *Provide a list of surveillance mechanisms (methods, frequency, expected range) that will be used to detect caribou and support adaptive management during periods when road surveys and HOL surveys are not being conducted (this representing >95% of the time).*

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle has addressed monitoring methods, work activity cessation and other adaptive management responses to caribou in Agnico Eagle's response to GN-10, GN-13 and GN-24. Information previously provided in these responses apply to GN-31.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-32
Re:	Carnivore dens		

Reference to FEIS: • Volume 8, Terrestrial Ecosystem Monitoring Plan (TEMP), Appendix 8E.7, Section 2.2.3.2, Table 5 - Mitigation Measures for Predatory Mammals; • Volume 8, Terrestrial Ecosystem Monitoring Plan (TEMP), Appendix 8E.7, section 3.1- Overview, Table 10: Summary of Terrestrial Ecosystem Monitoring Activities for the Meadowbank and Whale Tail Project

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Define what is meant by within the “vicinity of Project facilities? What specific distance does this refer to and what is the rationale for selecting this distance based on the available IQ and scientific literature regarding the susceptibility of denning carnivores to disturbance?*
- *Clarify whether a buffer zone will be applied around active bear dens within which no Project activities will be permitted to occur in-order to avoid potential den abandonment and risks to human and bear safety. What is the size of this no-go zone and how was it determined based on the on the available IQ and scientific literature regarding the susceptibility of denning bears?*
- *Clarify whether buffer zones will be applied around active wolf and wolverine dens within which no Project activities will be permitted to occur in-order to avoid potential den abandonment. What will be the size of these no-go zones and how were they determined based on the available IQ and scientific literature?*

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle will follow the guiding mitigation measures for predatory animals in Section 2.2 and 3.4 of the TEMP and the Den Protection and Management Plan found in Appendix F of the TEMP. However, no specific distance related to the vicinity of Project facilities has been determined. Any carnivore dens that are observed and have the potential to be affected by the Project facilities will be discussed with the HTO, KivIA, and the GN to raise awareness of the den presence, and discuss any mitigation measures, if necessary. To date, no predator dens have been deemed to be disturbed by Project activities.

Given that bear denning and the necessary mitigative response to denning bears and other carnivores such as wolves and wolverines is highly site specific, no specific distance or “no go zones” have been specified. In our experience, proactive measures to ensure construction or operational activities avoid known den sites has been the most effective mitigation. As a result, borrow sources along the road have been moved to avoid wolf den sites and the protocols outlined in the TEMP in Section 3.4.3 and specifically in Chart 3 will be followed to reduce the risks to human and predatory animal interactions. IQ collected during workshops and site visits held in 2015 with elders have informed these decisions and the approaches outlined in the TEMP in Section 3.4.3 and specifically in Chart 3.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-33
Re:	Road access and harvesting of wildlife		

Reference to FEIS: • TEMP Appendix 8-E.7; • Volume 3, Table 3-C-3 – Pathway Analysis and linkage matrix tables; • Volume 5, Section 5.5.3 - Project Related Effects Analysis; • Volume 7, Section 7.3.2.1.1 - Continued Opportunities for Traditional Wildlife Harvesting

Information Request / Recommendation Made By Interested Party:

The GN requests that the Proponent:

- *Provide available data or information from monitoring of the Meadowbank Project and the all-weather-access-road to support the assertion that the policy of no shooting within 1km of the road has been effective in managing harvesting along the road.*
- *Provide available data or information from monitoring of the Meadowbank Project and the all-weather-access-road to support the assertion that restriction of public access to Project roads effectively controls the level of harvesting. Specifically, can the Proponent provide data or information to demonstrate that closure of the road to the public beyond Kilometer 85 has been effective in preventing harvest in the vicinity of the road?*
- *Clarify the methods by which public access to the Whale Tail pit will be controlled and monitored.*
- *Clarify the methods by which a no shooting zone along the Whale Tail pit will be enforced and monitored.*
- *Clarify what is meant by the terms "limited", "discouraged", "restricted", and "not permitted" as used in the EIS to described public use of the Whale Tail haul road.*
- *Outline how public use of the haul road will be monitored and reported in-order to verify the prediction that survival rates of caribou will be unaffected by the road.*

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers the GN to GN-8 response related to data availability, analysis and collaboration with the GN. Agnico Eagle has addressed public access, enforcement of hunting and the no shooting zone and other adaptive management responses to protect caribou in Agnico Eagle's response to GN 24. Information previously provided in these responses apply to GN-33. The security gate on the AWAR will continue to monitor and record public use of the road. To ensure the protection of ungulates, Agnico Eagle will consult with the KivIA, GN, and HTO in 2017 and update the TEMP to include monitoring of hunting in the HHS and recording road use, prior to construction of Whale Tail Pit and the expansion of the haul road, to reflect monitoring and mitigation recommendations from the stakeholders that are realistic and sustainable.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-34
Re:	Indirect caribou habitat loss within the RSA		

Reference to FEIS: • Terrestrial Environment Vol 5

Information Request / Recommendation Made By Interested Party:

The LSA extends 1.5 km from Project footprint yet it is known from several published studies (e.g. Boulanger et al. 2012; Johnson et al. 2005; Johnson and Russell 2014) that ZOIs may extend well beyond this distance.

- *Can the Proponent therefore expand upon this analysis to provide information/results to conservatively estimate the levels and proportions of indirect habitat loss that may potentially occur within the RSA taking into account what is known about the size of ZOIs for caribou around mines on Arctic tundra and roads?*
- *Does the sum of direct and indirect loss of habitat in the RSA exceed the 40% threshold cited in the EIS?*
- *Can the Proponent explain the relevance of this 40% threshold when applied to a large, migratory species that has a range extending well beyond the RSA?*
- *Can the proponent further explain how calculations of % habitat loss can be used to support the conclusion that there will be a limit loss in connectivity?*
- *Is % habitat loss proportional to impacts on connectivity? Taking an extreme example, a wall or fence built across the range of a population of wildlife may only occupy a tiny fraction of the populations range in terms of direct and indirect loss of habitat but may act as an impermeable barrier thereby having a significant effect on connectivity.*

Agnico Eagle's Response to Information Request / Recommendation:

The assessment of significance of indirect effects to caribou was completed at the scale of the RSA for incremental effects, and at the range scale for cumulative effects (Section 5.5.4.1). The LSA scale was used only as a conservative comparison for effects at the RSA scale, by estimating the amount of preferred habitat in the RSA that would be lost if there was no longer preferred habitat in the LSA. As caribou are present near the Meadowbank Mine and road (a key focus of the TEMP is mitigating and managing direct interactions with caribou at the mine footprint), it is expected that there will continue to be preferred habitat use in the Whale Tail LSA.

Using this approach, it was estimated that if the preferred habitat in the LSA is no longer selected, no more than 6% of the preferred habitat in the RSA would be affected. This conservative estimate was considered to have a moderate magnitude of effect, at the regional scale.

The significance threshold of 40% identified used in Section 5.5 applies to direct habitat loss, not to the greater area of indirect disturbance caused by a zone of influence, as indicated in Section 5.5.3.3. Direct habitat loss was estimated at approximately 0.2% of the RSA, or less than 0.001% of the range of any of the caribou herds interacting with the Project.

Indirect habitat loss was not estimated, but a conservative estimate can be derived from existing analysis for the Bathurst herd. A habitat suitability analysis completed by DDEC (2014) using a zone of influence of 15 km for all mines and communities, 5 km for mineral exploration, transmission lines and roads, and 1 km for all other disturbances, and disturbance coefficients ranging from 0 (i.e., total habitat loss) near the mine to 0.90 (i.e. 10% reduction in habitat quality) at the outer extent of the zone of influence. The habitat suitability analysis indicated that the Bathurst herd, exposed to higher levels of development than the herds that interact with the Whale Tail Project, has had direct habitat loss of no more than 1.4% of the range and indirect loss of preferred habitat within a zone of influence was no more than 6% for any seasonal range (DDEC 2014). Again, the 40% threshold applies to direct habitat loss, not to the proportional change of preferred habitat.

Similar analysis of the herds affected by the Project (Ahiak, Lorillard, Wager Bay herds) would likely show lower levels of both direct and indirect disturbance, as the Ahiak herd has an estimated 8 active developments (including two communities) and 58 inactive developments within the entire range (Table 3-D-2), compared with an estimated 59 active and 50 inactive developments in the Bathurst autumn range alone (DDEC 2014).

The zones of influence described above encompass <0.08% of the Ahiak herd range, a level unlikely to affect the herd population or its use of the landscape. The zone of influence implies that there may be a lower probability of occurrence, but not that caribou are absent. Caribou continue to forage in and migrate through the LSA and RSA, and are regularly harvested within the LSA and RSA.

As there are few mammals on earth that undergo the same large migrations of barren-ground caribou, there are few other studies on the effects of habitat and habitat connectivity loss that are directly comparable. However, the underlying theories are the same regardless of the species or environment; as suitable habitat is lost, area of preferred habitat become isolated. In most landscapes, the total area of suitable habitat will be of greater importance than the spatial arrangement of that habitat, particularly if the species is mobile and easily able to travel between areas of suitable habitat (Andren 1994), such as a caribou. The literature identified in the FEIS suggests a significance threshold of 40%, as the research has shown that when disturbance exceeds 40%, the configuration of the landscape can change and the influences of habitat fragmentation on populations of wildlife become apparent. This threshold is similar to the threshold selected for the woodland caribou recovery strategy, which identified a threshold of 35% landscape disturbance to maintain population growth/stability (Environment Canada 2011, 2012).

Habitat loss is one factor affecting connectivity, but is not proportional to connectivity. Fragmentation effects have less influence than direct habitat loss when there is a large proportion of natural habitat on the landscape (Fahrig 1997, 2003; Andr  n 1999; Flather and Bevers 2002; Swift and Hannon 2010), which is current state of the barren-ground caribou range, including the effects of the Project and previous, existing and future developments.

Connectivity is likely also a function of the permeability or difficulty of crossing a barrier, and the distance between patches of suitable habitat on either side of the barrier. The analysis of collared caribou presented in the FEIS (Table 5-D-2) analyzed the movements of the collared caribou that approached the Meadowbank haul road, and found that 83% of these caribou crossed the existing AWAR road under its current function and traffic levels. Collar movements show directionality of movement, indicating that caribou typically only cross the road once per migratory season. This indicates that the road is highly permeable to caribou movement, and the finding is supported by intensive studies at Ekati (ERM Rescan 2013) where caribou crossing of a haul road is monitored at a scale of metres from the road. Further, haul roads separate patches of suitable habitat by less than 30 m, so the distance between suitable patches is small for a caribou. Mitigation is used to further increase the permeability of the road, including constructing roads to be as low as possible, providing caribou with the right-of-way, and closing haul roads in response to large movements of caribou.

References

- DDEC (Dominion Diamond Ekati Corp.) 2014. Jay Project Developer’s Environmental Assessment Report. Section 12, Barren-Ground Caribou. October, 2014. Available at http://www.reviewboard.ca/registry/project.php?project_id=674
- Environment Canada. 2011. Scientific Assessment to Support the Identification of Critical Habitat for Woodland Caribou (*Rangifer tarandus caribou*), Boreal Population, in Canada. Ottawa, ON. 115pp. plus Appendices.
- Environment Canada. 2012. Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. xi + 138pp.
- ERM Rescan. 2014. Ekati Diamond Mine: 2013 WEMP Addendum — Wildlife Camera Monitoring Summary Report. Prepared for Dominion Diamond Ekati Corporation by ERM Rescan: Yellowknife, Northwest Territories.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-35
Re:	Noise		

Reference to FEIS: • Volume 4, Appendix 4-D Baseline Noise, Section 2-1 and Figure 2-1; • Volume 4, Appendix 4-D Baseline Noise, Section 4

Information Request / Recommendation Made By Interested Party:

It appears that each of the 4 locations chosen for baseline noise monitoring were near some existing anthropogenic noise sources (e.g. exploration camp at Amaruq property, existing Amaruq access road, vault pit.) Can the Proponent clarify if any of the sites used for baseline noise monitoring were free of anthropogenic noise such that the baseline measurements at these sites represent ambient noise in the pristine (undisturbed) environment?

Agnico Eagle’s Response to Information Request / Recommendation:

The existing noise levels reported for baseline receptor R7 are representative of ambient noise in the “pristine (undisturbed) environment”. In other words, the existing noise levels reported for baseline receptor R7 do not include the influence of anthropogenic noise sources.

As indicated in Table 4.4-1 of the FEIS, at R7 the “...noise environment was dominated by natural sources (e.g. wind, waves, birds)”. Noise from sporadic helicopter flyovers was observed at R7 but, as discussed in Section 2.2.1 and Section 3.2 of Volume 4, Appendix 4-D, data samples contaminated by helicopter flyovers were removed from the analysis and not included when calculating daytime and nighttime existing noise levels for R7. Vehicular traffic on the Amaruq access road was inaudible at R7 for the duration of the baseline survey and had no material influence on the measured noise levels.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-36
Re:	Noise		

Reference to FEIS: • Volume 4, Section 4.4.4 Residual Impact Classification

Information Request / Recommendation Made By Interested Party:

The relevance of these conclusions to impacts on wildlife is unclear since it does not appear that results of noise modelling are carried through into the effects assessment for wildlife. They are not compared in this volume (volume 4) or in other volumes of the EIA to available literature on wildlife responses to noise. Also, the LSA for wildlife is a 1.5km area around the pit site and haul road, yet blasting noise seems to extend well beyond this distance.

Agnico Eagle’s Response to Information Request / Recommendation:

The responses of caribou and other mammals to sensory disturbances (which likely includes mechanisms such as noise, light, smells, vibration and movement), is only considered and mitigated holistically (Environment Canada 2012, Appendix I). The response of caribou to one mechanism (such as noise from a passing vehicle) cannot be separated out from the other associated sensory disturbances (such as the movement, smell, and vibration of the vehicle). However, the likely effects of the combined sensory disturbance to caribou has been studied, and results are presented in Section 5.5.3.3.

Because Nunavut does not provide a legal framework or regulatory guidance for the assessment of noise and vibration, the FEIS relied on widely-accepted noise and vibration assessment guidelines from other jurisdictions. In particular, the FEIS:

- assessed conventional (i.e., non-blasting) noise from Project construction and operations using guidance provided by the Alberta Energy Regulator (AER 2007); and
- assessed noise and vibration from Project blasting using guidance provided by the Ontario Ministry of Environment (OMOE 1978).

The AER and OMOE guidance documents used in the FEIS noise assessment are primarily focused on potential impacts to human receptors. However, in the absence of regulatory guidance or scientific consensus on wildlife-specific noise and vibration assessment methods or impact thresholds, Agnico Eagle respectfully submits that the AER and OMOE guidance documents are appropriate for the assessment of Project noise and vibration impacts on wildlife. In particular, the results of the noise and vibration assessment are relevant to both humans and wildlife. The AER guidance document acknowledges as much when it states:

“Landowners and residents often express concern about the impact of industrial noise on domestic animals and wildlife. While not the basis for these requirements, the EUB [former name

of the AER] continues to examine peer-reviewed scientific literature and has concluded to date that typical industrial noise regulated under its jurisdiction does not significantly impact the physiology and habituation patterns of animals over the long term. The literature does suggest that animals might temporarily avoid an area until they become familiar with or acclimatized to industrial noise.” (AER 2007)

The modelling showing that conventional noise from the Project decays below existing ambient noise at the noise and vibration LSA boundary confirms the wildlife assessment, as conventional noise from the Project will likely travel beyond the noise and vibration LSA boundary, but will be no louder than natural background noise (although it may be distinguishable from natural background noise).

With respect to blasting, the FEIS predicts that airborne noise from blasting, which is characterized using the Peak Pressure Level (PPL) parameter, will carry beyond the boundary of the noise and vibration LSA. However, as indicated in Table 4.4-5 and Table 4.4-9, the PPL level at the LSA boundary will be well below the 120 dBZ limit set out in the OMOE guidance document. In particular, at the LSA boundary the PPL from construction blasting is predicted to be 93 dBZ (see Table 4.4-5) and the PPL from operations blasting is predicted to be 105 dBZ (see Table 4.4-9).

References:

AER (Alberta Energy Regulator). 2007. Directive 038: Noise Control.

Environment Canada. 2012. Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. xi + 138pp.

OMOE (Ontario Ministry of Environment). 1978. Model Municipal Noise Control By-Law – Final Report. Noise Pollution Control Publication 119.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-37
Re:	Noise		

Reference to FEIS: • Volume 4, Section 4.4.3.1 Haul Road Construction

Information Request / Recommendation Made By Interested Party:

There is no discussion in the EIS to justify using the above thresholds to assess impacts on wildlife like caribou. Some outstanding questions include:

- *Why were these selected?*
- *What is the relevance of these directives (e.g. AER Directive 038)/thresholds in assessing impacts on wildlife (such as caribou and other mammals) that were specifically identified as a VC for the noise assessment?*
- *Appears that only relevance is to fish and people.*
- *Why assess against limits/thresholds that have no relevance to wildlife like caribou when one of the main VC for the noise assessment was caribou.*
- *Why not assess noise modelling results relative to literature on caribou responses to noise?*

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle respectfully submits that thresholds from the AER and OMOE guidance documents are appropriate for the assessment of Project noise and vibration impacts on wildlife. Agnico Eagle refers the GN to the response to GN-36 for additional discussion on the applicability of noise and vibration assessment thresholds to wildlife.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-38
Re:	Noise		

Reference to FEIS: • Volume 4, Section 4.4.3.1.2 Blasting Noise and Vibration Sources

Information Request / Recommendation Made By Interested Party:

What is the relevance of these thresholds in assessing impacts on wildlife like caribou that were identified as a VC for the noise assessment? It appears that the only relevance is to fish and people.

From this table we see that at 5km Peak Pressure Levels (PPLs) are at 93 dBZ. Can the proponent provide supporting evidence from available literature on impacts of this level of noise on wildlife? Also, provide additional data on PPL levels extending beyond 5km.

Agnico Eagle's Response to Information Request / Recommendation:

The responses of caribou and other mammals to sensory disturbances (which likely includes mechanisms such as noise, light, smells, vibration, and movement), is only considered and mitigated holistically (Environment Canada 2012, Appendix I). The response of caribou to one mechanism (such as noise) cannot be separated out from the other associated sensory disturbances. However, the likely effects of the combined sensory disturbance to caribou has been studied, and results are presented in Section 5.5.3.3.

Because Nunavut does not provide a legal framework or regulatory guidance for the assessment of noise and vibration, the FEIS relied on widely-accepted noise and vibration assessment guidelines from other jurisdictions. In particular, the FEIS assessed noise and vibration from Project blasting using guidance provided by the Ontario Ministry of Environment (OMOE 1978).

The OMOE guidance document used in the FEIS noise assessment is primarily focused on potential impacts to human receptors. However, in the absence of regulatory guidance or scientific consensus on wildlife-specific noise and vibration assessment methods or impact thresholds, Agnico Eagle respectfully submits that the OMOE guidance document is appropriate for the assessment of Project noise and vibration impacts on wildlife. In particular, the results of the noise and vibration assessment are relevant to both humans and wildlife.

With respect to caribou and Peak Pressure Level (PPL) from blasting, it should be noted that much of the energy associated with blasting is very low frequency (i.e., distributed below 50 Hz). Research into the range of caribou hearing has found that caribou are less sensitive to low frequency noise than humans (Flydal et al. 2001). For example, the caribou hearing threshold at 63 Hz is approximately 30 decibels (dB) higher than the human hearing threshold at 63 Hz. Put another way, a human could be expected to detect a low frequency noise approximately 30 dB quieter than could be detected by a caribou. This

suggests that assessing PPL impacts on caribou using limits set out in the OMOE guidance document is very conservative (i.e., likely to overestimate the impact of Project blasting). In particular, adverse impacts on caribou are very unlikely from a blasting PPL of 93 dBZ or 105 dBZ.

In response to the GN's information request, PPL levels from Project blasting during haul road construction and pit operations have been predicted for distances greater than 5 km from the blast site. Updated PPL predictions are presented in Table GN38-1.

Table GN38-4: Peak Pressure Level Predictions for Project Blasting

Distance from Blast [m]	Peak Pressure Level [dBZ]	
	Haul Road Construction	Pit Operations
100	130	142
200	123	136
300	120 ^a	132
500	115	127
1000	108	120 ^a
5000 ^b	93	105
6000	91	103
8000	88	101
10000	86	98
15000	82	95

^a This is the PPL limit specified by the OMOE guidance document (OMOE 1978)

^b This distance corresponds to the edge of the noise and vibration LSA

References:

Environment Canada. 2012. Recovery Strategy for the Woodland Caribou (*Rangifer tarandus caribou*), Boreal population, in Canada. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. xi + 138pp.

Flydal, K., Hermansen, A., Enger, P.S., and Riemers, R. 2001. Hearing in reindeer (*Rangifer tarandus*). J. Comp. Physiol. 187: 265-269.

OMOE (Ontario Ministry of Environment). 1978. Model Municipal Noise Control By-Law – Final Report. Noise Pollution Control Publication 119.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-39
Re:	Noise		

Reference to FEIS: • Volume 4, section 4.4.3.2 Whale Tail Pit Operations; • Volume 4.4.3.2.1 Conventional Noise Sources

Information Request / Recommendation Made By Interested Party:

There is no discussion in the EIS to justify using these thresholds to assess impacts on wildlife such as caribou. Why were these thresholds selected? What is the relevance of these directives (e.g. AER Directive 038)/thresholds in assessing impacts on wildlife like caribou that were identified as a VC for the noise assessment? Appears that only relevance is to fish and people so why is it assessed against limits/thresholds that have no relevance to wildlife like caribou when one of the main VC for the noise assessment was caribou. Why not assess relative to literature on caribou responses to noise?

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers the GN to response GN-36 for a detailed explanation of why the noise and vibration thresholds considered in the FEIS are relevant to wildlife. Furthermore, as discussed in Volume 4, Appendix 4.E-3.4.1 of the FEIS, atmospheric absorption attenuates high frequency noise more substantially than low frequency noise. In other words, as noise propagates from an emissions source out into the environment, high frequency spectral components attenuate more rapidly than low frequency components. As result, at large propagation distances (e.g., greater than 1 km), the observed noise spectra from conventional industrial noise sources is heavily weighted toward the low frequency end of the spectrum. Research into the range of caribou hearing has found that caribou are less sensitive to low frequency noise than humans (Flydal et al. 2001). For example, the caribou hearing threshold at 63 Hz is approximately 30 decibels (dB) higher than the human hearing threshold at 63 Hz. Put another way, a human could be expected to detect a low frequency noise approximately 30 dB quieter than could be detected by a caribou. This suggests that assessing potential impacts from pit operations on caribou using limits set out in the AER guidance document is very conservative – i.e., likely to overestimate the impact of pit operations – and justifies the use of these limits in the FEIS.

References:

Flydal, K., Hermansen, A., Enger, P.S., and Riemers, R. 2001. Hearing in reindeer (*Rangifer tarandus*). *J. Comp. Physiol.* 187: 265-269.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-40
Re:	Noise		

Reference to FEIS: • Volume 4.4.3.2.2 Blasting Noise and Vibration Sources

Information Request / Recommendation Made By Interested Party:

From this table we see that at 5km Peak Pressure Levels (PPLs) are at 105 dBZ. Rather than discussing these model results with respect to a threshold that has an unknown relevance to wildlife can the proponent provide evidence from available literature on impacts of this level of noise on wildlife? Also provide additional data on PPL levels extending beyond 5km?

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers the GN to GN-38 response for a discussion of Project blasting levels and their potential to impact caribou and other wildlife.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-41
Re:	Noise		

Reference to FEIS: • Volume 8.3.5.7, Appendix 11, Noise Monitoring and abatement Strategy Plan •
Section 2- target Sound Levels 2.1 Wildlife

Information Request / Recommendation Made By Interested Party:

These noise abatement objectives/thresholds do not appear to have any technical basis that makes them relevant for application in an open tundra environment when assessing impacts of noise on wildlife such as migratory caribou. Upon reviewing the Environmental Code of Practice for Metal Mines (2009) there were no references supporting the relevance of these thresholds for the wildlife in this EIS. Can the Proponent provide the page number for the noise abatement objectives/thresholds they are referring to.

Agnico Eagle’s Response to Information Request / Recommendation:

Environment Canada’s *Environmental Code of Practice for Metal Mines* (Environment Canada 2009), does not provide wildlife-specific noise targets or noise limits. Instead, the Environment Canada document states on page 15 and again on page 68 that:

“In residential areas adjacent to mine sites, the equilibrium sound pressure level (L_{eq}) from mining activities should not exceed 55 dBA during the day and 45 dBA during the night. Ambient noise can also affect wildlife, so sites in remote locations should also work to meet these objectives for off-site ambient noise levels.” [emphasis added] (Environment Canada 2009)

Given the content of the second sentence from the above quotation, Agnico Eagle respectfully submits that use of 55 dBA / 45 dBA noise targets in the Noise Monitoring and Abatement Strategy Plan is consistent with Environment Canada’s guidance on managing noise impacts to wildlife in remote locations.

References:

Environment Canada. 2009. Environmental Code of Practice for Metal Mines.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-42
Re:	Experience of the Meadowbank Project TEMP implementation and inclusion of IQ		

Reference to FEIS: • Volume 8 - Monitoring, Mitigation and Management Plans • Appendix 8-E Addendums for Environmental Protection and Monitoring Plans

Information Request / Recommendation Made By Interested Party:

The GN recommends that the Proponent provide the following information:

- i. Provide examples such as concrete measures and direct observations that demonstrate the success of the original TEMP in identifying, monitoring and managing residual effects of the Project on vegetation and wildlife and in particular: minimizing habitat loss, degradation and fragmentation, avoiding and lowering sensory disturbance to caribou and barriers to movement, reducing dustfall generated by moving vehicles, and reducing wildlife injury and mortality on the AWAR.*
- ii. Indicate how the implantation of the original TEMP was successful in controlling harvest pressures along the AWAR road and in vicinity of the project's facilities in general.*
- iii. Demonstrate how the updated version of the TEMP incorporates experience in terms of triggers for mitigation (e.g. distance and group size thresholds), and the efficiency of surveillance activities used to detect wildlife.*
- iv. Provide information which demonstrates that IQ was integrated in the updated TEMP for wildlife aspects.*

Agnico Eagle's Response to Information Request / Recommendation:

- i. Many examples of concrete measures and direct observations that demonstrate the success of the original 2006 TEMP are presented annually in the [Meadowbank Mine Annual Report](#) – Appendix G14 – Wildlife Monitoring Summary Report and examples are provided in Volume 5- Terrestrial Environment. Specifically, in 2014, Agnico Eagle evaluated the habitat loss predicted in the original FEIS to what has actually been lost. As presented in Table 3.3, 776 ha were predicted to be lost during the FEIS. 867 ha or 89.5% of overall terrestrial habitat was lost as compared to what was predicted. Despite these habitat losses, disturbances, systematic caribou surveys along the AWAR show density of caribou sightings along the road are consistent year to year (see Section 7 and Figure 7.1 and 7.2) and many caribou are observed by monitors to easily cross the AWAR. As discussed in Section 5.5.2.2 of Volume 5 Terrestrial Environment impact assessment, there have been no caribou mortalities at the mine site (including mine haul trucks along the 8km Vault Haul Road) and caribou mortalities along the AWAR, which is the longest road in Nunavut, have been low (refer to Table 5.5-2). This is mainly due to the implementation of monitoring and mitigation measures outlined in the TEMP, respectful operations on the road and timely closures.

Following a regrettable incident in 2013, responses have improved, road closures have increased and we have experienced three years with zero caribou mortalities. This is one clear example that demonstrates the effectiveness of the 2006 TEMP monitoring program and the decision tree approach that has been implemented and formally presented in the revised 2016 TEMP.

- ii. Agnico Eagle refers the GN to GN-11. Furthermore, as predicted in the FEIS and discussed during the public hearing for the July 2009 amendment to the NIRB Project Certificate Condition 32 to allow public access to km 85, hunting pressure has increased within the RSA. However results indicate it is below the 20% threshold and therefore Agnico Eagle believes the mitigation measures of the TEMP have been successful in controlling harvest pressure within the RSA. Furthermore, the greatest value is that monitoring through the HHS survey has provided unprecedented data that can be used by the GN to inform caribou harvests; Agnico Eagle looks forward to collaborating with the GN, KivIA, and HTO in future HHS.
- iii. Given the success of the 2006 TEMP to date, in nearly all cases, Agnico Eagle is proposing the exact same triggers and thresholds, despite a longer haul road and an additional pit. Agnico Eagle believes the ungulate monitoring and mitigation approach described in Chart 2 of the 2016 TEMP will ensure the protection of caribou, yet is operationally feasible.
- iv. Since 2006, Agnico Eagle has hired a staff of local wildlife experts to assist in monitoring annual wildlife; they have provided invaluable IQ that informs monitoring and mitigation decisions on a daily basis. As documented in the [Meadowbank Annual Report](#), Agnico Eagle routinely meets with the KivIA and HTO to discuss wildlife concerns and has hosted at least one annual site visit with the HTO to discuss monitoring results and the TEMP. In addition to these meetings and site visits, IQ workshops and helicopter tours of the Amaruq project and Whale Tail Pit, documented in Volume 7, Appendix 7-A, and in Volume 2, Appendix 2 G- Consultation Log, have informed the development of the TEMP for wildlife aspects. More specifically, the development of Chart 2 and avoidance of predatory mammal dens (Chart 3) were guided by IQ in discussions with the HTO, KivIA, and Elders during the site visit on September 8, 2015 and workshop in Baker Lake on February 5, 2016.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-43
Re:	Employment and Education		

Reference to FEIS: • Volume 7, Section 7.4.3.3: Table 7.4-4; Table 7.4-5 and Figure 7.4-3

Information Request / Recommendation Made By Interested Party:

The Department of Family Services (DFS) requests the following information from Agnico Eagle:

- 1. Definitions of the skill levels articulated in figure 7.4-3 (entry level, semi-skilled, skilled, professional and management) or the classification systems that AEM is using to rate positions (e.g. NOC);*
- 2. Given that Inuit are overrepresented in entry level and semi-skilled positions, the type and nature of the positions and jobs included in these categories; and*
- 3. Whether the total number of positions listed in table 7.4-4 and 7.4-5 are full-time equivalent positions.*

Agnico Eagle's Response to Information Request / Recommendation:

1. Agnico Eagle refers the GN to the attachment provided in response to GN-01, referred to as "Appendix D- occupational classification".
2. Agnico Eagle refers the GN to the attachment provided in response to GN-01, referred to as "Appendix D- occupational classification", which provides the type and nature of the positions included in the categories.
3. The total number of positions listed in Table 7.4-4 and 7.4-5 are full time equivalent positions.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-44
Re:	Financial literacy, stability, and mental health		

Reference to FEIS: • Volume 7, Section 7.4.3.3 and 7.4.3.4; • Volume 7, Section 7.4.4

Information Request / Recommendation Made By Interested Party:

The Department of Health requests further information on the number of participants in the proponent's work readiness and financial literacy programs at the Meadowbank project, and any information available on how participation in these programs has improved the financial literacy of Meadowbank employees.

Agnico Eagle's Response to Information Request / Recommendation:

The financial literacy training program is included in two other programs that are in place in our operations, i.e. the Work Readiness program and the Making it work program. Both include notions of training on budget management, financial planning and understanding of basic terms in accounting. Employees are eligible for both programs at different points in their life cycle within the organization.

As requested, details for the Work Readiness program for the year 2016 (January 1 to December 31) include:

- A total of 138 people enrolled in the program;
- 87 Successfully graduated the Work Readiness Program; and
- 51 people did not complete the Work Readiness Program

As for the Making it work program, a total of 24 people completed and successfully graduated the program since the implementation of the program in 2015.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-45
Re:	Air quality		

Reference to FEIS: • Volume 1, Section 1.2.4.3

Information Request / Recommendation Made By Interested Party:

The Department of Health requests that AEM please provide additional information on what they consider to be the likely types of fire events on site, the volume of water to be available for suppression activities, possible duration of likely fire events, and if necessary, what back-up measures are in place or considered for fire events that exceed the current on-site suppression capabilities.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle Meadowbank Division has a highly trained Emergency Response Team that specializes in mine responses, this team has successfully responded to both small and large fires over the past 9 years. As a result, the team is prepared with equipment and training to respond to any and all circumstances. Although it is difficult to predict future fires, their location, duration and the volume of water or suppression required to stop the fire, back-up measures include an ancillary ERT team located at Whale Tail Pit site and supported by the Meadowbank ERT team, and vice versa that can support the other site in the event of fire beyond that capabilities of one team. Therefore, Agnico Eagle is confident in our capabilities to respond to large and small emergencies at both sites. It should be noted that Section 11(2) of the *Nunavut Waters and Nunavut Surface Rights Tribunal Act* provides exception to the requirements of a license for the use of water for the purpose of extinguishing a fire or on an emergency basis.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-46
Re:	Solid Waste Management		

Reference to FEIS: • Volume 1, Section 1.2.12

Information Request / Recommendation Made By Interested Party:

The Department of Health requests that AEM provide additional information on the selection process for their landfill design, including:

- *The potential for leachate generation;*
- *Any design alternatives considered; and,*
- *Best practices or lessons learned from the design and maintenance of the landfill at the Meadowbank site.*

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers the GN to Volume 8, Appendix 8-B.1 – Whale Tail Pit Landfill Management Plan. This plan presents the design alternatives, design criteria, including leachate generation and management, maintenance, mitigative measures and lessons learned from the management of the Meadowbank site landfill that will be applied to the proposed Whale Tail landfill.

Landfill site selection and design used the GN guidelines such as:

- Guidance for the Preparation of Waste Management Plans
- Environmental Guideline for the General Management of Hazardous Waste
- Environmental Guideline for Waste Asbestos
- Environmental Guideline for Mercury-Containing Products and Waste Mercury
- Environmental Guideline for Ozone Depleting Substances
- Environmental Guideline for Industrial Waste Discharges into Municipal Solid Waste and Sewage Treatment Facilities

As stated in the Landfill and Waste Management Plan (Volume 8, Appendix 8-B-1), the landfill is required for the disposal of non-salvageable, non-hazardous, non-putrescible solid industrial wastes that cannot be incinerated and that result from construction, operations, and closure of the Project. Accordingly, leachate from the landfill is anticipated to be weak and drainage from the landfill is largely expected to freeze within the Waste Rock Storage Facility with little to no seepage water reporting to the Pond or collection infrastructure. However, in the event there is leachate from the landfill due to periods of heavy rainfall or spring freshet, the runoff will be collected in the Pond and pumped to the Whale Tail Attenuation Pond for further management. The design of the landfill as well as the operation procedure proposed in the Landfill and Waste Management Plan considered lessons learned from Meadowbank

Mine. In addition the proposed landfill design is similar to the landfill constructed at the Meliadine Mine. Accordingly, no alternative design was considered as the one proposed can be seen as the best practice for such facility in Arctic.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-47
Re:	Housing and staff turnover		

Reference to FEIS: • Volume 7, Section 3.8.4, p.41-42; section 3.3.2, p. 16; section 3.5, p. 23

Information Request / Recommendation Made By Interested Party:

It is recommended that AEM record and release housing overcrowding rates of employees, particularly in relation to employee turnover and absenteeism.

It is also recommended that AEM reach out to the NHC for updated information on its PH rent scale, to reduce the levels of misconception among employees about rental increases.

Agnico Eagle's Response to Information Request / Recommendation:

Although all factors of employee well-being, including housing, is important to consider in employee turnover and absenteeism, Agnico Eagle does not collect data related to housing overcrowding rates of employees as it is a violation of the Privacy Act.

The FEIS (Volume 7 - Socio Economic Assessment) does not predict changing population or household structures (including crowding) in Baker Lake, or other communities, as a result of the Project. The FEIS used the most up-to-date, publically available data in rent scales in the economic modelling.

Interested Party:	Government of Nunavut (GN)	Rec No.:	GN-48
Re:	Project-generated fiscal impacts to government		

Reference to FEIS: • Volume 7, Section 7.4.3.2, Table 7.4-3

Information Request / Recommendation Made By Interested Party:

The GN requests that AEM expand Table 7.4-3 and provide additional discussion/analysis to address:

- i. The different territorial bodies and what each is responsible for;*
- ii. What the direct, indirect, induced, and combined figures are for each tax; and*
- iii. Forecasts for the GN's fuel tax and payroll tax.*

Agnico Eagle's Response to Information Request / Recommendation:

- i. This request is unclear. Volume 7, Table 7.4-3 does not provide information on the territorial bodies of Nunavut, instead presenting territorial and federal revenue effects of the Project. This bullet has been interpreted as requesting a discussion of which GN departments receive or administer which type of royalty or tax. Royalties will be paid to NTI, and through the Project's Inuit Impact Benefit Agreement (IIBA). Agnico Eagle will pay taxes to the Government of Nunavut, which will allocate funds to territorial bodies. Canada Revenue Agency collects income tax on behalf on the GN, and the federal Department of Finance projects and administers payment of taxes to the GN.

Agnico Eagle suggests these details should be answered by the Territorial bodies to ensure the responsibilities are communicated effectively.

- ii. Agnico Eagle will provide additional information under separate cover for this sensitive information related to the breakdown of taxes. Please find an expanded analysis of project-generated fiscal impacts at the territorial and federal levels in Table GN48-1 below.
- iii. Agnico Eagle will provide this information to the GN prior to the Prehearing Conference and technical meetings.

Table GN48-1: Project-Generated Fiscal Impacts to Government, Direct, Indirect, Induced and Total

Level of Governm ent	Personal Income Tax (\$M)				Corporate Income Tax (\$M)				Taxes on Unincorporated Business Profits (\$M)				Non-Renewable Resource Revenue (\$M)				Sales and Excise Taxes (\$M)				Total Revenue (\$M)			
	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total	Direct	Indirect	Induced	Total
Construction (Cumulative)																								
Federal	12.3	1.4	4.0	17.7	0.4	0.0	0.1	0.6	1.2	0.1	0.4	1.7	n/a	n/a	n/a	n/a	0.3	0.0	0.1	0.5	14.2	1.6	4.6	20.4
Territorial	1.5	0.2	0.5	2.1	0.3	0.0	0.1	0.4	0.9	0.1	0.3	1.2	0.0	0.0	0.0	0	0.5	0.1	0.2	0.7	3.1	0.4	1.0	4.5
Total	13.7	1.6	4.4	19.8	0.7	0.1	0.2	1.0	2.0	0.2	0.7	2.9	0.0	0.0	0.0	0.0	0.8	0.1	0.3	1.2	17.3	2.0	5.6	24.9
Operations (Average Annual)																								
Federal	83.1	15.6	3.6	102.4	12.6	2.4	0.6	15.5	7.9	1.5	0.3	9.8	n/a	n/a	n/a	n/a	1.8	0.3	0.1	2.2	105.5	19.8	4.6	129.8
Territorial	13.2	2.5	0.6	16.2	3.0	0.6	0.1	3.7	1.7	0.3	0.1	2.1	49.9	0.0	0.0	49.9	2.7	0.5	0.1	3.3	70.5	3.9	0.9	75.3
Total	96.3	18.1	4.2	118.6	15.6	2.9	0.7	1.0	9.7	1.8	0.4	2.9	49.9	0.0	0.0	49.9	4.5	0.8	0.2	5.5	176.0	23.6	5.5	205.1

Note: individual revenues may not add up to the sum total for each jurisdiction due to rounding. Direct, indirect and induced revenue totals by source may not add up to the sum total for each jurisdiction due to rounding.
n/a= not applicable; \$M = million dollars

HEALTH CANADA

Interested Party:	Health Canada (HC)	Rec No.:	HC_1
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

Please specify the measures proposed to mitigate dust from the transportation of ore.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle proposes to use the same monitoring techniques and mitigative actions which are currently applied at the Meadowbank Mine. Mitigation to dust from the transportation of ore along the haul road will include:

- Use of esker material, which has reduced fines, as topping for the haul road;
- Ensure speed limits are respected ;
- Application of dust suppression will occur:
 - If FEIS predictions for dustfall related to impacts on wildlife or applicable standards to are exceeded;
 - In areas where operators may have safety concerns (i.e. blind hills or corners); and/ or
 - To ensure the safe access for traditional land use.
- Dust suppression applications could include:
 - Water;
 - GN approved dust suppressants; and,
 - Proven dust suppressant methods used on haul roads at Meadowbank.

Interested Party:	Health Canada (HC)	Rec No.:	HC_2
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

Please specify the air quality mitigation measures proposed for the Whale Tail Pit project rather than referring to a separate project document.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers HC to HC_1 response, as well as Volume 3, Appendix 3-C, Table 3-C-1, column Environmental Design Features and Mitigation for air quality mitigation measures.

Interested Party:	Health Canada (HC)	Rec No.:	HC_3
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

Provide a rationale on why current climate data (date up to 2016) was not used in the climate assessment.

Agnico Eagle’s Response to Information Request / Recommendation:

Long-term weather data from ECCC’s Baker Lake meteorology station was used to define existing climate for the region. The 1981 to 2010 period of record is the most recent 30-year climate normal data for which ECCC has computed statistics (they are only generated each decade - http://climate.weather.gc.ca/climate_normals/index_e.html).

Interested Party:	Health Canada (HC)	Rec No.:	HC_4
Re:			

Reference to FEIS: Volume 4, Figure 4.4-1

Information Request / Recommendation Made By Interested Party:

Figure 4.4-1 needs spatial context on the map/figure.

Agnico Eagle’s Response to Information Request / Recommendation:

As discussed in Volume 4, Appendix 4-E, Section 4.E-3.2.3:

“Haul road construction is expected to be completed by the same group of equipment...moving together along the length of the road. As such, the assessment of road construction focused on a representative 140 m section of road, with the assumption that the road construction equipment...will be spread out as much as 140 m along the route at any one time. The Project NIA predicted potential Project effects across a 5 km LSA and 7 km RSA surrounding representative construction activities.”

In keeping with the discussion from Section 4.E-3.2.3 presented above, Figure 4.4-1 presents haul road construction noise level predictions for an area surrounding a “*representative 140 m section of road*”. In other words, the results presented in Figure 4.4-1 are generally applicable to any 140 m segment of Project haul road; the scale bar presented in the figure legend indicates the predicted distance between construction activities and different noise levels. Because the results presented in Figure 4.4-1 do not apply to one specific point on the haul road, Agnico Eagle respectfully submits that it would be inappropriate to plot these results over a map or other spatial background.

Interested Party:	Health Canada (HC)	Rec No.:	HC_5
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

PM_{2.5} is a non-threshold contaminant - as such, please assess the project contribution in addition to background (or baseline) levels of PM_{2.5} in the region.

Agnico Eagle's Response to Information Request / Recommendation:

The Volume 4 assessment for all particulate matter size classes (i.e., PM_{2.5}, PM₁₀ and TSP) includes the predicted ground level concentrations as a result of the Project activities plus their background concentrations. The FEIS Volume 4 results for all criteria air contaminants are summarized in Table 4.3-4. Additional information regarding the derivation of the background PM values can be found in Section 4.A-3 of Appendix 4-A (Air Quality Baseline).

Interested Party:	Health Canada (HC)	Rec No.:	HC_6
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

Health Canada advises that emissions of VOCs and PAHs should also be considered as Air Quality VC indicators; especially if extensive use of diesel powered equipment is anticipated during any phase of the project.

Agnico Eagle's Response to Information Request / Recommendation:

Although volatile organic compounds (VOCs) and polycyclic aromatic compounds (PACs) concentrations can be predicted, there is no air quality measurement endpoint with which to assess potential effects. There are no Canada-wide standards or Nunavut ambient air quality standards for VOCs and PACs. Alberta has developed ambient air quality objectives for individual VOCs (e.g., benzene) and PACs (e.g., benzo[a]pyrene), but there are no relevant objectives, guidelines, or standards for "total VOCs or PACs".

VOC and PAC emissions from mining haul trucks and other equipment are highly uncertain. Uncertainty is linked to variability in a number of factors included, but not necessarily limited to: VOC and PAC emissions rates as a function of diesel engine loading (e.g., idling versus climbing the pit-ramp while loaded); ambient air temperature (i.e., -40°C in winter versus +15°C in summer), engine emissions control tier-level⁸ (i.e., U.S. EPA Tier-2, -3, or -4); and engine age/condition (i.e., how old is the engine and how well-maintained is it). There is insufficient technical information related to these issues to formulate a robust emissions profiles for most projects.

Predicting atmospheric concentrations and aerial deposition of VOC and PACs is also highly uncertain. These compounds reversibly partition between the gas- and particulate-phases, a process that is a strong function of compound molecular weight and ambient atmospheric temperature (e.g., -40°C in winter versus +15°C in summer at Whale Tail) and pre-existing aerosol surface area and its composition (i.e., hydrophilic versus hydrophobic aerosol surfaces). VOCs and PACs are subject to in-situ atmospheric photo-oxidation and heterogeneous chemical process that are poorly understood and therefore difficult to parameterize in air quality models. Finally, removal mechanisms including: wet deposition, dry deposition and below-cloud scavenging, depend on the hydrophilicity or hydrophobicity of the individual VOCs and PACs, their solubility, molecular weight, phase (gas, particulate, cloud-droplet, ice-crystal), and co-emitted species with which they interact (e.g., black carbon and organic aerosol, oxides of sulfur, oxides of nitrogen).

⁸ Agnico Eagle has indicated that engines used in the execution of the Project will meet the emissions regulations applicable at the time of equipment purchase. Agnico Eagle also intends to implement best practices associated with diesel particulate emissions. For example, minimizing idling and using diesel particulate filter technology on equipped vehicles.

Here we provide a semi-quantitative estimate of maximum annually averaged particulate-bound benzo(a)pyrene (BaP) concentrations at the Whale Tail Project. A comparison is then made to the annual average Alberta AAQO of 0.30 ng/m³. The estimate is based on the following assumptions:

- 1) The maximum plus background annual average PM_{2.5} concentration outside the project boundary is used as the initial PM_{2.5} reference concentration (i.e., 4.2 µg/m³). However, the annual average background concentration of PM_{2.5} (3.6 µg/m³) is assumed to contain a benzo[a]pyrene mass fraction of zero. Therefore, the maximum annually averaged concentration of Project-related PM_{2.5} outside the Project boundary that may contain particulate-bound BaP is assumed to be 0.6 µg/m³.
- 2) Although BaP may reversibly partition between the gas- and particulate-phase, we assume that 100% of the BaP is found in the particulate phase, an assumption that is probably valid for wintertime conditions at the Whale Tail Pit (average daily temperatures <-15°C from November to April).
- 3) PM_{2.5} emissions from diesel fuel combustion represent 25% of the emissions of PM_{2.5} from the Whale Tail Pit area (including in-pit, surface and haul road activities inside the Project boundary). This includes on- and off-road vehicles, the power plant and camp heater, all of which are powered by diesel fuel.
- 4) Benzo(a)pyrene is assumed to represent one of two PM_{2.5} mass fractions based on actual measurements on CAT-797B heavy haulers employed at Canadian oil sands mines in Alberta (Watson et al., 2013, *Characterization of Real-World Emissions from Nonroad Mining Trucks in the Athabasca Oil Sands Region during September, 2009*):
 - a. Average PM_{2.5} mass fraction (BaP_{avg}) = 7.70x10⁻⁵ +/- 8.28x10⁻⁵. This is the arithmetic average of 1.30x10⁻⁵ +/- 3.30x10⁻⁵ and 1.41x10⁻⁴ +/- 7.60x10⁻⁵, with uncertainty propagated as the square root of the sum of squares of the sample uncertainty.
 - b. Max PM_{2.5} mass fraction (BaP_{max}) = 2.02x10⁻⁴. This is the maximum observed mass fraction of BaP in PM_{2.5} among 8 tests conducted on-board the CAT 797B heavy haulers during the Watson et al. study.

$$[\text{BaP}]_{\text{avg}} = 0.6 \text{ (}\mu\text{g/m}^3\text{)} \times (1000 \text{ ng/}\mu\text{g}) \times 0.25 \times 7.70 \times 10^{-5} = 0.012 \text{ ng/m}^3 \quad (\text{AAAQO} = 0.30 \text{ ng/m}^3)$$

$$[\text{BaP}]_{\text{max}} = 0.6 \text{ (}\mu\text{g/m}^3\text{)} \times (1000 \text{ ng/}\mu\text{g}) \times 0.25 \times 2.02 \times 10^{-4} = 0.030 \text{ ng/m}^3 \quad (\text{AAAQO} = 0.30 \text{ ng/m}^3)$$

Semi-quantitative analysis of maximum annually averaged particulate-bound benzo[a]pyrene concentrations outside the Project boundary indicate that atmospheric concentrations remain below the AAAQO of 0.30 ng/m³. However, as described above, these estimates are highly uncertain and their validity is subject to the assumptions listed above.

Interested Party:	Health Canada (HC)	Rec No.:	HC_7
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

Health Canada advises that along with $PM_{2.5}$ and PM_{10} , total particulate matter (TPM) or dust deposition should also be included in the air quality environmental baseline.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers HC to KivIA IR-Air Quality-01 and 02.

Interested Party:	Health Canada (HC)	Rec No.:	HC_8
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

Health Canada suggests that CO and SOx be included in the monitoring plan as a parameter concerning human health.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle appreciates that CO and SOx are criteria air contaminants of concern related to human health. However, they are not required for the calculation of air quality health indices (<http://www.ec.gc.ca/cas-aqhi/default.asp?Lang=En&n=065BE995-1#calculated>).

Background concentrations of 1-hr averaged CO and SOx are low (0.3 ppmv and 1.0 ppbv, respectively). The assessment shows that the 1-hr average maximum plus background concentration of CO and SOx (0.9 ppmv and 6.7 ppbv, respectively) are a small fraction (<7% and <4%, respectively) of the relevant ambient air quality standards (13 ppmv and 172 ppbv, respectively). Since the model predictions are conservative, the assessment indicates that monitoring of CO and SOx is not warranted at this time.

Interested Party:	Health Canada (HC)	Rec No.:	HC_9
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

The Air Quality DMP states that a loss of data is anticipated: what is a small amount of data loss due to weather? Can this be quantified?

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle cannot find the text in Volume 4 to which the stakeholder is referring.

Based on the completeness of Environment and Climate Change Canada data presented in Table 4-A-6 of Appendix 4-A, and professional experience, particulate matter data completeness of greater than 75% can be expected.

Interested Party:	Health Canada (HC)	Rec No.:	HC_10
Re:			

Reference to FEIS: Volume 4

Information Request / Recommendation Made By Interested Party:

Please identify mitigation measures for project-related air quality impacts. Exceedances of air quality standards are noted but no mitigation measures are discussed.

Agnico Eagle's Response to Information Request / Recommendation:

Note briefly: comparable exceedances of PM₁₀ and TSP air quality standards can occur naturally over large geographic areas in the Kivalliq region due to the episodic transport of boreal forest fire smoke to the region. The predicted potential exceedances are very small in geographic extent, occurring up against the Project Boundary and/or near the location where the unpaved haul road leaves the mining property (see Figures 4-C-14 and 4-C-16 in Appendix 4-C). The following statement is in Section 4.3.3.2 on Page 4-18:

For PM₁₀, the worst year of the 5-year simulation includes a single PM₁₀ exceedance. For TSP, the worst year of the 5-year simulation includes three 24-hour TSP exceedances. Figure 4.3-4 illustrates the predicted spatial distribution of maximum plus background 24-hour average TSP concentrations. As indicated, the region where the maximum plus background TSP concentrations are predicted to exceed the air quality criteria over a 24-hour period is small.

And,

Air quality modelling also included an evaluation of maximum plus background concentrations of CACs at important local cultural or human health receptors. Predicted concentrations of all CAC were below their relevant ambient air quality standards at all of these local receptors.

The air quality modelling included in the FEIS is conservative by nature and proposed air quality monitoring activities can be used to validate this conservatism. There are no known community receptors near the Project Boundary where the air quality model predicted exceedances of the ambient air quality standards might occur on 1-3 days during a 5-year period (i.e., <1% of the year). Proposed mitigation measures for fugitive dust are listed in the pathways Volume 3, Appendix 3-C, Table 3.C-1.

Since the maximum plus background concentrations are conservatively estimated, the probability of their occurrence and their spatial extent are low, and the probability of exposure is also low, no additional mitigation is proposed at this time.

Interested Party:	Health Canada (HC)	Rec No.:	HC_11
Re:			

Reference to FEIS: Volume 6

Information Request / Recommendation Made By Interested Party:

Provide a discussion on the potential effects to Nemo Lake for all project phases and activities given its proximity to the Project.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers HC to Section 6.3.3.1 of Volume 6 – Freshwater environment, where potential effects of the Project on surface water quantity are identified and discussed for the construction phase (Section 6.3.3.1.2), the dewatering phase (Section 6.3.3.1.3), the operational phase (Section 6.3.3.1.4), the closure phase (Section 6.3.3.1.5), and the post-closure phase (Section 6.3.3.1.6). A summary of residual effects is also provided in Section 6.3.4.

As discussed in the sections noted above, potential effects on surface water quantity are expected to be negligible during the construction and dewatering phases. Discharge and water level regimes are expected to increase during operations, with negligible effects on channel/bank stability. Nemo Lake is expected to return to baseline conditions during the closure phase. Field inspections, water level and water quality monitoring will follow monitoring and mitigations plans.

Interested Party:	Health Canada (HC)	Rec No.:	HC_12
Re:			

Reference to FEIS: Volume 6

Information Request / Recommendation Made By Interested Party:

Identify on a map:

a) all water sources that could be used as a drinking water source (e.g. for hunters) or any source that could be used for recreational purposes (e.g. fishing)

b) all water sources that could be used as a drinking water source (e.g. for hunters) or any source that could be used for recreational purposes (e.g. fishing)

Agnico Eagle's Response to Information Request / Recommendation:

Specific lakes or rivers in the Project area have not been identified to date as traditional source drinking water, but for purposes of the assessment, it has been assumed that any lake or river could be used to supply drinking water for traditional travel or camping activities (see Values Component Selection Volume 6, Section 6.4.1.2.). Please see Volume 6, Figure 6.1-2 (Surface Water Quantity) showing all lakes and other watercourses in the Project area.

All surface water baseline data collected and predicted concentrations was compared to the Health Canada drinking water quality guidelines (Health Canada 2014) (Section 6.4.2.1).

For a discussion of surface water quality results, please refer to Volume 6 for:

- Baseline data locations
 - Volume 6, Appendix 6-G, Section 1.3, Figures 1-1 to 1-5
- Prediction locations
 - Volume 6, Section 6.4, Figure 6.4-1
- Water and sediment quality results
 - Volume 6, Section 6.4.2.2

For a discussion of water quality and effects to human health, please refer to Volume 3, Appendix 3-B for:

- Predicted total concentrations for chemicals in water (i.e. metals) compared to Canadian Drinking Water Guidelines from Health Canada to identify chemicals of potential concern:
 - Volume 3, Appendix 3-B, Section 3.B-3.5.1

Fish and fish habitat baseline studies were completed at watercourses along the Haul Road and in the headwaters of the A and C watershed in the vicinity of the Whale Tail Pit during 2014 and 2015 (see Section 6.5.2.1.1 and 6.5.2.2.1).

For a discussion of fish results, please refer to Volume 6 for:

- Fish capture summaries and presence in the watercourses along the Haul Road
 - Volume 6, Table 6.5-1 and Figure 6.5-1
- Fish capture summaries and presence in the lakes and streams near the Whale Tail Pit
 - Volume 6, Table 6.5-3, Table 6.5-4 and Figure 6.5-2

Interested Party:	Health Canada (HC)	Rec No.:	HC_13
Re:			

Reference to FEIS: Volume 6

Information Request / Recommendation Made By Interested Party:

Discuss impacts on potable water at Baker Lake community; identify the source of potable water for the community and how it is treated.

Agnico Eagle's Response to Information Request / Recommendation:

Whale Tail Pit is located approximately 150 km northwest of the hamlet of Baker Lake. Given the distance of the project to the community and the location of the drinking water source, no impacts to the potable water in the community of Baker Laker are expected as a result of the Whale Tail Pit Project. Methods of treatment of the community water should be addressed by the Baker Hamlet.

Interested Party:	Health Canada (HC)	Rec No.:	HC_14
Re:			

Reference to FEIS: Volume 7

Information Request / Recommendation Made By Interested Party:

Identify on a map:

- a) Isopleths for both air and noise impacts overlaid with the mapped locations of all permanent and seasonal human receptors (e.g. camp sites, hunting huts and blinds)*
- b) Any harvesting areas along the length of the haul road*
- c) Any cultural or religious sites*

Agnico Eagle's Response to Information Request / Recommendation:

Isopleths for air and noise impacts overlaid with mapped locations of all recorded permanent and seasonal human receptors (caribou harvesting areas, fishing sites, cultural sites and travel routes) in the Project area are presented in Figures HC_14a to HC_14e. These sites were recorded based primarily on past use, and no specific traditional land and resource sites that are currently used were identified in the project area, including along the length of the haul road, during baseline studies. Traditional Land and Resource Use, or IQ baseline results indicated that the Project area was used in the past by local people primarily as a travel corridor between Baker Lake and the Back River to access traditional land use sites. Today, use of the area is limited, and hunting and fishing activities are primarily practiced opportunistically in the Project area as people travel through the region to other important traditional land use sites (see Figures 3-1 and 3-2 of Section 7.0 Appendix 7-A Inuit Qaujimagatuqangit Baseline Report). All recorded cultural and religious sites used in the past in the Project area are included on these figures.

For isopleths related to noise, please refer to:

- Figure HC_14a Whale Tail Pit Operations Winter Noise Level Predictions and Harvesting/Cultural Sites

Note that winter noise levels have been presented in Figure HC_14a because the Project noise assessment predicted higher noise levels over a larger area for winter conditions than for summer conditions. Project noise levels outside of the 30 dBA contour will be below the existing ambient noise level in the area. For a discussion of potential noise impacts from the Whale Tail Pit and Haul Road on human receptors and cultural sites, please see KIVIA-IR-Noise-01.

Isopleths of background plus maximum predicted ground level concentrations of criteria air contaminants (CACs) in the vicinity of the Whale Tail Pit are presented in Figures 4-C-6 through 4-C-18 of Appendix 4-C (Air Quality Modelling Technical Summary).

The effects of fugitive road dust were assessed in a generic sense by modelling a representative 1-km length of the haul road. Results are presented in Section 4.C-8.2, including Tables 4-C-20, 4-C-21, 4-C-22 and Figures 4-C-19, 4-C-20, 4-C-21, 4-C-22. Ground-level concentrations of total suspended particulate (TSP) and particulate matter smaller than 10 micrometers in aerodynamic diameter (PM10) were predicted to exceed the relevant 24-hr average ambient air quality standards at distances of up to 1,500 m in the worst-case-scenario. Maximum predicted dust deposition rates are predicted to be below the 24-hour BC total dustfall standard within 300 meters of the haul road.

The following additional figures were produced to show Isopleths for CACs that are most relevant to human health, overlaid with harvesting and cultural sites:

- Figure HC_14b Model Predicted 1-Hour NO₂ Concentrations And Harvesting/Cultural Sites
- Figure HC_14c Model Predicted 24-Hour TSP Concentrations And Harvesting/Cultural Sites
- Figure HC_14d Model Predicted 24-Hour PM₁₀ Concentrations And Harvesting/Cultural Sites
- Figure HC_14e Model Predicted 24-Hour PM_{2.5} Concentrations And Harvesting/Cultural Sites

Interested Party:	Health Canada (HC)	Rec No.:	HC_15
Re:			

Reference to FEIS: Volume 7
Information Request / Recommendation Made By Interested Party:

Indicate whether there is a program for monitoring mercury levels in fish. Health Canada's 2006 comments on Meadowbank mine included a recommendation that a monitoring program be put in place to assess mercury in fish in the area of the project. In 2013 Health Canada reviewed the "Human Health Preliminary Quantitative Risk Assessment of Consumption of Country Foods for the Meadowbank Gold Project" and noted that a "no fishing order" for employees onsite is not a valid reason to exclude fish from the country foods assessment.

Agnico Eagle's Response to Information Request / Recommendation:

This recommendation for monitoring of mercury levels was not conducted to assess mercury and fish in the area of the Meadowbank Mine. Based on operational experience at Meadowbank access by local employees to fishing on site is restricted and from a traditional land use perspective the area is not used for fish harvest prior to and during operations. Based on the mine plan for Whale Tail, flooding will occur; therefore, Agnico Eagle has commissioned a focused study to better understand the potential for changes in fish mercury concentrations related to the flooding of Whale Tail Lake (South Basin) (see HC_18). Agnico Eagle will continue to work with the DFO and HC during the authorization phase of the project to complete a mercury monitoring program as part of the Fisheries Monitoring Plan that is acceptable to the DFO, HC, HTO, and KivIA. While ensuring the protection of the fish population of Whale Tail Lake, this plan will specifically include fish tissue sampling or an acceptable method to monitor the mercury levels against modeled predictions.

Interested Party:	Health Canada (HC)	Rec No.:	HC_16
Re:			

Reference to FEIS: Volume 7, Section 7.3.2.1.1

Information Request / Recommendation Made By Interested Party:

Provide information on how the public will be restricted from using the haul road.

Agnico Eagle’s Response to Information Request / Recommendation:

In accordance with Condition 32 of the Meadowbank Project Certificate, the AWAR (Road from Baker Lake to Meadowbank Mine) is currently not accessible to the public, including hunters, beyond km 85. This will continue to be enforced and will decouple public access from the proposed Whale Tail Haul Road, which will be enforced as a private road and therefore will not be accessible to the public. This is a known practice for the existing haul roads at the Meadowbank Mine site.

As per Volume 8, Appendix 8-C.1 – Whale Tail Haul Road Management Plan, hunters may cross the Whale Tail Haul Road at defined locations, however use of the private Whale Tail Haul Road will not be permitted.

Control measures for the Whale Tail Haul Road will continue to include security enforcement, reporting by haul truck drivers and as needed the HSS (Health, Safety and Security) department will contact the local conservation officer or enforcement officer to ensure the parameters set out, according to NIRB PC condition 32, are followed by the public.

Interested Party:	Health Canada (HC)	Rec No.:	HC_17
Re:			

Reference to FEIS: Volume 7, Section 7.3.2.1.4

Information Request / Recommendation Made By Interested Party:

Include noise from emergency sirens and back-up alarms in considering the effects of noise on sensitive receptors or culturally important sites.

Agnico Eagle’s Response to Information Request / Recommendation:

As discussed in Appendix 4-E, Section 4.E-2.1.1, back-up alarms are accounted for in the noise assessment: *“For mobile equipment, the noise emission values include the contribution from a back-up alarm – with a suitable penalty applied to account for the tonal nature of this source”*. Emergency sirens are so infrequent that they are not considered a major source of noise. Agnico Eagle believes the noise sources, levels and duration parameters used in the modeling sufficiently consider effects on sensitive receptors and culturally important sites.

Interested Party:	Health Canada (HC)	Rec No.:	HC_18
Re:			

Reference to FEIS: Volume 7, Section 7.3.2.1.2

Information Request / Recommendation Made By Interested Party:

Discuss the potential for methyl mercury bioaccumulation in fish in Whale Tail Lake and any connected waterways.

Agnico Eagle's Response to Information Request / Recommendation:

The effects of water management and flooding on mercury dynamics in Whale Tail Lake were qualitatively assessed in Section 6.4.3.2 of Volume 6. Based on comparisons to literature-reported field studies from other reservoirs, the FEIS assessment predicted a temporary increase in fish mercury concentrations between two to nine times higher than baseline concentrations. Given that these predictions were founded on the results seen in permanently flooded reservoirs, they can be considered conservative.

Agnico Eagle commissioned a focused study to better understand the potential for changes in fish mercury concentrations related to the flooding of Whale Tail Lake (South Basin). The study involved using two complementary approaches: (1) a detailed comparison of site-specific information on physical, chemical and ecological conditions to the conditions found in two group of existing reservoirs (i.e., those where fish mercury concentrations changed by less than three times and those with higher changes) and (2) application of empirical models to predict changes in fish mercury concentrations. The latter employed two novel approaches to account for the temporary nature of flooding in Whale Tail Lake (South Basin). The first involved a detailed assessment of the temporal dynamics of fish mercury concentrations after flooding based on actual field studies of Canadian reservoirs. The second involved running simulations using a complex mechanistic mercury reservoir model. The focused mercury assessment results suggest that peak fish mercury concentrations for lake trout in the flooded Whale Tail Lake (South Basin) will be between two and three times baseline concentrations (i.e., the low end of the FEIS predictions). We anticipate completion of reporting for this study and will provide it to NIRB by February 28, 2017.

Interested Party:	Health Canada (HC)	Rec No.:	HC_19
Re:			

Reference to FEIS: Volume 7, Section 7.3.2.1.2

Information Request / Recommendation Made By Interested Party:

Include a discussion the potential impacts of spills on fish that could be consumed.

Agnico Eagle’s Response to Information Request / Recommendation:

Effects of potential spills on water quality and aquatic biota was considered in the assessment as a secondary pathway (Appendix 3-C) because environmental design features, mitigation, and spill clean-up will limit potential effects. Environmental design features and mitigations considered include the following:

- The Spill Contingency Plan will be implemented, including ready access to an emergency spill clean-up kit for cleaning up any spills.
- Hazardous materials and fuel will be stored according to regulatory requirements to protect the environment and workers and will be stored at the Meadowbank Mine.
- Storage tanks (e.g., fuel, engine oil, hydraulic oil, and waste oil and coolant) will be double walled, or located in lined and bermed containment areas.
- Hazardous wastes will be temporarily stored at Whale Tail Pit and then transported to the Meadowbank Mine in appropriate containers to prevent exposure until they are shipped off site to an approved facility.
- Individuals working on site and handling hazardous materials will have appropriate training (e.g., WHMIS)
- Soils from petroleum spill areas will be deposited at the Meadowbank Mine Landfarm.
- Equipment will be re-fueled, serviced, or washed away from the watercourse crossings.
- Fuel, lubricants, hydraulic fluids, and other chemicals will be stored at least 31 m away from the high water mark of any waterbody.
- Construction equipment will be regularly maintained.
- Emergency spill kits will be available wherever toxic materials or fuel are stored and transferred.

Any spills that occur are reported to the GN spill hot line followed by or concurrent with management of the site in accordance with the Agnico Eagle Spill Contingency Plan. The Spill Contingency Plan “designates lines of authority, responsibility, establishes proper reporting, and details plans of action in the event of a spill” (Appendix 8-D.6).

In addition, based on Agnico Eagle's experience with the Meadowbank, accidental spills (e.g., fuel) have occurred, but most of the spill volumes have been small, and clean-up has occurred with only minor effects to the environment (Agnico Eagle 2015).

A Priori spill monitoring plans are not developed because the spill plan must be specific to the source chemicals, time of year, and location (i.e., land or water) (Appendix 8-D.6, Section 5.6).

Interested Party:	Health Canada (HC)	Rec No.:	HC_20
Re:			

Reference to FEIS: All Sections

Information Request / Recommendation Made By Interested Party:

Provide a discussion on cumulative impacts of the proposed Whale Tail Pit together with the operation of the Meadowbank mine.

Agnico Eagle's Response to Information Request / Recommendation:

Cumulative effects from the Project together with the operation of the Meadowbank Mine are integrated into the assessment of all primary pathways. As described in the FEIS Assessment Methods (Volume 3, Section 3.5.2.2), assessment cases used in the FEIS included a baseline case that includes all existing development, including the Meadowbank Mine. The residual impact classification for each Primary Pathway describes the residual incremental and cumulative adverse effects from the previous and existing developments, the Project (i.e., the Application Case), and future developments (i.e., the Future Case, if applicable) on the VC (Section 3.7.1). Further, a summary of cumulative effects for key categories (including caribou, terrestrial environment, marine environment, aquatic resources, traditional land use and socio-economics) are provided in Volume 3, Appendix 3-D, including maps of all the past, present and reasonably foreseeable future developments considered.

INDIGENOUS AND NORTHERN AFFAIRS CANADA

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_1
Re:	Seepage Quality		

Reference to FEIS: APPENDIX 5-E Geochemical Baseline

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent provide the following additional information to assist in determining future effluent quality from the WRSF:

a. The percent of the total arsenic in the samples that were leached from the humidity cells and column leach tests.

b. Provide data on the arsenic leaching rate (e.g., mg/kg/week).

c. A description of the impact of solid:liquid ratios on leaching rates, with an emphasis on ratios that are representative of future conditions in the WRSF.

d. In Appendix 5-E, Table 9, is the NP total NP of CaNP?

e. In Appendix 5-E, Figure 2, the grain sizes of several rock pieces appear to be greater than 9.5 mm. What is meant by <9.5 mm?

f. Some of the high sulphur greywacke (chert) has minimal NP and may acidify rapidly even in the Arctic environment. Other than placement below the proposed rock cover, are there any additional plans for the selective placement or management of this PAG waste rock material?

Agnico Eagle's Response to Information Request / Recommendation:

- a. The table below compares the total arsenic concentration of each humidity cell and large column sample with the total arsenic leached from these samples over the duration of testing (at the time of FEIS submission).

Rock Type	Sample ID	Test Type	Total As (mg/kg)	Sum of Arsenic Leached Through Duration of Kinetic Testing (mg/kg)	Proportion of Total Arsenic (%)
Ultramafic	AMQ-ENV-32	HCT	440	35	8%
Iron Formation	AMQ-ENV-43	HCT	820	36	4%
Greywacke	AMQ-ENV-37	HCT	33	0.8	2%
Greywacke	AMQ-ENV-18	HCT	33	0.3	1%
Greywacke	AMQ-ENV-28	HCT	90	0.4	0.5%
Greywacke	AMQ-ENV-40	HCT	280	0.08	0.03%
Chert	AMQ-ENV15-133	HCT	970	0.2	0.02%
Intermediate Intrusive	AMQ-ENV-114	HCT	8.7	0.1	1%
Ore	AMQ-ENV15-144	HCT	1100	2.1	0.2%
Ore Composite	AMQ-ENV15-089 + 076	HCT	735	1.2	0.2%
Tailings	RE-13872/ RE-13874	HCT	3200	2.0	0.06%
Ultramafic (0a)	C-1	Column	682	24	3%
Iron Formation(S9E)	C-2	Column	689	22	3%
Greywacke (S3C)	C-3	Column	163	0.1	0.03%
Greywacke (S3C and S3S)	C-4	Column	41	0.1	0.3%
Ultramafic (0b)	C-5	Column	71	4	5%
Chert; (S10)	C-6	Column	222	0.1	0.05%
Mafic Volcanic (1b)	C-7	Column	30	0.5	2%

- b. Average leaching rates (mg/kg/week) are discussed in Volume 6, Appendix 6-H, Section 3.2.1 and provided in Appendix A Water Quality Input Parameters.
- c. INAC is referred to the following in support of this response:
- IR ECCC#7: provides a discussion of the comparison of laboratory leach test results to comparative criteria.
 - Appendix 5-E, Section 2.2.4.2 discusses the various details of the kinetic test methods utilized, and their time equivalency compared with site specific conditions.
 - Appendix 5-E, Section 3.5.1 provides a discussion on the effect of solid-to-liquid ratios for the various leaching tests, and their effect on parameter concentrations.
 - Appendix 6-H, Section 3.2 discusses the water quality model input parameters, specifically the calculation of loading rates using leach test results and scale-up assumptions.
 - Appendix 6-H, Section 4.0 and Table 9 which provide the list of model assumptions including the scaling factors applied to the loading rates from the WRSF, including for temperature, rock density, grain size / channelization / and the depth of the active layer.

Based on the observed correlation between leachate concentrations and the solid-to-liquid ratio of the various leaching tests, water quality predictions for seepage from the WRSF were completed using a loading based approach. Loading rates (mg/kg/week) were calculated for each waste rock type using the large column leach test. Model assumptions and scaling factors were applied conservatively to account for time equivalency of the kinetic tests, laboratory solid-to-liquid ratios compared with actual site conditions, temperature controls on reaction rates, rock density, and grain size / channelization factors to account for the percentage of rock mass in the WRSF that is contributing a chemical load to seepage.

- d. Total NP (or bulk NP) is presented in Appendix 5-E Table 9; CaNP (based on CO₂%) is not presented in this table.
- e. The crushed grain size used for construction of the large columns is < 9.5 mm. This indicates that the grains are crushed by a Jaw Crusher until 80% of the grains can pass through a screen of 9.5 mm. Therefore, 80% of the grains have at least two axes that are less than 9.5 mm, and the remaining 20% of the grains have at least one axis that measures greater than 9.5 mm.
- f. As discussed in Appendix 5-E Section 3.5.1.1, three PAG humidity cell samples and two PAG large columns produce alkaline leachate through various weeks of kinetic testing. Despite the low buffering capacity of these samples, the NP is sufficiently present and reactive to delay the onset of ARD conditions.

As described in Appendix 8-A.1, waste rock will be managed in the WRSF following best practices to limit the ingress of oxygen and development of convection cells (i.e., waste rock will not be free dumped). Agnico Eagle refers INAC to ECCC 6 response.

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_2
Re:	Long-term Water Quality in the Flooded Pit		

Reference to FEIS: EIS Vol. 6, Freshwater Environment, APPENDIX 6-H Mine Site and Receiving Environment Water Quality Predictions

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent provide a technical analysis that addresses the following questions:

- a. Is meromixis expected in the pit lake?*
- b. If yes, will the meromixis be stable? What factors could result in future turnover and mixing (high winds, pit wall failure)?*
- c. What additional work will be completed to validate assumptions regarding pit diffusion and meromixis? When will a detailed plan describing this work become available?*

Agnico Eagle's Response to Information Request / Recommendation:

- a. Meromixis is possible given the shape and depth of the open pit. This phenomenon is observed in many pit lakes. The water quality predictions (Volume 6, Appendix 6-H, Section 5.2.1) demonstrate that without meromixis, assuming fully mixed conditions in the flooded open pit lake and also in the above layer that forms the extension of the North basin of Whale Tail Lake, concentrations in both sections of the water body meet the Site Specific Water Quality Criteria (SSWQC) for arsenic and the CCME water quality criteria for the other parameters. Although it was assumed that both layers do not mix between the two of them, if they did the water quality would still meet the SSWQC for arsenic and the CCME criteria for the other parameters.
- b. Factors that could promote mixing of the pit lake water and the overlying water in Whale Tail Lake include the following (Pieters and Lawrence 2014):
 - groundwater inflows;
 - surface ice formation (seasonal effect);
 - runoff;
 - lake morphology;
 - climactic factors (e.g., wind direction, seasonal cooling); and
 - turbulence resulting from physical disturbances like pit wall slumping.

Groundwater infiltration at depth, should it occur, could slightly increase the salinity or total dissolved solids (TDS) concentrations in the deeper pit lake water layer of Whale Tail Lake. Note that the salinity of the groundwater at the level of the pit bottom is expected to be relatively low. This scenario was

considered unlikely because this is expected to be a groundwater recharge area (Volume 6, Appendix 6-H, Section 5.3.2).

Other factors that may promote mixing of the pit lake water with the overlying water in Whale Tail Lake include pit wall slumping, lake depth, the surface-area-to-depth ratio, and fetch size (Gammons et al. 2009; Pieters and Lawrence 2014). High wind speeds and the direction of the prevailing wind may also promote vertical mixing, especially for lakes with large surface areas and fetches.

- c. Monitoring of pit water quality and groundwater quality and closure/post-closure water quality monitoring as well as monitoring of groundwater inflows into the pit, if there are any, will be essential to verify and validate the assumptions used in the predictive water quality model. These will provide important site specific information on the transfer of chemical mass from the rock to the contact water and the mixing or lack thereof of waters within the flooded pit and Lake. These will help to refine the current sources of uncertainty in the water quality model (Volume 6, Appendix 6-H) which include assumptions surrounding the interactions between the flooded pit lake and the overlying Whale Tail Lake. Using results collected through the Core Receiving Environment Monitoring Program (CREMP; Volume 8, Appendix 8-E.2), the Dike Construction and Monitoring Plan (Volume 8, Appendix 8-A.2), the Water Quality and Flow Monitoring Plan (Volume 8, Appendix 8-B.3), and the Water Management Plan (Volume 8, Appendix 8-B.2), management practices will (if required) be adaptively adjusted. Additionally, site-wide water balance information and modelled predictions of water quality in the pit lake will be updated as part of the licence requirements to update the Water Management Plan.

References:

- Gammons CH, Harris LN, Castro JM, Cott, PA, Hanna, BW. 2009. Creating lakes from open pit mines: processes and considerations, with emphasis on northern environments. Canadian Technical Report of Fisheries and Aquatic Sciences 2826: ix + 106 p.
- Pieters P, Lawrence, GA. 2014. Physical processes and meromixis in pit lakes subject to ice cover. Canadian Journal of Civil Engineering, 41: 569-578.

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_3
Re:	Mixed Zones and Compliance Points		

Reference to FEIS: EIS Vol. 6, Freshwater Environment, APPENDIX 6-H Mine Site and Receiving Environment Water Quality Predictions

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent provide:

- a. An assessment of the spatial extent of areas within Mammoth Lake and other receivers that are predicted to have average or maximum concentrations above the proposed water quality objectives for arsenic and any other contaminants of potential concern. To ensure the full range of potential loading scenarios are considered, the assessment should evaluate a variety of seepage loading rates from the WRSF (e.g., with and without effective seepage mitigation).*
- b. A description of anticipated ecological impacts associated with any areas within Mammoth Lake or other receivers that are predicted to have localized concentrations above the applicable water quality criteria.*
- c. A consolidated list of proposed water quality criteria, associated compliance points (end of pipe, edge of defined mixing zone, etc.) and frequency considerations (mean, max, etc.).*

Agnico Eagle's Response to Information Request / Recommendation:

- a. Rather than presenting the full range of potential loads to Mammoth Lake, Agnico Eagle focused on a conservative evaluation of parameter release from the WRSF and applied this in perpetuity post-closure, anticipating that treatment may not be required at all, but putting in place the ability to treat water should it be necessary. A comprehensive suite of parameters was modelled in Mammoth Lake: in the effective mixing zone that will receive the effluent, in the entire Mammoth Lake volume, as well as in Whale Tail Lake (North Basin). As presented in Volume 6 Appendix 6-H, the predicted total concentration of some parameters showed potential exceedances based on a conservative, theoretical particulate fraction addition to dissolved concentrations (Volume 6, Appendix 6-H, Section 5.3.3). Dissolved concentrations of most parameters met guidelines and therefore did not cause them to be potential concern. Arsenic and phosphorous are the elements of interest.

The water quality model for Mammoth Lake considered and included point source discharges (i.e., diffusor discharge from the Attenuation Pond during Operations, and from the WRSF Pond in Post-Closure) and runoff from the surrounding watershed. Modelled results were developed for the effective mixing zone (EMZ), which is an area assumed to be 100 meters around the diffusor outlet, selected based on previous experience at other sites, and for the entirety of Mammoth Lake, including the EMZ. The EMZ surrounding the diffusor will receive site discharges during construction and operations. Treated

contact water from the WRSF in post-closure will also be directed through the existing diffuser system, as per Table 3.7, Appendix 8.B-2 of the Water Management Plan.

The results for the EMZ and for Mammoth Lake are summarized in Volume 6, Section 6.4.3.3.2.2 and described in greater detail in Section 5.2.2 of Volume 6, Appendix 6-H and in Appendix 6-I. Predictions of water quality conditions and potential exceedances of guidelines are based on the loading scenario described in detail in Volume 6, Appendix 6-H. This was considered a conservative yet reasonable scenario. The area within Mammoth Lake that is expected to be directly affected by the higher concentrations in the diffuser discharges compared to the rest of the Lake is a mixing zone of 100 m radius from the pipe. The scenario of discharge with no treatment or mitigation was not assessed because that was considered an unrealistic scenario.

The model considers the largest extent of development (the maximum mine footprint) starting at operational Year 1. The arsenic loading rates from the WRSF are also conservatively modelled to represent possible poor-end water quality (biased high) that could occur in WRSF seepage should the WRSF actually generate any seepage. The loads used in modelling are based mainly on analytical results of laboratory testing on site specific materials that were available at the time and on documented cases in similar settings by the same operator (Meadowbank and Meliadine). Both of these mines have similar waste rock types that leach some arsenic according to laboratory data, but that report less arsenic in reality. Similar differences in climate and scale between laboratory tests and the future mine facilities at Whale Tail suggest that concentrations and volumes of leachates to be generated will be less than predicted.

Furthermore, in post-closure, the seepage from the WRSF is modelled as a constant loading source in perpetuity; however, since the exposed rock is not reactive, and will not acidify, it is expected that all chemicals contained in the seepage will be attenuated in time as the stockpile settles and fines become compacted. This is expected to result in decreased loadings in time, and therefore treatment in perpetuity is highly unlikely (Volume 6, Appendix 6-H, section 5.2). Nonetheless, these results were used to design a prudent water management plan that includes water treatment for arsenic, should it be required. It is planned that if water quality in the WRSF pond does not meet discharge criteria, the water in this pond will be treated prior to discharge.

As the project progresses through construction and operation, monitoring of water quality at source points within the site will be undertaken, as defined in the Water Management Plan (Appendix 8.B-2) and as per requirements of a Type A water licence. This will allow for validation of the model and adaptive management as needed to minimize chemical release and avoid the need for water treatment where possible and as early as possible. Water quality monitoring of the WRSF seepage and pond will continue in closure and post-closure to verify that the WRSF pond meets discharge criteria and the dike will not be breached, seepage will not be released without treatment, until the applicable criteria are met according to the Type A water licence.

- b. Predicted changes to water quality conditions in the receiving environment are assessed in Volume 6, Appendices 6-H and 6-I. The results summary in Section 5.2.2 of Appendix 6-H indicates that for the maximum mine footprint, the predicted concentrations at downstream locations will be below CEQG-AL

for all parameters and below the SSWQO for arsenic. All dissolved parameters are predicted to comply with the CEQG-AL during post-closure, and arsenic concentrations are predicted to meet the SSWQO. Predicted impacts to aquatic biota and human consumers are described in Volume 6, Section 6.5.3.3.2 and Volume 3, Appendix 3-B.

- c. Water quality criteria exist for end-of-pipe discharges from the attenuation pond, the EMZ in Mammoth Lake, and the receiving environment (i.e., areas outside the EMZ). Applicable criteria are summarized in Volume 6, Table 8 (Portage effluent limits; NWB 2015) and with the water quality modelling results presented in Volume 6, Appendix 6-I. Details for the SSWQO for arsenic are provided in Volume 6, Section 5.0 and Appendix 6-N. The criteria for the receiving environment are the same as those used in the screening process.

Information on monitoring locations, sampling frequency, monitored parameters, discharge criteria, and adaptive management plans for water quality are summarized in the updated Water Quality and Flow Monitoring Plan (Volume 8, Section 8.3.2 and Appendix 8-B.3). Additional monitoring information can be found in the CREMP (Volume 8, Appendix 8-E.2).

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_4
Re:	Ammonia and Nitrate Discharges		

Reference to FEIS: EIS Vol. 6, Freshwater Environment, APPENDIX 6-H Mine Site and Receiving Environment Water Quality Predictions

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent provide the following additional information:

a. Estimates of explosive use, projected losses and estimated discharge concentrations for ammonia and nitrate

Agnico Eagle's Response to Information Request / Recommendation:

The concentration of explosives by-products (ammonia and nitrate) in site contact water is sensitive to the management of blasting agents during their use. Development of explosives loss rate assumptions can introduce uncertainty into predictions of nitrate concentrations in waste rock contact water. Therefore, average measured concentrations of ammonia and nitrate in Meadowbank Mine pit sumps and RSF seepage monitoring locations were assigned as a surrogate to source terms for mine water pumped from the Whale Tail Pit sump and collected in the Whale Tail Pit WRSF pond.

Agnico Eagle will follow the same explosives management practices for Whale Tail Pit operations that are currently in place for Meadowbank. Given this and the proximity and similarity both in setting and operation of the Project to the Meadowbank Mine, it was assumed that similar nitrogen concentrations would occur in the waste rock and open pit drainages.

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_5
Re:	Post Closure Water Treatment Contingency		

Reference to FEIS: APPENDIX 8-F Addendum for Closure and Reclamation Plan

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent provide:

- a. Descriptions of all loading scenarios that may result in exceedances of the CEQG-AL and/or SSWQO for relevant parameters.*
- b. Descriptions of potential impacts to the downstream receivers and exposed species if contingencies are not implemented.*
- c. Conceptual plans for the implementation of the two proposed water treatment contingencies.*
- d. Indicative cost estimates for the implementation of the two proposed water treatment contingencies (single event and long-term).*

Agnico Eagle’s Response to Information Request / Recommendation:

- a. Predictions of water quality conditions and potential exceedances of the CEQG-AL and/or SSWQO are based on the loading scenario described in detail in Volume 6, Appendix 6-H.

Theoretical worst case loading scenarios that could generate higher concentrations than predicted which may result in exceedances of the CEQG-AL and/or SSWQO prior to treatment are the following:

- Sustained chemical leaching from flooded pit wall and diffusion of these contaminants throughout the pit lake water body in closure and post-closure
- Upward transfer and mixing of contaminants from the flooded pit to the overlying Whale Tail Lake in closure and post-closure
- Continual high mass loading, both of dissolved and of the particulate fraction, from the remaining highwall in post-closure
- Sustained elevated leaching from the WRSF

Sustained chemical leaching from flooded pit wall and diffusion of these contaminants throughout the pit lake water body in closure and post-closure was not considered likely because the north end of the flooded pit is expected to be a groundwater recharge zone (Volume 6, Appendix 6.B, Section 3.7.2).

Upward transfer and mixing of contaminants from the flooded pit to the overlying Whale Tail Lake in closure and post-closure is addressed in the response to INAC-IR #2.

The model currently takes into account a continual high mass loading from the remaining highwall in post-closure, for both the dissolved and total concentrations. Dissolved concentrations are expected to attenuate over time, as fines settle and become compacted, and the available source is depleted. Total concentrations were calculated assuming that the particulate fraction will contribute to the MMER maximum monthly mean allowable of 15 mg/L TSS. It is likely that the particulate fraction that contributes to total concentrations will also decrease over time, as unstable material is washed away and only physically stable, non-reactive material remains. TSS concentrations will be monitored on site during construction, operation, closure and post-closure, and water from the site or the re-flooded Whale Tail Lake will not be released downstream until there is confidence that appropriate water quality will be maintained in perpetuity and according to the Type A Water Licence conditions.

Sustained elevated leaching from the WRSF are considered unlikely, as discussed in the response to INAC-IR #3. Furthermore, as the project progresses, monitoring of water quality at source points within the site will allow for validation of the model inputs and assumptions, and will allow for adaptive management to correct negative trends that may lead to environmental effects. Water quality monitoring of the flooded Whale Tail Lake (North basin), as well as the WRSF seepage will also occur in closure and post-closure to verify that the dikes will only be breached if and when the appropriate water quality criteria are met according to the Type A Water Licence.

- b. The FEIS presented predicted water quality and effects to the receiving environment for a conservative case. This assessment case considered the water treatment contingencies identified in response to Part C of this IR.

The modelled case, which assumes a conservative scenario, concluded that there will be temporal and spatial variability of phosphorus concentrations within the study area which could potentially result in a negative residual effect to the fishery during operations. However, these changes are predicted to be reversible (Section 6.4.3.3). Agnico Eagle is committed to meeting Type A Licence requirements.

Assessment of a case of sustained chemical leaching from the pit wall with diffusion through the pit lake, without treatment, was not modelled and assessed for the receiving environment because water of that quality would not be permitted to be released from site. This sensitivity was modelled for on-site water quality; however, it was considered to be ultraconservative and an unlikely scenario based on the assessment of hydrogeological flows. Further, it is anticipated that, consistent with the Type A Water Licence for Meadowbank, regular updates to the water balance and water quality model predictions for Whale Tail will be required. As the project progresses through construction and operation, monitoring of water quality at source points within the site will be undertaken, as defined in the Water Management Plan (Appendix 8.B-2). This will allow for validation of the water quality model and adaptive management (e.g., different treatment, interception of water, change in practices, and disposal at alternative locations) as needed.

- c. The water treatment components of the water management plan are listed in Section 3.1.2 of the Water Management Plan (Volume 8, Appendix 8.B-2). The two water treatment plants (WTP) considered for water treatment contingencies include:

- a mobile WTP for the construction period to attenuate suspended solids in water (TSS), and,
- a fixed WTP built during construction and ongoing until no longer required, after closure if needed. The fixed WTP will discharge treated water through a submerged diffuser that will be located in Lake A16 (Mammoth Lake).

These WTPs, along with a potable WTP and a sewage treatment plant will be built in Year -1 during construction at (Volume 8, Appendix 8.B-2, Table 3.2).

The Interim Closure plan (Volume 8, Appendix 8-F) states that all site contact water will ultimately flow into, or be pumped to, the Attenuation Pond. It is planned to use an Actiflo clarifier of an approximate hydraulic capacity of 2,000 m³/h to remove suspended solids both for the construction WTP and for the fixed WTP. The Actiflo clarifier process is based on the coagulation, flocculation, and clarification principle. A treatment circuit will be added to the fixed WTP during construction, to remove arsenic should it be necessary. Final design details will be provided to the regulators for approval at least 60 days prior to construction. For the purpose of predictive water quality modelling, Agnico Eagle assumed that the fixed WTP would remove arsenic to 0.15 mg/L on an average monthly basis. Throughout construction, operation and closure, all site waters will be collected and treated as necessary to meet the discharge criteria, then pumped to the receiving environment (Mammoth Lake) via the discharge pipeline and the submerged diffuser.

- d. The detailed design of the two WTP will be available and submitted to regulators prior to construction of the Whale Tail Pit. The costs will be provided at that time.

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_6
Re:	WRSF Permafrost Active Zone		

Reference to FEIS: EIS Vol. 1, Project Description; APPENDIX 8-F Addendum for Closure and Reclamation Plan

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent provide:

- a. A detailed description of the basis of the WRSF closure design (i.e. basis for the 2-4 m NPAG cover) and justification of its effectiveness to meet objectives in both the short and long term (e.g. thermal modelling). Descriptions of thermal monitoring and updated modelling that will be conducted to assure the WRSF will remain frozen under current and future climate change scenarios should also be provided.*
- b. Descriptions of design modifications capable of enhancing the establishment of permafrost or other adaptive measures that might be required should monitoring and/or modelling results show that objectives may not be met in either the short or long term.*
- c. Empirical evidence that permafrost aggradation has been achieved in comparable waste rock deposits (i.e., at locations with similar climate and physical properties such as grain size).*

Agnico Eagle's Response to Information Request / Recommendation:

- a. No modelling was performed; rather, the thickness of the cover is based on observations made on the waste rock dump at Agnico Eagle Meadowbank Mine located approximately 50 km southeast of the site. Thermistor strings installed in the waste rock dump at Meadowbank Mine show an active layer development of less than 4 meters yearly. Although Agnico Eagle, is confident that an NPAG/NML cover of 2 to 4 m will be capable of enhancing the establishment of permafrost in the pile, thermistor strings will be installed in the Whale Tail WRSF and the development of the active layer will be monitored.
- b. If monitoring indicates that the active layer is deeper than designed, then the contingency measures would include either by increasing the thickness of the NPAG/NML layer or increasing it by adding a layer of finer grained material with a higher heat capacity which will result in reduced thaw penetration.
- c. Agnico Eagle refers INAC to Section 5 -Waste Rock Management Activities and Section 9.1 Progressive Closure in the Meadowbank Annual report. Agnico Eagle will review the thermal behavior of the WRSF cover at Meadowbank by September 2017. The review will include thermistor records, comparison between the climate of both sites, as well as physical properties of waste rock.

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_7
Re:	Revegetation		

Reference to FEIS: APPENDIX 8-F Addendum for Closure and Reclamation Plan

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent indicate:

a. The anticipated order of magnitude period (e.g., years, decades or centuries) that will be required for the natural re-establishment of vegetation on disturbed areas of the site (e.g., the WRSF and scarified roads).

Agnico Eagle’s Response to Information Request / Recommendation:

The pre-disturbance terrain at the proposed Project area is covered by discontinuous vegetation interspersed with many outcrops of frost-shattered bedrock as shown in Figure 1, and Photos 1 and 2 attached (provided as an example of the pre-disturbance conditions).

It is expected that natural colonization of vegetation cover at the disturbed areas will be observed within decades based on experience with similar projects. It is expected that the post-closure site conditions consistent with the pre-disturbance landscape as shown in Figure 1, and Photos 1 and 2 will be achieved within centuries.

Active revegetation has not been planned at this time as part of the reclamation plan given the cold climate setting of the Project. Additional research on active revegetation may be considered in future iterations of the closure activities as mentioned in Section 5.2.5.7 Uncertainties of Appendix 8-F Addendum for Closure and Reclamation Plan.

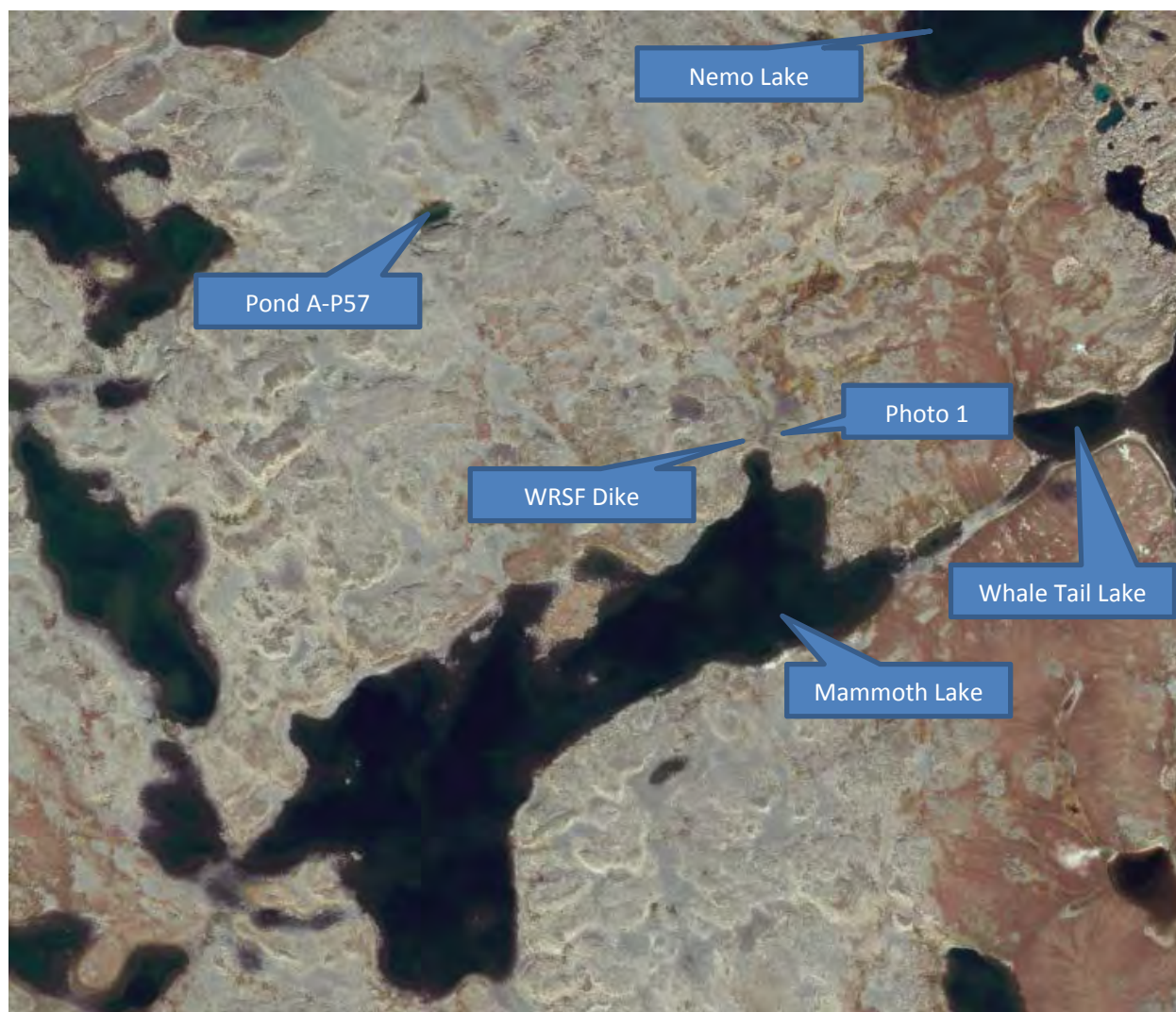


Figure 1: Satellite Image Showing the Proposed Waste Rock Storage Facility Area



Photo 1: Pre-disturbance Conditions at Proposed WRSF Area, looking West (combination of 4 photos)



Photo 2: Close-up of Pre-disturbance Conditions at Proposed WRSF Area

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_8
Re:	Terrain Features – Alternatives		

Reference to FEIS: EIS Vol. 1, Project Description

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent provide:

- a. An indication as to whether consideration has been given to placement of fine grained material (e.g. crushed waste rock or overburden) on the WRSF ramps and selected surfaces to facilitate safe access to and across the waste rock pile by wildlife or land users.*
- b. Descriptions of alternative waste rock facilities with different diameter:height proportions, identifying any associated advantages and disadvantages.*
- c. Evidence that interested parties have been consulted on the conceptual design of the WRSF, including its height and accessibility.*

Agnico Eagle’s Response to Information Request / Recommendation:

- a. The Waste Rock Storage Facility (WRSF) ramp will be covered with a layer of crushed rock during operation as access with trucks and pickups need to be maintained. The ramp will remain in place over closure period, in part to provide access to the monitoring equipment (thermistors). As such, the ramp will be available for post-closure use by wildlife and land users. Long-term it may not be necessary to actively maintain the ramp to allow such continued access. Site access during operations and closure of the site will be restricted; at the discretion of the NWB and NIRB, these restrictions are expected to be lifted in post closure.
- b. A thorough alternatives assessment was completed for the proposed location for the WRSF, and included the evaluation of four other potential sites (see Figure 1.9-1 in Volume 1, Section 1.10.5) which present different diameter or footprint (and therefore height) proportions. As stated in Section 1.10.5, the biggest advantage of the selected site is its topography. This site allows the management of the contact water in a single point where the WRSF Pond is planned. Accordingly, the topographic situation of this site is favorable for the containment of the generated contact water within the selected sub-watershed that in-turn will limit unattended overflow of contact water in surrounding watersheds. Therefore, considering the limitation of impacts on the surrounding water environment as a priority, the WRSF was configured to reduce its footprint and fit the volume of waste inside the targeted sub-watershed.
- c. Further to the consultation that was done regarding the Whale Tail Pit Project location and its’ components, the waste rock storage alternatives assessment was presented to regulatory agencies during September 26 (GN, INAC, NPMO), October 4 (KIA) and October 13 (KIA), 2016 meetings (Part 2: Waste and Water Management, Slide 13; this presentation was provided to meeting participants following the respective meetings).

Interested Party:	Indigenous and Northern Affairs Canada (INAC)	Rec No.:	INAC-IR_9
Re:	Reclamation Research		

Reference to FEIS: APPENDIX 8-F Addendum for Closure and Reclamation Plan

Information Request / Recommendation Made By Interested Party:

INAC requests that the Proponent provide:

- a. A consolidated summary of uncertainties associated with the closure design.*
- b. A consolidated summary of research programs and anticipated outputs that will be used to address each uncertainty.*
- c. A schedule indicating the timing of each research program, specifying when research findings will become available. Linkages to key decisions in the closure planning process should also be provided.*

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle completed the Closure and Reclamation Plan in accordance with the “Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories”, issued by the Mackenzie Valley Land and Water Board (MVLWB) and Aboriginal Affairs and Northern Development Canada (AANDC) in 2013 (MVLWB/AANDC 2013). Responses are summarized in the table attached.

As indicated in Appendix 8-F Addendum for Closure and Reclamation Plan (Section 5.2.2.8), the Interim Closure and Reclamation Plan (ICRP) is a “living” document and includes a commitment to adaptive management and monitoring during all stages of the mine life to demonstrate the safe performance of the mine facilities and to reduce the potential for any contamination on the site or in the adjacent area after mine operations cease.

In addition to the proposed research programs or path forward presented in the table attached, monitoring programs will be initiated during the pre-development and operation stages of the Project to provide additional baseline information on which to base the Final CRP document. Lessons learned from Meadowbank Mine and similar projects will also be used for planning the closure measurements, where applicable, due to the short duration of the pre-development and operations stage of the Project.

References:

MVLWB/AANDC (Mackenzie Valley Land and Water Board/Aboriginal Affairs and Northern Development Canada). 2013. Guidelines for the Closure and Reclamation of Advanced Mineral Exploration and Mine Sites in the Northwest Territories. November 2013.

Uncertainties – Section from APPENDIX 8-F Addendum for Closure and Reclamation Plan	Description	Proposed Research Program/Path Forward and Anticipated Output	chedule
	Arsenic release from submerged Whale Tail Pit walls is a source of uncertainty in the prediction of the long-term water quality of the flooded pit lake and Whale Tail Lake (North Basin). The actual interaction between the two water bodies (water within the pit and water above it forming North Whale Tail Lake) as well as possible chemical stratification of the flooded pit lake (which would result in improved water quality in the shallow pit lake) should be investigated with additional modelling. The source of the uncertainty lies in the occurrence of arsenic in waste rock and its leachability, which is currently being investigated.	a) Geochemical studies including lab testing, results will be used to update the water quality model and confirm predictions. b) Additional water quality modeling to confirm predictions.	a) Already on-going, it will continue during the next design levels of the Project and into the operations stage as needed. b) To be updated in the next design levels of the Project or during operations to support preparation of the Final CRP.
WRSF Hydrogeochemical and Hydrological Conditions	Uncertainty with the hydrogeochemical and hydrological conditions that will occur in the WRSF.	Hydrogeochemical and hydrological studies, findings will be used to update the water quality model and confirm predictions. Use analytical results from waste rock field cells implemented in summer 2016.	Studies will be defined during the next design levels of the Project. e updated in the next design levels of the Project or during operations to support preparation of the Final CRP.
Pit and Whale Tail Lake Hydrogeochemical and Hydrological Conditions	Uncertainty with the hydrogeochemical and hydrological conditions that will occur in the pit walls, and in the hydrological conditions in the Pit Lake and Whale Tail Lake.	Hydrogeochemical and hydrological studies, findings will be used to update the water quality model and confirm predictions.	Studies will be defined during the next design levels of the Project. e updated in the next design levels of the Project or during operations to support preparation of the Final CRP.
	The rock type to be used for the WRSF cover is predicted to release arsenic at concentrations that may exceed effluent limit. Fluoride concentrations are relatively elevated but are predicted to meet CEQG-AL in the receiving environment. Experience at the Meadowbank Mine suggests that field conditions are likely to show much lower concentrations in contact water than predicted.	Review of leaching test results and also monitoring information from Meadowbank Mine. Use analytical results from waste rock field cells implemented in summer 2016.	to support preparation of the Final CRP.
	The thermal conditions within the WRSF will depend on the actual waste placement plan and schedule, initial waste temperatures when placed, and thermal conditions of the original ground before the waste materials are placed.	Thermistors will be installed in the WRSF to monitor the rate of freeze back and permafrost development progress in the facilities during the operations stage. In addition, thermistor strings will be installed in the cover as it is progressively placed to verify the cover performance, i.e. that the active zone thickness is less than the design cover thickness. Temperature readings will be taken according to Part I Item 9 of the Type A Water Licence to track permafrost development within the WRSF during operations and closure. The measured temperature within the WRSF will provide background information for the study of permafrost development within the facility.	The locations for the thermistors will be determined during the final detailed design stage or during operations to support preparation of the Final CRP. The monitoring schedule will be reviewed and modified annually, as required, to reflect changes in operations and/or technology.
	It is uncertain whether or not it will be economically viable at the time of closure to ship out the jaw crushers and conveyors for salvage. However, given the length the operational period, it is likely they will have some salvage value.	Salvage opportunities to be evaluated.	During Final Closure and Reclamation Plan preparation.
	It may not be visually apparent if potentially acid generating (PAG) bedrock has been exposed along the corridor of the Project haul road.	If exposures on the Project haul road corridor result in acidification of surface water, then such impacts will be assessed and an appropriate mitigation strategy will be put in place.	During construction, operations and decommissioning of the Haul Road
	It is uncertain what the post-closure land use will be. In particular, it is uncertain if KivIA would prefer that facilities such as: salvageable buildings, airstrip and the haul road should be left for their use.	Additional community engagement.	Already on-going, it will continue during the next design levels of the Project and into the operations stage as needed.
	The reclamation plan will be designed to encourage a natural succession of	Additional research on active revegetation may be considered.	Future iterations of the closure activities.

Uncertainties – Section from APPENDIX 8-F Addendum for Closure and Reclamation Plan	Description	Proposed Research Program/Path Forward and Anticipated Output	chedule
	indigenous plant species within disturbed site areas. Active revegetation has not been planned at this time as part of the reclamation plan given the cold climate setting of the Project.		
	The water quality predictions provide an estimate of water quality under fully mixed conditions where the effluent and downstream lake overflows are being mixed instantaneously in the downstream receiving water body. In reality, mixing will occur over time and could result in sporadic elevated concentrations at various locations at any given time.	Additional water quality modeling to confirm predictions.	e updated in the next design levels of the Project or during operations to support preparation of the Final CRP.

KIVALLIQ INUIT ASSOCIATION

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Terrestrial - 01
Re:	Predicting caribou responses to Whale Tail haul road		

Reference to FEIS: Volume 5 - Terrestrial Environment; Volume 7 – Human Environment; Appendix 4-B Air Emissions Inventory; 2015 Wildlife Monitoring Summary Report - Meadowbank

Information Request / Recommendation Made By Interested Party:

KivIA requests that the Proponent conduct an analysis of annual collar movements relative to AWAR to describe caribou movement rates including delays and deflections. The analysis should include annual traffic levels and hunting trips for AWAR.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle refers the KivIA to GN-8 response related to data availability, analysis and collaboration with the GN. The GN, as per our MOU (GN and Agnico Eagle), provides the annual analysis of the collar movement of data.

In addition, to ensure the protection of ungulates, Agnico Eagle will consult with the KivIA, GN, and HTO in 2017 and update the TEMP to include monitoring of hunting in the Hunter Harvest Survey and recording road use, prior to construction of Whale Tail Pit and the expansion of the haul road, to reflect recommendations from the stakeholders that are realistic and sustainable.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Terrestrial - 02
Re:	Cumulative effects assessment for caribou		

Reference to FEIS: Volume 5 - Terrestrial Environment; Volume 7 – Human Environment

Information Request / Recommendation Made By Interested Party:

Using data gathered during operation of AWAR, the KivIA requests that the Proponent should conduct energetic modeling to quantify the costs of apparent deflection of caribou around the Project area as well as energetic costs of caribou responses to reasonably foreseeable projects.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle refers the KivIA to GN-8 response related to data availability, analysis and collaboration with the GN. Agnico Eagle respectfully requests that the KivIA provide rational to support the use of energetics modelling to quantify the costs of apparent deflection of caribou around the Project area given the limited amount of time of caribou spend within the Project area.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Terrestrial - 03
Re:	Caribou monitoring		

Reference to FEIS: Appendix 8-E.7: Terrestrial Ecosystem Management Plan

Information Request / Recommendation Made By Interested Party:

- 1. KivIA requests that the Proponent clarify how monitoring of caribou at intermediate distances (>300 m to 5 km) will occur to address the monitoring component of the TEMP, to verify the impact prediction that Project activities will not affect ungulate activities >1,000 m from infrastructure and trigger enhanced mitigation.*
- 2. KivIA also requests that the Proponent clarify how “unnatural caribou use patterns” will be quantified, and clarify what will be the basis for “natural” caribou use patterns relative to annual variation.*
- 3. To determine whether Height of land surveys are effective, KivIA asks that the Proponent provide a “viewscape” GIS analysis to determine the area effectively covered by the proposed 5 height of land survey sites.*
- 4. KivIA requests that the Proponent provide details on caribou-specific mitigation measures for when caribou encounter the Project, especially the haul road, to evaluate residual impacts.*

Agnico Eagle’s Response to Information Request / Recommendation:

- As per GN-13 response Agnico Eagle refers the KivIA to Volume 8, Appendix 8E.7, Terrestrial Environment Monitoring Plan (TEMP), Section 3.3, Table 12: Monitoring Approach for Ungulates for the Meadowbank and Whale Tail Project and Chart 2. Agnico Eagle will monitor caribou groups interacting with the haul road and AWAR by using a variety of monitoring tools that include:
 - Caribou collaring data (with updates that can be made available to Agnico Eagle daily);
 - Ground surveys (around the site and along the haul road);
 - Height of Land surveys; and
 - Sightings reported to the dispatch by operators (e.g. long haul truck drivers) and the security department.

Agnico Eagle recently committed to extending its’ contribution to the GN DOE managed caribou monitoring program and collaring data will be made available to Agnico Eagle on a daily basis. To monitor intermediate distances (>300m to 5km) Agnico Eagle will use a combination of daily caribou collaring information and Height of Land Surveys. The HOL site were tested in 2016 and will be further evaluated for their effectiveness in 2017 using a scope and binoculars to determine the maximum distance and calibrate siting distances. These techniques have been a proven and

effective monitoring tool along the Meadowbank AWAR, which has resulted in no caribou collisions in the past 3 years. As per the previous response, Agnico Eagle will collaborate with the GN and evaluate the caribou collaring data along the Whale Tail Haul Road to verify the impact predictions. Furthermore, to ensure the protection of ungulates, Agnico Eagle will consult with the KivIA, GN, and HTO in 2017 and update the TEMP, prior to construction of Whale Tail Pit and the expansion of the haul road, to reflect monitoring and mitigation recommendations from the stakeholders that are realistic and sustainable.

2. The GN, as per our MOU (GN and Agnico Eagle), and Agnico Eagle will collaborate and evaluate the caribou collaring data along the Whale Tail Haul Road to determine “unnatural caribou use patterns”. Agnico Eagle will provide a response during Technical Review period.
3. Agnico Eagle has hired local wildlife monitors and professional biologists to determine the optimal height of land survey locations which are documented in the TEMP in Section 3.3.2. Rather than providing the KivIA additional desktop analysis, Agnico Eagle invites representatives to visit these HOL locations in 2017 to determine if the locations provide effective coverage for their monitoring purpose.

4. TEMP Mitigation Action Plan

Since 2008 Agnico Eagle has implemented effective monitoring management and mitigation of effects to wildlife through implementation of an approved TEMP at the Meadowbank Mine. This being said, Agnico Eagle acknowledges that any effective plan needs to be continually updated to reflect success and lessons learned through operations and feedback from experts as new approaches and learnings are realized. Agnico Eagle believes that a holistic approach to the revision of the TEMP will provide a solid foundation for mitigation, monitoring and management for wildlife as part of the Whale Tail Project and other Agnico Eagle operations within the region. Therefore, Agnico Eagle proposes an Action Plan for Wildlife Mitigation, Monitoring, and Management planning. The revised TEMP will reflect realistic and sustainable monitoring and mitigation recommendations from stakeholders.

Agnico Eagle acknowledges the various IR received from the parties related to Wildlife and Wildlife Management as such Agnico Eagle proposes the following path forward to addressing these IRs and in some cases technical comments already on file.

- **Step 1 – Initial Draft** of a revised TEMP – Agnico Eagle is committed to revision of the existing TEMP to include and address all IRs received as well as any follow-up on issues raised during the November 2017 workshop. The revision of the TEMP will be completed by Agnico Eagle with support from subject matter experts in February 2017.
 - The revised draft will be provided to the NIRB and any interested parties at least two weeks in advance of NIRBs deadline for technical comments from the Parties. Allowing for additional time and consultation to be brought forth by the parties to the NIRB.

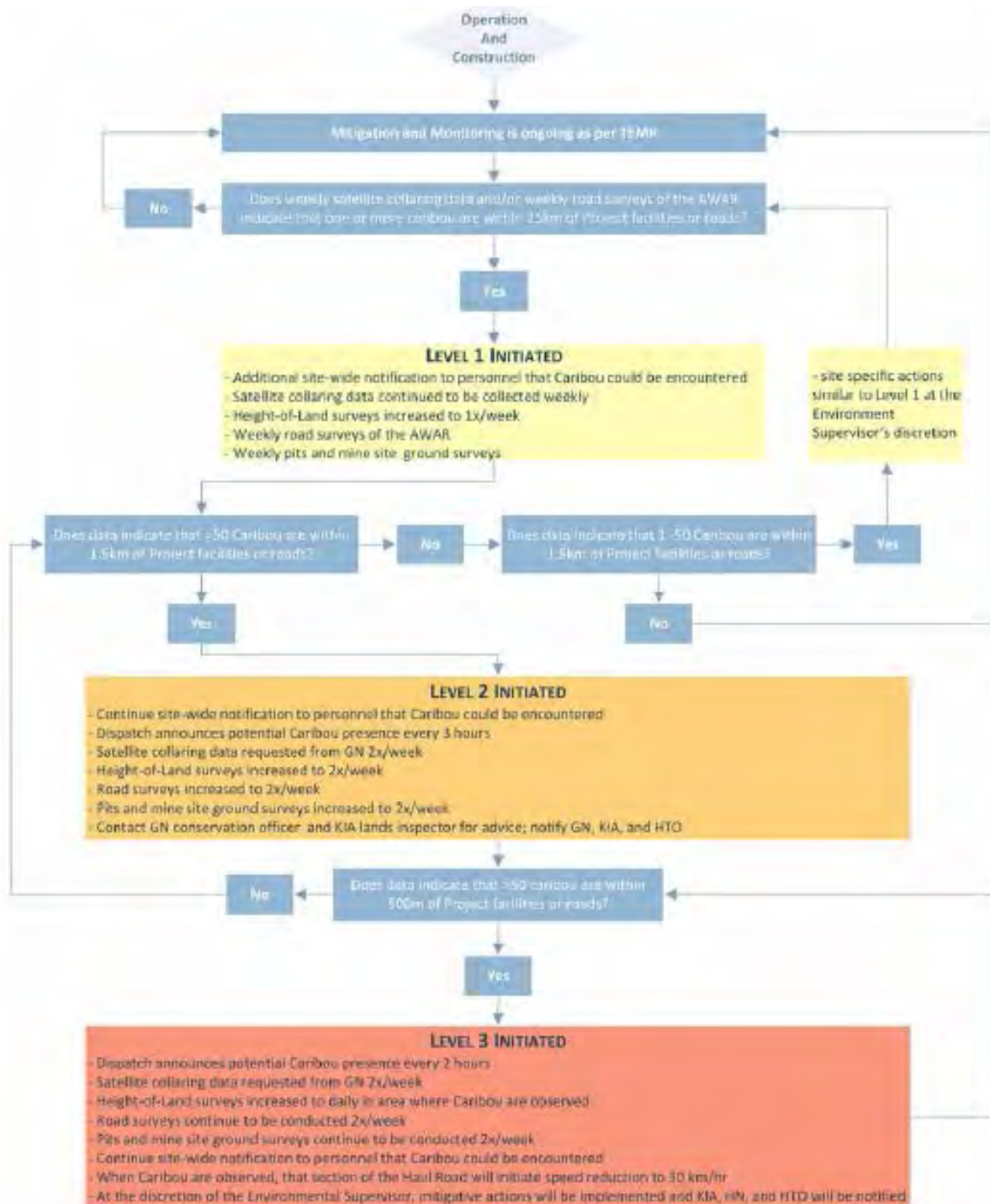
- **Step 2** – Agnico Eagle to formally **present the Initial Draft Plan** concepts to interested parties at a February 2017 Workshop to be held in Ottawa. The agenda will address the following key areas of concern highlighted in the Irs, including but not limited to the following:
 - o Adaptive Management and monitoring tools;
 - o Caribou mitigation and monitoring measures (see below);
 - o Data availability, analysis, and collaboration;
 - o Triggers and thresholds for adaptive management;
 - o Blasting management, including zone of influence;
 - o Site infrastructure, including the haul road;
 - o Road access/traffic, harvesting, and caribou deflections;
 - o Cumulative effects.
- **Step 3** – Agnico Eagle acknowledges some issues related to wildlife monitoring requires a multifaceted team approach of jurisdictional authorities. Ongoing collaboration and next steps will be discussed at the workshop (Feb 2017)
- **Step 4** – The technical comments received during the NIRB review process and the results of the workshop will be incorporated into an **initial draft** of the TEMP with Agnico Eagle’s final submission in advance of the **technical meeting or immediately following the technical meeting** with sufficient time for parties to provide any final statements with respect to its content in their final submission to the NIRB prior a final hearing (March/April 2017)
- **Step 5** – Agnico Eagle anticipates that **sufficient progress and confidence** is provided in the revised or second draft of the TEMP prior to the **final hearing** such that the NIRB can make a fully informed and confident decision as it relates to wildlife management and mitigation measures to be applied by Agnico Eagle. (September 2017)
- **Step 6** – **Final revision of the TEMP for implementation following issuance of a Project Certificate to capture any recommendation made by the parties and NIRB. (January 2018)**

For example some of the caribou mitigations measures and monitoring tools to be discussed at the workshop include:

- Application and revision to Chart 2 (Attachment KivIA-Terrestrial-03-A),
- Adaptive Management of Caribou such as:
 - o Implementation of convoys of haul trucks;
 - o Haul truck speeds;
 - o Haul truck and blasting activities;
 - o Potential restrictions to operations.
- Caribou collaring data;

- Ground surveys;
- Height of Land surveys; and
- Caribou sightings and security.

Attachment KivIA-Terrestrial-03: CHART 2: Adaptive Management for Caribou in Proximity to Project Facilities and Roads



Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Terrestrial - 04
Re:	Terrestrial baseline for caribou		

Reference to FEIS: Appendix 5-C: Terrestrial Baseline Characterization Report

Information Request / Recommendation Made By Interested Party:

- 1. KivIA requests that the Proponent provide a map of October 2014 helicopter survey and cumulative relative caribou use along the Project haul road to identify the probability of exposure of caribou.*
- 2. KivIA requests that the Proponent conduct a Resource Selection Function analysis of habitat selection within the Whale Tail RSA.*
- 3. KivIA requests that the Proponent provide information showing the relationship among the collar pathways, road survey and Height of land sightings.*

Agnico Eagle's Response to Information Request / Recommendation:

1. Agnico Eagle requests clarification during the upcoming workshop from the KivIA regarding request number 1.
2. Agnico Eagle refers the KivIA to KivIA-Terrestrial-03 and GN-8 response related to data availability, analysis and collaboration with the GN. As part of the collaboration, Agnico Eagle and the GN will discuss the use of Resource Selection Function, however at this time Agnico Eagle does not believe a Resource Selection Function analysis of habitat will improve the impact predictions nor the conclusions made in the FEIS.
3. Agnico Eagle refers the KivIA to GN-8 response related to data availability, analysis and collaboration with the GN.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Terrestrial - 05
Re:	Operational flexibility for road closures to protect caribou		

Reference to FEIS: Volume 5 - Terrestrial Environment; Appendix 8-E.7: Terrestrial Ecosystem Management Plan; Appendix 4-B Air Emissions Inventory; Appendix 8-C.1: Whale Tail Pit Haul Road Management Plan

Information Request / Recommendation Made By Interested Party:

1. KivIA requests that the Proponent provide information on the operational flexibility for mill feed on ore stock-piling relative to road closures to protect caribou.

2. KivIA requests that the Proponent provide information on caribou numbers as thresholds for closure of the haul road and for convoying.

Agnico Eagle’s Response to Information Request / Recommendation:

1. Agnico Eagle refers the KivIA to GN-06 response for more details on the mill throughput flexibility in our engineering analysis (Table 4-B-15 presents lower 5%, average and upper 95% haul road traffic passages). At a prefeasibility level, in order to feed the Meadowbank mill between 9000 tpd – 12,000 tpd Agnico Eagle assumes haul trucks will move ore continuously along the haul road. However, our engineering and economic modeling has accounted for 28 x 24 hour (672 operating hours) “blizzard or wildlife protection days” within 1 year that may result in reduced hauling due to in-climate weather or hauling stoppages due to caribou migrations.
2. Agnico Eagle refers the KivIA to KivIA-Terrestrial-03.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Terrestrial - 06
Re:	Dust levels from the haul road		

Reference to FEIS: Volume 5 - Terrestrial Environment; Volume 4 – Air Quality; Appendix 4-B Air Emissions Inventory; Appendix 4-C Air Quality Modelling Technical Summary

Information Request / Recommendation Made By Interested Party:

1. KivIA requests the Proponent provide clarification about terminology (total fleet travels) and units used for dust emissions and dustfall. KivIA requests that the Proponent explain what is meant by “total fleet travels 11,860 km/day” relative to the estimates of anticipated haul truck and other vehicle passage rates (Append. 4-B, Sec. 4.B-8, pg 4-B-11), which average 192 passages per day to a maximum of 230 passages per day. KivIA also requests that the Proponent provide the conversion of dust emissions expressed as kg/km/day to $\mu\text{g}/\text{m}^3/24$ hours.

2. KivIA requests that the Proponent provide the basis for statements about watering as effective mitigation for road dust.

3. KivIA requests that the Proponent clarify traffic volumes for the haul road, since an implicit mitigation for dust is low road use volumes.

Agnico Eagle’s Response to Information Request / Recommendation:

1a. Agnico Eagle refers the KivIA to GN- 06. Total fleet travel in km/day refers to the total distances (km) traveled by all vehicles on the road in one day. The total fleet travel can be calculated as:

$$\begin{aligned} \text{Total fleet travel (km/day)} &= \text{sum of vehicle traffic for all types of vehicles} \times \text{length of road (km)} \\ &= 190 \times 62.42 = 11,860 \text{ (km/day)} \end{aligned}$$

As indicated in the road traffic simulation study⁹, one maintenance vehicle was assumed to do road maintenance and grading travelling at a speed of 5 km/hr. Two additional road maintenance vehicles were assumed to perform snow removal and de-icing after a winter storm. Without detailed information (Appendix 4-B, Table 4-B-16), the maintenance vehicles were not considered in the total fleet. To avoid archaeological sites and ensure safety of operations on the road, the length of road was updated from 62.42 km to 64 km after the modelling effort was completed. However, this update didn’t affect the air quality assessment as the air quality modelling was conducted for the pit including the section of haul road inside the project boundary and for a generic 1-km section of the haul road.

1b. The unit kg/km/day describes the mass of particulate matter emitted along a length of road averaged over a 24-hr period (the input to the model). The unit $\mu\text{g}/\text{m}^3/\text{day}$ describes the mass

⁹ Agnico Eagle Number: 6108-REP-005: Road traffic simulation study.

concentration of particulate matter in the atmosphere averaged over a 24 hour period (the output of the model). To estimate the latter from the former requires refined air quality dispersion modelling, which has been completed for this assessment. Atmospheric deposition of fugitive road dust is described in terms of the mass of dust deposited per unit area per unit time (e.g., mg/cm²/30 days). This too has been calculated and reported in Appendix 4-C, in Table 4-C-22.

2. A 70% mitigation efficiency for watering unpaved road more than twice a day is recommended by Environment Canada in its general national pollution release inventory reporting tools¹⁰.
3. The traffic volume for the haul road was obtained from a road traffic simulation study¹¹ conducted for the Meadowbank-Whale Tail Pit haul road. The road traffic model provides insights on traffic densities and is used to determine the number of long haul trucks required to meet the annual ore tonnage target. The primary goal of the traffic study is to objectively determine the safest and most efficient way to move the required amount of material from its origin to its destination. It incorporates random elements, including loading and unloading times, queuing for resources (i.e., stockpile, crusher, fuel station), interference with road maintenance and oversize vehicles on the road to determine if the required output is achievable. Traffic restrictions such as road blockages due to winter storms and caribou crossings, blasting at Amaruq and airplane landings at Meadowbank have also been modelled. The model simulation results of traffic volume are listed in Table 4.B-8 of Appendix 4-B. As discussed in the response to 1a of this IR, the maintenance vehicles were not included in the assessment.

Results of the existing dust monitoring program can be found in the following report: *Agnico Eagle Mines (AEM), 2015. 2014 All-Weather Access Road Dust Monitoring Report, Meadowbank Gold Project*. As per Agnico Eagle response to HC-1, application of dust suppression will occur:

- If FEIS predictions for dustfall related to impacts on wildlife or applicable standards to are exceeded
- In areas where operators may have safety concerns (i.e. blind hills or corners); and/ or
- To ensure safe traditional land use.

Dust suppression applications could include:

- Water;
- GN approved dust suppressants; and,
- Proven dust suppressant methods used on haul roads at Meadowbank.

¹⁰ General National Pollutant Release Inventory Reporting Tools. Available on line: <https://www.ec.gc.ca/inrp-npri/default.asp?lang=En&n=6DE7F8BC-1#n6>

¹¹ Agnico Eagle Number: 6108-REP-005: Road traffic simulation study.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Air - 01
Re:	Baseline air quality		

Reference to FEIS: Volume 4, Section 4.3.2, page 4-11

Information Request / Recommendation Made By Interested Party:

Provide evidence or justification that the baseline data for the period 2005 to 2009 is representative of current air quality conditions in the Kivalliq region.

Agnico Eagle’s Response to Information Request / Recommendation:

The baseline air quality data summarized in Table 4.3-1 includes multiple years of publicly available observational data from multiple ground-based Environment and Climate Change Canada “National Air Pollution Surveillance” network sites in the NWT and Nunavut, as well as NASA airborne data from 2008. Please see discussion in Sections 4.A-3.1 and 4.A-3.2 of Appendix 4-A (Air Quality Baseline), including Tables 4-A-5, 4-A-6, and 4-A-7 for more information.

This data represents a comprehensive inventory of the only publicly available air quality data for the Kivalliq region.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Air - 02
Re:	Baseline air quality		

Reference to FEIS: Volume 4, Section 4.3.2, page 4-12

Information Request / Recommendation Made By Interested Party:

Provide the baseline dust deposition value and confirm whether or not the dust deposition model predictions include baseline.

Agnico Eagle's Response to Information Request / Recommendation:

The only independent, publicly available estimates of baseline dust deposition rates in Nunavut are those contained in the Baffinland Mary River Project FEIS (Baffinland 2012), and an academic study undertaken in 1994 and 1995 (Zdanowicz et al. 1998). Baseline measurements at Mary River from July 12 to August 30, 2007 indicated a background rate of 0.003 mg/cm²/30-day. The Zdanowicz study indicated a rate of 0.0004 mg/cm²/30-day for the Penny Ice Cap (at 1,980 meters above sea level) located on Baffin Island, Nunavut. Neither study is directly relevant to the Whale Tail FEIS, since they occurred on Baffin Island and the Mary River measurements were of only 1-month duration. Therefore, rates of dust deposition predicted by the air quality model for the assessment do not include an estimate of background dust deposition rates.

Dust deposition measurements from August 18 to September 19, 2014 at representative background locations approximately 10 km from the Meadowbank Mine indicated rates between 0.14 and 0.032 mg/cm²/30-day (Agnico Eagle 2015). This local background deposition rate was subtracted from the AWAR and Vault Pit observational data prior to their comparison with model predictions in Figure 4.3-3. See section 4.C-8.2 of Appendix 4C for additional information.

Note briefly: the data collected at Meadowbank Mine are used as a reference for monitoring and are not representative for the purposes of the FEIS air modeling as they do not capture seasonal variability of dust deposition in the Kivalliq region (e.g., winter rates versus summer rates).

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2015. 2014 All-Weather Access Road Dust Monitoring Report, Meadowbank Gold Project.

Baffinland Iron Mines Corporation (Baffinland). 2012. Final Environmental Impact Statement, Mary River Project. Appendix 5C – Air Quality.

Zdanowicz, C. M., G. A. Zielinski and C. P. Wake, 1998. Characteristics of modern atmospheric dust deposition in snow on the Penny Ice Cap, Baffin Island, Arctic Canada. Tellus Series B, 50(5), DOI: 10.1034/j.1600-0889.1998.t01-1-00008

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Air - 03
Re:	Baseline air quality		

Reference to FEIS: Appendix 4.A-3

Information Request / Recommendation Made By Interested Party:

1. Provide the relationship between TSP, PM10 and PM2.5 measurements at Meadowbank Mine to support the selection of baseline TSP and PM10 concentrations.

Agnico Eagle's Response to Information Request / Recommendation:

The relationship between TSP, PM10 and PM2.5 at the Meadowbank Mine does not represent the relationship between TSP and PM10 under baseline conditions (i.e., background). There are only two air quality monitoring stations at the existing Meadowbank Mine that measure PM_{2.5}, PM₁₀ and TSP. These are DF-1 and DF-2 and they are located within 2 km of the mine and its supporting infrastructure. As such, it is generally not appropriate to use the DF-1 and DF-2 monitoring data to estimate background concentrations of PM_{2.5}, PM₁₀, and TSP; they are known to be affected by the local mining activities.

Background concentrations could potentially be estimated by evaluating the 10th percentile, or perhaps the 50th percentile of the available 24-hr average measurements obtained every 6 days. It would not be appropriate to use the 90th percentile, as is typically done when the monitoring location is far from local influences (see statistics presented in Table 4-A-7 of Appendix 4-C).

Table KivIA-Air03-1 summarizes the year 2012 through 2014, 90th, 50th, and 10th percentile PM_{2.5}, PM₁₀, and TSP concentrations observed at DF-1 and DF-2. As indicated in Table KivIA-Air03-1, the 50th percentile 24-hr TSP concentrations range from 6.2 to 12.8 µg/m³, while the 10th percentile values range from 1.8 to 2.7 µg/m³. The background 24-hr average concentration assigned to PM_{2.5}, PM₁₀ and TSP values for the Whale Tail FEIS is 6.6 µg/m³. This appears to represent a very conservative estimate for background concentrations of PM_{2.5} and PM₁₀, and a sufficiently conservative estimate for background concentrations of TSP.

Table KivIA -Air03-1: Concentrations Observed at DF-1 and DF-2

Percentile	DF-1 (µg/m3)			DF-2 (µg/m3)		
	PM2.5	PM10	TSP	PM2.5	PM10	TSP
90 th	1.1	16.8	24.4	7.0	17.9	62.4
50 th	0.5	4.7	6.2	1.5	3.6	12.8
10 th	0.2	1.5	1.8	0.2	1.3	2.7

Please note there is a typographical error in Volume 4, Table 4.3-4 of the FEIS, the 24-hr PM₁₀ and TSP background concentrations should be 6.6 µg/m³, not 3.6 µg/m³, meaning they are consistent with the 24-hr PM_{2.5} background value. This error does not occur in the tabulated values or the figures.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Air - 04
Re:	Air emissions from blasting and explosives detonation		

Reference to FEIS: Appendix 4.B-2

Information Request / Recommendation Made By Interested Party:

Provide sample calculations for the worst-case 1-hour, 24-hour and annual emission rates of TSP from blasting, and for NOx from explosives detonation.

Agnico Eagle's Response to Information Request / Recommendation:

Total Suspended Particulate Matter

The 1-hr TSP emissions included in Table 4-B-2 were calculated by dividing the 24-hr emissions rate by 24-hrs and do not represent the 'worst-case' hourly emissions. As indicated in Section 4.B-2.2, the following emissions factor (EF) were used to estimate TSP emissions from blasting:

$$\text{TSP Emission Factor (kg/blast)} = EF(TSP) = 0.00022 (A)^{1.5}$$

The blasting area and number of blasts per day were outlined in Section 4.B-2 of Appendix 4-B.

The TSP emission factor EF(TSP) was calculated as:

$$EF(TSP) = 0.00022 \times (1425)^{1.5} = 11.83 \text{ kg/blast.}$$

Therefore, the worst case hourly TSP emission = $11.83 \text{ (kg/blast)} \times 1 \text{ (blast/hour)} = 11.83 \text{ kg/hour.}$

The daily TSP emission = $11.83 \text{ (kg/blast)} \times 2 \text{ (blast/day)} = 23.67 \text{ kg/day.}$

The annual TSP emission = $11.83 \text{ (kg/blast)} \times 2 \text{ (blast/day)} \times (365 \text{ days/year}) / 1000 \text{ (kg/tonnes)} = 8.64 \text{ tonnes/year.}$

The Nunavut ambient air quality standards for TSP are assessed over 24-hour and annual averaging periods and are therefore the appropriate averaging periods to use when evaluating the worst case scenario. While addressing this IR an error was noted in Table 4-B-2 wherein the values in the Table were based on a previous blasting area estimate of 1025 m² not 1425 m². The updated emissions were slightly higher than the modelled emissions as the blasting area was updated from 1026 to 1425 m². This results in a 0.28% increase in Whale Tail in-pit TSP emissions, which considered to be negligible in terms of effects on the model predictions. Table 4-B-2 of Appendix B has been updated as follows:

Table 4-B-2: Particulate Matter Emissions from Blasting

Compounds	Emissions	
	Daily (kg/day)	Annual (tonnes/year)
TSP	23.67	8.64
PM ₁₀	12.31	4.49
PM _{2.5}	0.71	0.26

CO, NO_x, and SO₂

As indicated in Section 4-B-2.3 and Table 3-B-3, the NO_x emissions from explosives detonation were calculated from emission factors of 8 kg of NO_x emissions per tonnes of explosives, plus the following assumptions:

- 215 kg of explosive used per hole
- 50 holes per blast
- 2 blasts per day

The 1-hr CO, NO_x and SO₂ emissions factors presented and modelled in the FEIS were calculated by dividing the daily emissions rate by 24-hrs (e.g., 1-hr NO_x = 24-hr NO_x/24 = 731 kg/day / 24-hr/day = 30.46 kg/hr). This does not represent the worst-case 1-hr emissions scenario. The worst case scenario is as follows:

$$\text{1-hr NO}_x \text{ emission} = 8 \text{ (kg/tonne)} \times 215 \text{ (kg of explosive per hole)} \times 50 \text{ (holes per blast)} / 1000 \text{ (kg/tonnes)} = 86 \text{ kg/hour.}$$

The hourly CO, NO_x and SO₂ emissions have been provided in the new Table 4-B-3 below. Also, the Daily and Annual emissions rates presented in the FEIS were incorrect. This was a transcription error only, the emissions rates used in the air quality modelling have been verified as those listed in updated Table 4-B-3 below.

Table 4-B-3: Emissions from the Use of Explosives

Compounds	Emission Factor (kg/tonne)	Emissions		
		Hourly (kg/hour)	Daily (kg/day)	Annual (tonnes/year)
CO	34	365.5	731	267
NO _x	8	86	172	62.8
SO ₂	1	10.75	21.5	7.85

Adopting the worst-case 1-hr emissions of CO, NO_x and SO₂ for blasting increases the total 1-hr CO, NO_x and SO₂ emissions from activities occurring within the Whale Tail Pit and will affect the air quality model predictions of the maximum plus background 1-hr ground level concentrations of CO, NO_x, and SO₂ for the Project as a whole.

The magnitude of the change in the predictions can be estimated through a scaling analysis. Table KivIA-Air04-1 summarizes the Project total 1-hr CO, NO_x and SO₂ emissions rates as well as the maximum plus background concentrations predicted by the air quality model for the FEIS. Also included are the revised 1-hr emissions rates and a scaled estimate of maximum ground-level concentrations of the CACs based on the revised 1-hr emission rates.

The scaling analysis indicates that maximum plus background ground-level concentrations of 1-hr CO, NO₂ and SO₂ will remain below both the existing Nunavut ambient air quality standards, as well as stricter NO₂ standards occurring in AB and SK, and stricter Canada-wide SO₂ standards recently adopted by the Canadian Council of Ministers of the Environment. Thus, the conclusions of the air quality impact assessment remain valid.

Table KivIA-Air04-1: Comparison of Project total NO_x, SO₂, and CO Emissions

Compounds	Project Hourly Emissions (kg/hour)		Maximum 1-hour model predictions outside the Project boundary (µg/m ³)	Scaled worst-case 1-hr predictions outside the Project boundary (µg/m ³)	1-hr Background Concentrations (µg/m ³)	Scaled 1-hr maximum plus background concentrations (µg/m ³)	1-hour Ambient Air Quality Standards (µg/m ³)
	Modelled	Worst Case					
CO	60.63	395.67	714	4,660	389	5,049	15,000
NO ₂	129.37	208.2	137	220.5	12.6	233	400 (300 ^a)
SO ₂	1.26	11.11	15.1	133	2.7	136	450 (170 ^b)

^aThe Nunavut AAQS is 400 µg/m³, the AB guideline and the SK standard are 300 µg/m³.

^bThe Nunavut AAQS is 450 µg/m³, in 2020 the CAAQS will be 183 µg/m³; the 2025 CAAQS will be 170 µg/m³.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Air - 05
Re:	Dust emissions from ore crushing		

Reference to FEIS: Appendix 4.B

Information Request / Recommendation Made By Interested Party:

Provide the rationale for excluding ore crushing emissions from the air quality assessment.

Agnico Eagle's Response to Information Request / Recommendation:

Combustion emissions and fugitive dust emissions for the diesel-powered jaw crusher operating at throughput of 9000 tonnes per day were included in the assessment. They are not explicitly discussed because they were pooled with other similar emissions sources (e.g., wheeled loader feeding the crusher) for the "Ore Pad" area emissions source. The PM emissions for the ore pad area source are summarized in Table 4-B-12 of Appendix 4-B.

Combustion emissions were calculated using AP-42 guidance and the diesel engine class information for the 350 horsepower jaw crusher and the 880 hp rubber-tired loader. The pooled emissions information are summarized as follows:

Non-Road Vehicle Exhaust	Annual Emissions [tonnes/year]	Hourly Emissions [g/s]	Daily Emissions [g/s]
PM	2.24	0.09	0.07
PM10	2.24	0.09	0.07
PM2.5	2.17	0.08	0.07
DPM	2.24	0.09	0.07
NO _x	34.27	1.30	1.09
SO ₂	0.04	0.00	0.00
CO	8.63	0.33	0.27
eCO ₂	4,844.01	-	-

The fugitive dust emissions from the crusher were calculated using US EPA AP-42 guidance and the relevant parameters are summarized below:

Emissions from Rock Crushing

Emission factors, kg/Mg	TSP	PM10	PM2.5
Tertiary Crushing	0.0027	0.0012	0.0002

Emission rate, g/s	TSP	PM10	PM2.5
Tertiary Crushing	0.2813	0.1250	0.0231

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Air - 06
Re:	Dust deposition		

Reference to FEIS: Appendix 4.C-5

Information Request / Recommendation Made By Interested Party:

- 1. To support the selection of the Method 2 deposition algorithm, provide modelled dust deposition rates (in centimetres per second) and a comparison to the observed deposition rates at Meadowbank Mine.*
- 2. Clarify if plume depletion was used in the AERMOD model.*
- 3. Additional information about the Vault haul road observations presented in Figure 4.3-3 is requested including, time of year the observations were taken, traffic counts during the observations, and if dust suppression was applied at the time of the observations.*

Agnico Eagle's Response to Information Request / Recommendation:

1. In Section 4.3.3.1, model predicted maximum dust depositions were compared with the observations from the Meadowbank haul road in Figure 4.3-3. This figure includes the dust deposition rates along the Meadowbank Mine AWAR and the Vault Haul roads. Whale Tail haul road predictions are comparable to the Meadowbank observations and lend confidence to the model predictions with Method 2 deposition algorithm. The unit "centimeters per second" refers to a deposition velocity for a particle of a fixed size, not a deposition rate (mass/area/time) for a dispersion of log-normally distributed particles.
2. Plume depletion was used in AERMOD model by specifying options of 'DRYDPLT' and 'WETDPLT' for parameter 'MODELOPT' in the Control Pathway.
3. The first sentence of the second paragraph on page 4-16 of the FEIS should read: *"Included in Figure 4.3-3 are the observed dust deposition rates at upwind and downwind dustfall monitoring stations along the Meadowbank Mine AWAR and Vault Haul roads (Agnico Eagle 2015).*

Dustfall canisters were deployed for the duration of August 18 or 19 – September 19, 2014, and calculated dustfall rates were normalized to 30 days (mg/cm²/30 days, per ASTM 1739-98). Traffic volumes varied among the following monitoring locations:

1. Between Airplane Lake and the gatehouse at Baker Lake, to address concerns raised by the community of excess dust (km 1).
2. Immediately south of the emulsion plant turn-off, because this area receives the highest traffic rates on the AWAR (km 103).
3. Mid-way along the Vault haul road, approximately in line with air quality station DF-4.

The Meadowbank dust suppression program includes:

- Continuous watering of mine site roads, including Vault haul road, in the summer;
- Application of calcium chloride along the highest-use segment of the AWAR (from the Meadowbank Gatehouse to the Exploration Camp); and
- Watering of airstrip 30 min or less prior to arrival of aircraft, and 15 min or less prior to take-off.

This citation is also missing from the FEIS:

Agnico Eagle (Agnico Eagle Mines Limited). 2015. 2014 All-Weather Access Road Dust Monitoring Report, Meadowbank Gold Project.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR- Air - 07
Re:	Mitigation of dust from the haul road		

Reference to FEIS: Appendix 4.C-8.3, Appendix 8-E

Information Request / Recommendation Made By Interested Party:

1. *Provide information to support the assumption of 70% control due to watering.*
2. *To support the selection of strategic watering, provide an overview of the existing dust mitigation measures used at Meadowbank Mine and along the AWAR, and an evaluation of their effectiveness.*

Agnico Eagle’s Response to Information Request / Recommendation:

1. The US EPA AP-42 Chapter 13.2.2 and Canada’s National Pollution Control Inventory (NPRI) guidance indicate a 70% control efficiency for “twice daily road watering” for unpaved road surfaces.

EPA (2006) *Unpaved Roads-Chapter 13.2.2, AP-42, Compilation of Air Pollutant Emission Factors*, Volume 1, Stationary Point and Area Sources, USEPA, USA.

WRAP (2004) *Fugitive Dust Control Measures Applicable for the Western Regional Air Partnership’s (WRAP)*. Fugitive Dust Handbook. Western Governor’s Association, Denver, Colorado, USA.

MRI (2001) *Particulate Emission Measurements from controlled construction Activities*, EPA/600/R-01/031. Midwest Research Institute , Kansas City, Kansas, USA.

2. Agnico Eagle refers the KivIA to the [Meadowbank Mine Annual Report, Appendix G13](#) – All Weather Access Road Dust Monitoring Report which provides dust fall monitoring results, analysis and existing dust mitigation measures at Meadowbank Mine and along the AWAR. In summary, Agnico Eagle applied tetraflakes in the highest traffic zones near Baker Lake (between the hamlet of Baker Lake and the gatehouse, and near the spud barge area), between the Mine site and the emulsion plant, along mine haul roads (i.e., Vault road) and lastly a water truck is used on the airstrip prior to landing and take-off. As reported in the annual report, dust levels around the mine site are generally below guideline limits and monitoring results along the AWAR indicate that more than a 50% reduction in average total dustfall is occurring from 25 to 100 m on the downwind (most impacted) side of the road, indicating that the majority of dustfall does settle within the predicted 100 m zone. In addition, average rates of dustfall decline below Alberta Environment’s guideline for recreational areas within 100 m of the AWAR. Further, all but one sample collected at 300 m from the AWAR and most samples collected at 100 and 150 m are within the range of background dustfall levels. Based on these results, it is unlikely that FEIS predictions are being exceeded and that impacts to VCs (vegetation community productivity and wildlife) due to dust are occurring beyond the assumed ZOI (100 m). The results to date clearly indicate the effectiveness of strategic watering and dust suppression in high traffic areas.

Furthermore, due to concerns by NIRB inspectors and hunters using the AWAR, in 2016, Agnico initiated a dust assessment pilot program on the AWAR. Following a Community Liaison Meeting and meetings with the HTO, a planning meeting and field visit were organized with HTO members to identify areas on the AWAR where the community has expressed concerns regarding the dust generated by the traffic on the road. Following the field assessment, Agnico tested dust control methods on three sections of the roads. The Duststop, the Tetraflake and speed reduction were the three methods tested on the AWAR for a period of 2 months between July and September 2016. Additional dust monitoring was completed for the areas where dust control methods were applied. Results of the dust monitoring, along with details on dust control methods tested in summer 2016 will be provided with the 2016 Annual Report.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Aquatic Ecology - 01
Re:	Final fish habitat offsetting plan		

Reference to FEIS: Appendix 8-E - Conceptual Offsetting Plan

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent supply a detailed schedule for the final offsetting plan production, including the specification of times for external review and comment.

Agnico Eagle’s Response to Information Request / Recommendation:

Please refer to DFO-9. Agnico Eagle will work with the DFO to complete a tentative schedule to ensure a final offsetting plan is acceptable to the DFO, KivIA, and HTO and completed in a timely fashion and not later than November 2017. Once the schedule is agreed upon by DFO, a tentative schedule will be provided to the KivIA, NWB, and NIRB prior to the prehearing conference.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Aquatic Ecology - 02
Re:	Final fish habitat offsetting plan		

Reference to FEIS: Appendix 8-E - Conceptual Offsetting Plan

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent supply the results of the follow-up workshops and a discussion of how these have helped modify the conceptual plan.

Agnico Eagle’s Response to Information Request / Recommendation:

Beginning as early as 2003, consultation with local community members, on behalf of Cumberland Resources regarding the Meadowbank Mine began and were undertaken to discuss options or alternative possibilities for the reclamation of the Meadowbank Mine site and concepts to replace lost fish habitat. Between 2012 and 2016, Agnico Eagle hosted numerous workshops and site visits in the community of Baker Lake and attended various in-person and teleconference meetings with the DFO to present conceptual models and potential offsetting options related to Meadowbank and Whale Tail Pit. Please refer to DFO-9 and workshop minutes are provided in Attachment KivIA IR-Aquatic Ecology-02-A.

Attachment KivIA-Aquatic Ecology-02-A: DFO/AEM

Meeting Summary and Action Items



DFO/AEM MEETING SUMMARY AND ACTION ITEMS

Winnipeg, Manitoba and by WebEx; November 16, 2016

Meeting attendees:

DFO: Elizabeth Patreau, Martyn Curtis, Sally Wong

Agnico Eagle: Jamie Quesnel, Ryan Vanengen, Cam Portt; Leilan Baxter, Marie Pier Marcil (by WebEx)

Note: Action items in **bold**; DFO comments and additions in **red text** provided to Agnico Eagle on January 3rd, 2017

The main intent of this meeting is to familiarize DFO with the Whale Tail pit project and conceptual offsetting plan; to discuss plans/ next steps to ensure Whale Tail Pit timelines are achieved and a final offsetting plan is delivered to ensure authorizations are in place by April 2018.

Introduction – Ryan Vanengen:

- Review of Meadowbank site & current closure schedule
- History of DFO Fisheries Act Authorizations/Letter of Credit/HCMP at Meadowbank
 - o Point of discussion: will need to extend Authorizations NU-03-0191.3 and .4, which expire on Dec 31, 2017; discuss possible next steps for AWAR authorization
 - o Regarding the AWAR Authorization NU-03-0190 (as amended May 27, 2008), conditions related to Monitoring are still valid and applicable as the Project continues and expands. Condition 5.2 “The approved Monitoring Plan shall be implemented annually for the years 2007 to 2011 inclusive and every other year thereafter (starting in 2013) until one (1) year after water crossing decommissioning and restoration is completed.”
 - o Regarding Authorization NU-03-0191.3 Main Minesite as re-issued in March 2013, the Valid Authorization period expires December 31, 2017 as it pertains to the harmful alteration, disruption and destruction of fish habitat in Second and Third Portage Lakes. As you’ll note, beneath the dates listed, the Authorization states “The valid authorization periods for other conditions of this Authorization are set out below as Conditions of Authorization.” The ‘other conditions’ pertaining to reporting on Monitoring and Compensation/Offsetting activities are outlined in referenced Plans, and to be reported on annually by March 31. Therefore, no Letter R is required and the Authorization does not expire.
 - o DFO: No amendments are provided now – can issue Letter R (addendum) if only date changes or cancellation/new authorization if anything else changes; this is likely the case for Vault Authorization NU-03-0191.4. Regarding Authorization NU-03-0191.4 Vault Lake – if AEM anticipates that dewatering, excavation, dike construction and placement of course material in Vault Lake basin will occur beyond December 31, 2017 AEM will need to provide DFO an updated schedule for consideration of a ‘Letter R’ – Notification of Modifications to the dates in conditions of Paragraph 35(2)(b) *Fisheries Act*



Authorization. Please note that this letter only allows for a modification of dates, it does not allow for increased levels of serious harm to fish and fish habitat.

- Discussion regarding defining success of compensation/offsetting features, especially as related to LoC requirement; for example, monitoring of AWAR constructed spawning pads has been ongoing and indicates successful utilization as designed. Is an amended Authorization required, or can this now fall under monitoring only? Will need to be determined. **See above comment re AWAR.**
- **Action Item #1 - Agnico Eagle to set action plan/proposed schedule** for further discussion early in 2017 – Agnico Eagle suggests meeting the week of January 23rd.
- DFO review of submitted “final” Phaser offsetting plan ongoing – DFO still need to confer with experts (Ken Minns) regarding time-lag calculations –
Action Item #2 - DFO to provide final agreement on Phaser Lake Offsetting Plan

Review of the Whale Tail pit project description and water management – Ryan Vanengen:

- This meeting is one of various Agnico Eagle meetings with regulatory agencies following the submission of the FEIS in July 2016. The project is through the NIRB scoping stage is in the review stage.
- Overview of Whale Tail pit project, permits, timelines discussion:
 - Dewatering dike timeline is crucial. In-water construction of the Whale Tail Dike is currently planned to begin in June 2018; under a predevelopment license – dike material preparation, pads and expansion of the road will begin in January.
 - Agnico Eagle submitted proposed schedule to NIRB/NWB; waiting for their response in the coming weeks.
Action Item #3 - Agnico Eagle will provide a proposed schedule to DFO for finalization of the Whale Tail Pit offsetting plan and review of Meadowbank Authorizations.
 - Temporary Mammoth crossing for access to waste rock during pre-development; temporary bridge with a gabion pillar.
 - As part of the predevelopment application planned for submission in January 2017, pathway of effects analysis will be submitted to DFO; no serious harm to fish is predicted and likely a DFO letter of advice will be required.
- Review of water management strategy – Multiple Accounts Analysis conducted to determine the best water management option; available in the Project Description. The concept of passive diversion and creation of the Whale Tail Lake south basin “reservoir” for fisheries productivity and offsetting was considered and due to its’ fisheries benefits, in-part directed Agnico Eagle to the selected water management approach.
- Offsetting plan and baseline data collection summary - Cam Portt.



Items of discussion:

- Shorelines discussion
 - **Action Item #4 - DFO to send question to Agnico Eagle regarding shoreline layer;** not disagreement with method, just clarification to be made – *Provide by week of Nov 21.*
 - **DFO will provide comments on the shoreline delineation in our Information Requests submission to the NIRB and NWB due December 16, 2016.**
 - **Action Item #5 - Agnico Eagle to investigate whether 2011 was low/average/high-flow year** (e.g. MBK weather data, additional satellite imagery from Exploration?) – *Agnico Eagle responded to DFO on November 25, 2016.*
- Agnico Eagle will plan to adopt changes incorporated into Phaser offsetting HEP for Whale Tail plan
- If data is presented that demonstrates fish use of flooded pits, DFO is open to discussing habitat value of these areas **for future projects (acknowledging that such data could only begin to be collected when water quality is deemed suitable for fish introduction, and dike breaching, and is likely decades away based on current projects).**
- DFO: requested comment on assumptions regarding use of habitat created by flooding Whale Tail south area
 - Agnico Eagle: expectation that use/benefit will be immediate, productivity of north basin of Whale Tail will hopefully be retained as a result of fish transfer; flooding will occur over 1-1.5 yr; i.e. min. 6 yrs of use (unless permanent water level elevation increase is employed as an offsetting option)
 - Agnico Eagle presented figure illustrating potential for temporary gains to exceed temporary losses in productivity
- Discussion regarding proposed ~~complementary~~ **complementary** measures that could represent 10% of the offsetting. The concept is that Agnico Eagle would collaborate with the Hamlet of Baker Lake to improve wastewater discharge practices. Agnico Eagle commented that this type of offsetting is favoured in community consultations, concept is in early stages but would not be simply a monetary donation by Agnico Eagle (in concept, it is a collaboration with the Hamlet and researchers, that Agnico Eagle could ~~facility~~ **facilitate** and could potentially include **a** research program, engineering considerations, construction, ongoing monitoring and monitoring training). **Further to AEM's request for consideration of a complementary offsetting measure in the Hamlet of Baker Lake, please ensure any such proposals follow the direction provided in DFO's Fisheries Productivity Investment Policy: A Proponent's Guide to Offsetting which can be viewed:**<http://www.dfo-mpo.gc.ca/pnw-ppe/offsetting-guide-compensation/index-eng.html>



Complementary Measures

Complementary measures are investments in data collection and scientific research related to maintaining or enhancing the productivity of commercial, recreational or Aboriginal fisheries. In areas where there are limited opportunities for measures to offset fisheries productivity losses and where there is limited understanding or data on fisheries populations, complementary measures may be considered in addition to other offsetting measures. Complementary measures may comprise up to 10% of the required amount of offsetting; the remaining 90% of the offset amount must consist of habitat enhancement, restoration or creation offsetting measures. Complementary measures are not regarded as offsetting measures on their own because they generally do not give rise to measurable, on-the-ground, fisheries conservation outcomes. However, they may indirectly support meeting these outcomes.

Complementary measures may be considered when they take into account the guiding principles outlined in [section 2.2 of this guide](#). For example, complementary measures such as data collection and scientific research should be designed to fill any significant knowledge gaps regarding fisheries productivity such that fisheries management objectives or local restoration priorities may be established, and provide benefits that are in addition to any existing research or data collection programs. In addition, complementary measures must be undertaken in a transparent, scientifically robust and timely manner by a qualified individual or organization approved by the Department. Complementary measures may not replace monitoring requirements related to the offsetting measures.

Complementary measures should only be considered in exceptional circumstances such as in remote, pristine areas where there is a lack of information about fisheries productivity and where offsetting opportunities are limited. The application of these measures is determined on a case-by-case basis, in consultation with DFO. A sound rationale describing why other offsetting methods are not appropriate for fulfilling the entire offset requirement, and a detailed plan outlining how the proposed complementary measure will be carried out, evaluated, and communicated, will both be required.

Chemical or Biological Manipulations

This group of offsetting measures includes chemical manipulation of water bodies, stocking of fish or shellfish, and management or control of aquatic invasive species. These measures should be used only when the other groups of offsetting measures are not available, and only under specific circumstances, such as where the site-specific issues are well understood, the limitations to fisheries productivity are known, and fisheries management plans contain clear objectives for the fishery. Such methods may be considered where they conform to the guiding principles outlined in [section 2.2 of this guide](#).

When chemical or biological manipulations are proposed as potential offsets, the proponent must provide a sound rationale to demonstrate how the measure will benefit fisheries productivity. The rationale should also provide scientifically defensible evidence of the successful application of the measure under similar conditions (e.g., similar aquatic ecosystems).

- In summary, Agnico Eagle is looking to DFO to provide some opinions and feedback regarding shoreline layer issue (provided via Whale Tail IR's), proposed offsetting measures (initial comments provided via Whale Tail IR's), time lag considerations, and HSIs (further discussion on time lag calculations and HSI's with DFO's expert being worked on) by the new year and ideally by no later than mid-January, in order to move forward with developing final offsetting plan in collaboration with DFO. Agnico Eagle also understands that opinions on approaches may change based on the review process.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Aquatic Ecology - 03
Re:	Final fish habitat offsetting plan		

Reference to FEIS: Appendix 8-E - Conceptual Offsetting Plan

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent describes changes to the HEP used for the Whale Tail Pit based on the DFO report findings.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle requests clarification on which “DFO report findings”, the KIA are referring to. Presuming the KivIA are referring to the DFO (August 2016) “Review of Habitat Evaluation Procedure (HEP) Input parameters and model results for the Meadowbank Gold Mine Project”, Agnico Eagle has incorporated changes in the HEP including, but not limited to:

- Incorporating an equal fisheries species weightings factor;
- Addressing the unmapped areas of concern; and
- Proposed additional offsite offsetting projects that will reduce the time-lag effect and increase the offset ratio

Agnico Eagle will continue to work with the DFO during the authorization phase of the project to complete a final offsetting plan that is acceptable to the DFO, HTO, and KivIA.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Aquatic Ecology - 04
Re:	Final fish habitat offsetting plan		

Reference to FEIS: Appendix 8-E - Conceptual Offsetting Plan

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent document concrete examples of where fish habitat offsetting plans have resulted in full compensation in a similar environment.

Agnico Eagle’s Response to Information Request / Recommendation:

To our knowledge, there are few examples of “full compensation” in Nunavut, however Agnico Eagle has concrete examples of successful implementation of fish habitat offsetting features that have been constructed at Meadowbank. Specifically, Agnico Eagle has constructed spawning pads along the AWAR and dike face fish habitat and results demonstrate creation of fish habitat has been successful, that fish are utilizing these areas and that they are productive. Monitoring has been conducted since 2009 and updated results are presented in Appendix G.8 of the 2015 Meadowbank Annual Report. Results show that constructed spawning pads at stream crossing R02 along the AWAR are stable and generally, condition factors of adult fish, population size distributions and timing of migration were within the range of values seen in previous years, confirming continued use of this area by Arctic grayling. Larval drift rates of collection continue to exceed those observed prior to construction of the spawning pad, suggesting a net positive increase in impact on Arctic grayling reproduction, either through direct increased use or reduced pressure on upstream spawning areas.

Meadowbank onsite dike face habitat has also been evaluated and monitoring results indicate that interstitial water quality within the dike faces have met CCME guidelines for aquatic life, and periphyton coverage continues healthy periphyton community growth with increasing biomass as compared to values observed in 2013, indicating suitable conditions for growth. Angling and underwater motion camera monitoring dike faces have proved to be a successful non-lethal program that demonstrated continued fish use of the dikes as habitat. A total of 85 fish were caught through angling and there were no mortalities. A total of 32 fish were captured on camera during the underwater motion camera program.

Respectfully, Agnico Eagle recommends KivIA solicit DFO expert opinion on documenting concrete examples of where fish habitat offsetting plans have resulted in full compensation in a similar environment.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Aquatic Ecology - 05
Re:	Habitat Compensation Monitoring Plan		

Reference to FEIS: Habitat Compensation Monitoring Plan developed in consultation with DFO during the Phaser Lake authorization phase (Agnico Eagle 2016d)

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent supply the Habitat Compensation Monitoring Plan (HCMP) developed in consultation with DFO during the Phaser Lake authorization phase (Agnico Eagle 2016d).

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle will provide a “final” HCMP, that incorporates Phaser Lake offset monitoring to DFO and KivIA by February 28, 2017.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Freshwater Environment - 01
Re:	Emergency Spillway of WRSF		

Reference to FEIS: Appendix 8-B.2: Water Management Plan

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent supply information about emergency spillway (location, height, and length) of the waste rock storage and other dykes in case of a flood event occurs such as PMP and its related dam break analysis.

Agnico Eagle’s Response to Information Request / Recommendation:

The design, operation, and associated water management of the Whale Tail Waste Rock Storage Facility dike is described in Section 3 of Appendix 8 B.2 - Whale Tail Pit Water Management Plan. All dikes have been designed to meet the Canadian Dam Association of Dam Safety Guidelines (CDA 2014) and have taken into account flood events such as PMP. More specifically, the Whale Tail WRSF dike does not have a spillway as it has sufficient capacity to accommodate 1 year of accumulation; according to the CDA standards the design of the WRSF dike is classified as “low” consequence of failure structure.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Freshwater Environment - 02
Re:	Monitoring Locations for all Surface Quality Parameters		

Reference to FEIS: Volume 8 – Monitoring, Mitigation, and Management Plans

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent supply the locations (map) of all monitoring points (not only TSS) at the Project (Whale Tail) site during all phases of the Project.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle refers the KivIA to Section 2.3.6, Figures 2-6, 2-7, 2-8 and 2-9, and Table 3-3 of Appendix 8-B.3, which presents the locations of all site monitoring points, at all phases of the project for surface water quality parameters (not only TSS) for each sample location.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Noise and Vibrations - 01
Re:	Points of reception for noise impacts		

Reference to FEIS: Volume 4, section 4.4.1.2

Information Request / Recommendation Made By Interested Party:

Provide predictive noise and vibration impacts at culturally sensitive points of reception.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle’s refers the KivIA to Information Request response HC_14a, which includes figures showing pit operation noise level predictions superimposed over culturally sensitive points identified in Figures 3-1 and 3-2 of the Inuit Qaujimajatuqangit (IQ) baseline report (Volume 7, Appendix 7-A) for the Project. The HC_14a figures show predicted Project noise levels across the extended polygons that the IQ baseline report identified as winter travel routes, potential archaeological sites, grave sites, caching areas, camping areas, spirits/haunted areas, caribou harvesting areas and fishing sites. None of the cultural sites shown in the HC_14 figures represent occupied dwellings. Moreover, the culturally sensitive points recorded are based primarily on past use by local stakeholders, and no specific traditional land and resource or cultural sites that are currently used were identified in the project area during baseline studies.

Table KivIA -Noise01-1 presents noise level predictions from conventional (i.e., non-blasting) noise sources associated with pit operations at the “Discrete Receptor” locations considered in the Project FEIS climate and meteorology and air quality assessments (see Sections 4.2 and 4.3 of the Project FEIS). Table KivIA-Noise01-2 presents haul road operation noise level predictions at these same “Discrete Receptor” locations. Table KivIA-Noise01-3 presents noise and vibration predictions for blasting associated with pit operations at these same “Discrete Receptor” locations. None of the “Discrete Receptors” listed in the tables below represent occupied dwellings. All of the “Discrete Receptors” listed in the tables below are based primarily on past use by local people, and no specific traditional land and resource or cultural sites that are currently used were identified in the project area during baseline studies.

Table KivIA-Noise01-5: Pit Operations Noise Level Predictions - Conventional Sources

Discrete Receptor	UTM Coordinates		Existing Ambient Noise Level [dBA]	Pit Operations Project Noise Level [dBA]		Pit Operations Cumulative Noise Level [dBA]	
	Northing [m]	Easting [m]		Summer	Winter	Summer	Winter
Grave Site 2	634234	7246486	30	-- ^a	-- ^a	30	30
Grave Site 3	583533	7249635	30	-- ^a	-- ^a	30	30
Grave Site 4	602840	7251875	30	35	36	36	37
Grave Site 5	608952	7244985	30	25	26	31	31
Grave Site 29	590991	7249714	30	19	19	30	30
Fishing Marker	631472	7229489	30	-- ^a	-- ^a	30	30
Muskox Area	625925	7253043	30	17	17	30	30
Fishing Area	631154	7246367	30	-- ^a	-- ^a	30	30
Caching Area 1	626296	7243523	30	-- ^a	9	30	30
Caching Area 2	618910	7250697	30	23	25	31	31

^a Noise level is too small to be meaningfully quantified.

Table KivIA-Noise01-6: Haul Road Operations Noise Level Predictions

Discrete Receptor	Approximate Distance to Nearest Point on Haul Road [km]	Existing Ambient Noise Level [dBA]	Pit Operations Project Noise Level [dBA]		Pit Operations Cumulative Noise Level [dBA]	
			Summer	Winter	Summer	Winter
Grave Site 2	12	30	17	18	30	30
Grave Site 3	28	30	-- ^a	-- ^a	30	30
Grave Site 4	7.0	30	24	27	31	32
Grave Site 5	6.0	30	26	29	31	33
Grave Site 29	20	30	-- ^a	-- ^a	30	30
Fishing Marker	2.3	30	36	40	37	40
Muskox Area	9.0	30	21	23	31	31
Fishing Area	11	30	18	20	30	30
Caching Area 1	5.4	30	27	30	32	33
Caching Area 2	3.8	30	31	34	34	35

^a Noise level is too small to be meaningfully quantified.

Table KivIA-Noise01-7: Pit Operations Noise and Vibration Level Predictions – Blasting

Discrete Receptor	Approximate Distance to Nearest Blast Site [km]	Peak Particle Velocity – Ground Vibration [mm/s]	Peak Pressure Level – Airborne Noise [dBZ]
Grave Site 2	28	0	89
Grave Site 3	24	0	90
Grave Site 4	5.4	1	104
Grave Site 5	10	0	98
Grave Site 29	17	0	93
Fishing Marker	36	0	86
Muskox Area	19	0	92
Fishing Area	25	0	90
Caching Area 1	22	0	91
Caching Area 2	12	0	97

The Project FEIS assessed potential impacts from conventional noise sources using Permissible Sound Level (PSL) limits from the AER guidance document (AER 2007). As discussed in the Project FEIS the relevant PSL limits are as follows:

- Summer, daytime: 50 dBA;
- Summer, nighttime: 40 dBA;
- Winter, daytime: 55 dBA; and
- Winter, nighttime: 45 dBA.

The pit operations cumulative noise levels presented in Table 1 comply with the PSL limits (summer and winter, daytime and nighttime) for all the “Discrete Receptors”. Likewise, the haul road operations cumulative noise levels presented in Table 2 comply with the PSL limits (summer and winter, daytime and nighttime) for all the “Discrete Receptors”.

The Project FEIS assessed potential impacts from blasting noise and vibration using limits from an Ontario Ministry of Environment (OMOE) guidance document (OMOE 1978). As discussed in the Project FEIS the relevant blasting limits are as follows:

- Peak Particle Velocity (PPV): 10 mm/s; and
- Peak Pressure Level (PPL): 120 dBZ.

The pit operations blasting levels presented in Table 3 comply with both the PPV and PPL limits for all the “Discrete Receptors”.

Based on the results presented in Tables 1, 2, and 3 it can be concluded that there will no adverse impacts from conventional Project noise sources or from Project blasting at any of the culturally sensitive points of reception (i.e., “Discrete Receptors”) considered in the Project FEIS.

References:

AER (Alberta Energy Regulator). 2007. Directive 038: Noise Control.

OMOE (Ontario Ministry of Environment). 1978. *Model Municipal Noise Control By-Law – Final Report*.
Noise Pollution Control Publication 119.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Noise and Vibrations - 02
Re:	Project footprint		

Reference to FEIS: Volume 4, section 4.1.3.3

Information Request / Recommendation Made By Interested Party:

Provide mapping that shows the "project footprint" and an estimation of impacts at 1.5 km from this line.

Agnico Eagle's Response to Information Request / Recommendation:

Figure 4.4-2 of the FEIS presents a plot showing predicted pit operations noise levels across the local study area and regional study area under summer propagation conditions. Figure 4.4-3 of the FEIS presents a plot showing predicted pit operations noise levels across the local study area and regional study area under winter propagation conditions. In Figure 4.4-2 and Figure 4.4-3, the Project footprint is denoted by shaded polygons labelled "Borrow Source", "Infrastructure", and "Proposed Haul Road".

In response to KivIA's information request, Figure 4.4-2 and Figure 4.4-3 have been updated to include polygons denoting a 1.5 km buffer surrounding the Project footprint. The updated figures are attached.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Noise and Vibrations - 03
Re:	Study areas		

Reference to FEIS: Volume 4, section 4.1.3.3

Information Request / Recommendation Made By Interested Party:

Provide additional rationale for the selection of the LSA and RSA distances, as they do not appear to be consistent with the Meadowbank FEIS, despite this being stated as the basis for selection.

Agnico Eagle’s Response to Information Request / Recommendation:

Volume 3, Section 3.3.1 explains the overall rationale used to identify appropriate effects study areas for each VC. In particular, Section 3.3.1 of the FEIS states:

“Selection of the boundary for effects study areas was based on the physical and biological properties of the VCs. In addition, effects assessment areas were designed to capture the maximum spatial extent of potential effects from the Project and other previous, existing, and reasonably foreseeable future developments.”

Specific LSA and RSA boundaries for the Project noise and vibration assessment were selected in keeping with the overall rationale described in Section 3.3.1 of the Project FEIS document.

The RSA boundary was established as a buffer surrounding the Project footprint at a distance of 7 km for consistency with the noise assessment completed as part of the Meadowbank FEIS. Discussion of the 7 km noise RSA used in the Meadowbank FEIS can be found in Section 4.15.1 of the Meadowbank FEIS document (Cumberland 2005a).

In accordance with research suggesting that noise sources farther than 5 km from the Project will not meaningfully influence cumulative noise levels in the area (Drew and South 2009), the LSA boundary was established as a buffer surrounding the Project footprint at a distance of 5 km. As identified in KivIA’s information request, the Meadowbank FEIS does not explicitly state the buffer distance used to establish the noise LSA – i.e., the Meadowbank noise assessment makes use of an LSA, but the specific dimensions of this LSA are not explicitly stated in either the main FEIS document (Cumberland 2005a) or the associated noise assessment document (Cumberland 2005b).

References:

Cumberland (Cumberland Resources Ltd.). 2005a. Meadowbank Gold Project – Environmental Impact Statement. October 2005.

Cumberland. 2005b. Meadowbank Gold Project – Noise Impact Assessment. October 2005.

Drew, T. and South, D. 2009. Cumulative Effects and the 1.5 km Boundary. Alberta Acoustics and Noise Association Spring Noise Conference. May 2009.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Noise and Vibrations - 04
Re:	Haul road construction impacts		

Reference to FEIS: Volume 4, section 4.4.3.1.1

Information Request / Recommendation Made By Interested Party:

Provide a discussion of haul road construction impacts with distance from the activity - e.g., the daytime sound level limit of 55 dBA is expected to be exceeded within X metres of the activity. This would allow for a more meaningful discussion of impacts as they relate to the actual concerns of the community.

Agnico Eagle's Response to Information Request / Recommendation:

Figure 4.4-1 of the FEIS presents plots showing predicted haul road construction noise levels as a function of distance from the construction activity for both summer and winter propagation conditions. For example, Figure 4.4-1 shows the distance at which haul road construction noise levels will decay to 55 dBA, 50 dBA, 45 dBA, etc. In response to the KivIA's information request, the haul road construction noise level predictions presented graphically in Figure 4.4-1 are reproduced in tabular form below (Table KivIA-Noise04-1).

Table KivIA-Noise04-8: Haul Road Construction Noise Level Predictions - Summer Propagation Conditions

Predicted Haul Road Construction Noise Level [dBA]	Distance from Construction Activity [m]
65	148
60	267
55	457
50 ^a	730
45	1114
40 ^b	1626
35	2273
30 ^c	3065
21	5000 ^d

^a This noise level represents the Alberta Energy Regulator Directive 038 (AER 2007) Permissible Sound Level (PSL) for daytime Project operations in summer. Note that this PSL does not apply to Project construction.

^b This noise level represents the Alberta Energy Regulator Directive 038 (AER 2007) PSL for nighttime Project operations in summer. Note that this PSL does not apply to Project construction.

^c This is the existing ambient noise level (for both daytime and nighttime) considered in the Project noise assessment.

^d This distance corresponds to the edge of the noise LSA.

For summer propagation conditions, Table KivIA-Noise04-1 shows that:

- haul road construction noise levels are predicted to decay to 50 dBA at 730 m from the construction activity;
- haul road construction noise levels are predicted to decay to 40 dBA at 1626 m from the construction activity; and
- haul road construction noise levels are predicted to decay to 30 dBA at 3065 m from the construction activity.

Table KivIA-Noise04-9: Haul Road Construction Noise Level Predictions - Winter Propagation Conditions

Predicted Haul Road Construction Noise Level [dBA]	Distance from Construction Activity [m]
65	198
60	355
55 ^a	572
50	863
45 ^b	1236
40	1701
35	2276
30 ^c	3025
21	5000 ^d

^a This noise level represents the Alberta Energy Regulator Directive 038 (AER 2007) PSL for daytime Project operations in winter. Note that this PSL does not apply to Project construction.

^b This noise level represents the Alberta Energy Regulator Directive 038 (AER 2007) PSL for nighttime Project operations in winter. Note that this PSL does not apply to Project construction.

^c This is the existing ambient noise level (for both daytime and nighttime) considered in the Project noise assessment.

^d This distance corresponds to the edge of the noise LSA.

For winter propagation conditions, Table KivIA-Noise042 shows that:

- haul road construction noise levels are predicted to decay to 55 dBA at 572 m from the construction activity;
- haul road construction noise levels are predicted to decay to 45 dBA at 1236 m from the construction activity; and
- haul road construction noise levels are predicted to decay to 30 dBA at 3025 m from the construction activity.

References:

AER (Alberta Energy Regulator). 2007. Directive 038: Noise Control. Approved February 16, 2007.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Noise and Vibrations - 05
Re:	Whale Tail Pit operations		

Reference to FEIS: Volume 4, section 4.4.3.2.1

Information Request / Recommendation Made By Interested Party:

Provide a discussion of pit operation impacts within the LSA, including at discrete points of cultural significance to the community.

Agnico Eagle’s Response to Information Request / Recommendation:

Please refer to KivIA-IR-Noise and Vibrations-01 for a detailed response to this information request.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Noise and Vibrations - 06
Re:	Haul road operations impacts		

Reference to FEIS: Volume 4, section 4.4.3.3

Information Request / Recommendation Made By Interested Party:

Provide a discussion of haul road operation impacts with regard to distance from the operations, rather than only focusing on the outer boundary of the study area. This would allow for a more meaningful discussion of impacts as they relate to the actual concerns of the community.

Agnico Eagle's Response to Information Request / Recommendation:

Figure 4.4-4 of the FEIS presents plots showing predicted haul road operation noise levels as a function of distance from the haul road for both summer and winter propagation conditions. For example, Figure 4.4-4 shows the distance at which haul road operation noise levels will decay to 55 dBA, 50 dBA, 45 dBA, etc. In response to the KivIA's information request, the haul road operation noise level predictions presented graphically in Figure 4.4-4 are reproduced in tabular form below.

Table KivIA-Noise06-10: Haul Road Operation Noise Level Predictions - Summer Propagation Conditions

Predicted Haul Road Operation Noise Level [dBA]	Distance from Centre of Haul Road [m]
65	25
60	66
55	180
50 ^a	421
45	836
40 ^b	1490
35	2551
30 ^c	4041
28	5000 ^d

a This noise level represents the Alberta Energy Regulator Directive 038 (AER 2007) Permissible Sound Level (PSL) for daytime Project operations in summer.

b This noise level represents the Alberta Energy Regulator Directive 038 (AER 2007) PSL for nighttime Project operations in summer.

c This is the existing ambient noise level (for both daytime and nighttime) considered in the Project noise assessment.

d This distance corresponds to the edge of the noise LSA.

For summer propagation conditions, Table KivIA-Noise06-1 shows that:

- haul road operation noise levels are predicted to decay to 50 dBA at 421 m from the centre of the haul road;

- haul road operation noise levels are predicted to decay to 40 dBA at 1,490 m from the centre of the haul road; and
- haul road operation noise levels are predicted to decay to 30 dBA at 4,041 m from the centre of the haul road.

Table KivIA-Noise06-11: Haul Road Operation Noise Level Predictions - Winter Propagation Conditions

Predicted Haul Road Operation Noise Level [dBA]	Distance from Centre of Haul Road [m]
65	41
60	129
55 ^a	362
50	757
45 ^b	1368
40	2269
35	3576
31	5000 ^c
30 ^d	5375

^a This noise level represents the Alberta Energy Regulator Directive 038 (AER 2007) PSL for daytime Project operations in winter.

^b This noise level represents the Alberta Energy Regulator Directive 038 (AER 2007) PSL for nighttime Project operations in winter.

^c This distance corresponds to the edge of the noise LSA.

^d This is the existing ambient noise level (for both daytime and nighttime) considered in the Project noise assessment.

For winter propagation conditions, Table KivIA-Noise06-2 shows that:

- haul road operation noise levels are predicted to decay to 55 dBA at 362 m from the centre of the haul road;
- haul road operation noise levels are predicted to decay to 45 dBA at 1368 m from the centre of the haul road; and
- haul road operation noise levels are predicted to decay to 30 dBA at 5375 m from the centre of the haul road.

References:

AER (Alberta Energy Regulator). 2007. Directive 038: Noise Control. Approved February 16, 2007.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Noise and Vibrations - 07
Re:	Noise monitoring		

Reference to FEIS: Volume 4, section 4.4.7

Information Request / Recommendation Made By Interested Party:

Provide a project-specific noise management plan.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle refers the KivIA to Volume 8, Table 8.2-1 that provides a link to the approved Noise Monitoring and Abatement Management Plan. The same approaches for noise monitoring and abatement presented in this plan will be applied to Whale Tail Pit location. Agnico Eagle does not believe a separate plan is needed for the Whale Tail Pit location as it is important to Agnico Eagle that the Meadowbank *Material Management, Emergency Response, Environmental Monitoring* and other operational plans remain holistic, operationally seamless and functional.

Project construction and operations will be comparable to activities that are currently ongoing at the Meadowbank Mine. Therefore, noise management plans developed for the Meadowbank Mine (Agnico Eagle 2009, 2013) can be applied directly to the Project.

Specific details on how the Meadowbank Mine noise management plans will be applied to the Project are provided in Section 4.4.7 of the FEIS:

- “...yearly noise monitoring will be conducted at four locations in the vicinity of the Project”;
- “...monitoring locations will be selected and adjusted as Project activities evolve, but an appropriate starting point would be to monitor noise levels once each year at the same four receptor locations used for baseline monitoring”;
- “...monitoring will be conducted in general accordance with... AER Directive 038”;
- “...monitoring results will be compared to the same target values considered in the Meadowbank Mine noise management plans and to model predictions...”; and
- “If monitored noise levels exceed appropriate limits, Agnico Eagle will take appropriate actions to identify the specific cause of the exceedance and, if practical, to mitigate the relevant noise source”.

Agnico Eagle respectfully submits that development of a separate Project-specific noise management plan is not appropriate at this time.

References:

Agnico Eagle (Agnico Eagle Mines Limited). 2009. Noise Monitoring and Abatement Plan, Meadowbank Gold Project. Version 1.

Agnico Eagle. 2013. Noise Monitoring and Abatement Plan, Meadowbank Gold Project. Version 2.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Geotechnical - 01
Re:	Open pit slope design		

Reference to FEIS: Volume 1, Appendix 1-D, Figure 4.3

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent provide the locations on a figure of all thermistors for the Whale Tail open pit project area.

Agnico Eagle’s Response to Information Request / Recommendation:

Map showing the location of thermistor strings is presented in Knight Piesold letter No.:NB101-00622/04-A.01 and dated November 24, 2015. This document is located in Volume 6, Appendix 6-A, Attachment A of the FEIS.

The list of drillholes where thermistor string is installed is listed in Table 1.

Table 1 Summary of Instrumentation Installations

Drillhole ID	Drillhole Details					Target	Instrumentation Type
	Northing (m)	Easting (m)	Length (m)	Azimuth (°)	Dip (°)		
AMQ15-294	607,073	7,255,676	323	221	-45	Lake Talik	Thermistor & VWP
AMQ15-349A	607,065	7,255,628	203	204	-45	Lake Talik	Thermistor, VWP & EC
AMQ15-306	606,715	7,255,364	201	96	-45	Lake Talik	Thermistor & VWP
AMQ15-324	606,497	7,254,995	501	300	-45	Permafrost base	Thermistor & VWP
AMQ15-421	607,098	7,255,491	501	274	-51	Deep talik. Permafrost base	Thermistor & VWP
AMQ15-452	606,627	7,255,688	501	106	-50	Deep talik. Permafrost base	Thermistor & VWP

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Geotechnical - 02
Re:	Project design considerations		

Reference to FEIS: Volume 2, Appendix 2-J, Section 2.J-2.2

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent provide more detail based on thermistor, or other, data that supports these conclusions.

Agnico Eagle’s Response to Information Request / Recommendation:

These conclusions are based on the modelling results performed and establishing the baseline information for the deep permafrost in the area of the proposed open pit. The investigations, as well as the modelling, are summarized in Knight Piesold’s letter No.:NB101-00622/04-A.01 dated November 24, 2015. This document is located in Volume 6, Appendix 6-A, Attachment A of the FEIS.

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIVIA-IR-Geotechnical - 03
Re:	Dike construction dewatering		

Reference to FEIS: Volume 8, Appendix 8-A.2, Section 4, page 6

Information Request / Recommendation Made By Interested Party:

The KivIA requests that the Proponent provide a summary of “lessons learned” from the 2008 Second Portage Lake TSS event and document how their current procedures and protocols for in lake dike construction have changed to limited TSS events similar to the 2008 event.

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle refers KivIA to Appendix 8-A.2 – Water Quality Monitoring and Management Plan for Dike Construction and Dewatering which incorporates mitigation measures and the “lessons learned” from 2008 to 2011 Meadowbank dike construction and dewatering. Furthermore, Agnico Eagle refers the KivIA to Volume 1, Appendix 1-C – Design Drawings – “Whale Tail Dike”. Learning from the 2008 to 2011 dike construction at Meadowbank, the location of the footprint of the Whale Tail Dike was selected to reduce the likelihood of re-suspending sediment during dike construction material as it is located on a natural shoal that is shallow and has few or no natural deposition areas.

NATURAL RESOURCES CANADA

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_1
Re:	Baseline data on terrain and permafrost conditions		

Reference to FEIS: Vol. 1 (1.2.3, 1.2.5), App. 1-C, Vol. 5 (5.3.2, 5.3.6), App. 5-A

Information Request / Recommendation Made By Interested Party:

(a) Please provide clarification on field investigations (including geotechnical borehole drilling) conducted to provide detailed information on permafrost conditions such as ground ice content to support design of project components

(b) Please also provide information on plans to address uncertainties with respect to active layer thickness and ground ice conditions to support final design of project components.

Agnico Eagle's Response to Information Request / Recommendation:

At the time of the Application, the information regarding the overburden thickness was mainly provided from exploration drillholes and based on a dataset of approximately 1100 holes where the average estimated thickness of the overburden is 7.7 m.

Planning for 2017 is to add additional geotechnical drillholes dedicated to the investigation of the soils. These drillholes are positioned at planned locations of various infrastructures, such as dikes, ponds, and the waste rock storage facility and some thermistors will be grouted in place. The depth of the active layer can vary based on material type and water content, presence or absence of vegetation, proximity to water, and general topographic aspect (e.g., the direction the slope faces, either north, south, east, or west), but is relatively consistent over regional areas. The active layer is deeper in poorly drained low lying areas, and shallower in well drained areas such as ridge lines. As reported in the baseline report (Volume 5, Appendix 5-A of FEIS), the depth of the active layer for the site is based on observations made at Meadowbank Mine (located approximately 50 km southeast of the property) and ranges from 1.3 m in areas with shallow overburden to about 4 m adjacent to lakes (Cumberland 2005).

References:

Cumberland (Cumberland Resources Ltd.). 2005. Meadowbank Gold Project Baseline Physical Ecosystem Report.

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_2
Re:	Permafrost and talik distribution		

Reference to FEIS: Vol 6 (6.2.2.2), App. 6-A, 6-B, App. 8-A

Information Request / Recommendation Made By Interested Party:

Please clarify the ground temperature value utilized in the analysis to identify lakes having open taliks and whether the potential for higher ground temperature was considered in the analysis

Agnico Eagle's Response to Information Request / Recommendation:

The mean annual surface temperature (MAST) that Knight Piesold (2015) extrapolated from the geothermal gradient at Thermistor AMQ15-324 was used in the analysis to identify lakes with open taliks. This extrapolation produced a MAST of -10.4°C. The MAST recorded at the weather station at the Meadowbank Mine was -11.4°C (Knight Piesold 2015). Although the thermistor data is still considered to be stabilizing and a lower temperature is likely in the future, the higher temperature value of -10.4°C was used in our analysis as a conservative value (i.e., the calculation with -10.4°C results in a smaller lake having an open talik then when the MAST from the weather station [-11.4 °C] is used). It should be noted that an additional conservatism in the calculations is the lake temperature. A typical temperature range for northern lakes is +2 to +4°C based on literature review and past project experience in the area (Burn 2002; Golder 2003). To be conservative +4°C was selected in the analysis.

References:

- Burn, C.R. 2002. Tundra Lakes and Permafrost, Richards Island, Western Arctic coast, Canada. Canadian Journal of Earth Sciences, 39: 1281-1298.
- Golder, 2003. Report on Permafrost Thermal Regime Baseline Studies, Meadowbank Project, Nunavut. Golder Project No. 03-1413-078. Prepared for Cumberland Resources Ltd. Submitted 18 December 2003.
- Knight Piesold Consulting. 2015. Agnico Eagle Mines Ltd: Meadowbank Division – Whale Tail Pit – Permafrost and Hydrogeological Characterization. Dated November 24, 2015.

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_3
Re:	Design of water management/retention structures		

Reference to FEIS: Vol. 1, App. 1-C, Vol. 8, App. 8-A (8-A.1, 8-A.2), App. 8-B (8-B.2)

Information Request / Recommendation Made By Interested Party:

(a) Please clarify whether frozen foundation conditions are required to ensure adequate performance of the water management/retention structures.

(b) Please clarify whether the potential for thawing of foundations due to impoundment of water behind water retention structures (such as pond formation behind WRSF dike) has been considered in the stability and seepage analysis to support design of these structures.

(c) Please provide any information on thermal analysis conducted to support design of water retention/management structures and/or information on plans for such analysis to support detailed design.

Agnico Eagle's Response to Information Request / Recommendation:

- a) The design of the dikes and intent of the water management structures are described in Section 3 of Volume 8, Appendix 8-B.2. More specifically, for the North –East Dike, Mammoth Dike, Saddle-dam and Waste Rock Storage Facility dike, dikes are designed to be frozen or keyed into either bedrock or permafrost. For the Whale Tail Dike, a cutoff wall or equivalent will be constructed and therefore is not dependent on frozen conditions. In all cases, the proposed dikes have been designed to meet the Canadian Dam Association of Dam Safety Guidelines (CDA 2014). To ensure adequate performance, Agnico Eagle will closely monitor the structures according to the “Dewatering Dikes Operation, Maintenance and Surveillance Manual described in Volume 8, Section 8.3.1.1 and conduct annual geotechnical reviews according to a Type A water licence. Thermal behavior of the structures will be monitored with geotechnical instrumentation.
- b) For the WRSF Dike, a cutoff wall or equivalent will be constructed and therefore is not dependent on frozen conditions. To verify adequate performance, Agnico Eagle will closely monitor the structures according to the “Dewatering Dikes Operation, Maintenance and Surveillance Manual” described in Volume 8, Section 8.3.1.1 and conduct annual geotechnical reviews according to a Type A water licence. Thermal behavior of the structures will be monitored with geotechnical instrumentation. For other dikes, any seepage would flow in direction of the open pit and be captured by the contact water management facilities.
- c) Along with field investigation completed prior to construction, the design and thermal analysis conducted for the structures at Meadowbank has informed and supported the design of water retention/management structures at Whale Tail Pit. In accordance with typical general provisions of a Type A water licence, Agnico Eagle will provide detailed dike designs to the NWB prior to the construction of the Whale Tail dikes. To ensure adequate performance, Agnico Eagle will closely monitor the structures according to

the “Dewatering Dikes Operation, Maintenance and Surveillance Manual” described in Volume 8, Section 8.3.1.1 and conduct annual geotechnical reviews according to a water Licence, by conducting regular inspection and with geotechnical instrumentation.

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_4
Re:	Design of Waste Rock Storage Facility (WRSF)		

Reference to FEIS: Vol. 1, App. 1-C, Vol 2, Vol. 8, App. 8-A (8-A.1)

Information Request / Recommendation Made By Interested Party:

Please clarify whether any thermal analysis has been conducted to support design of WRSF including selection of design cover thickness and/or provide information on plans for any analysis to be conducted to support detailed design of the WRSF.

Agnico Eagle's Response to Information Request / Recommendation:

Thermal analysis data conducted at Meadowbank is continuing and will be updated to support the cover design thickness of the Whale Tail WRSF and associated closure plans. Modelling of the thermal regime of the Meadowbank WRSF is ongoing and based on thermal data collected since early operation at Meadowbank. Agnico Eagle refers NRCan to Section 5 -Waste Rock Management Activities and Section 9.1 Progressive Closure in the [Meadowbank Annual report](#). To ensure adequate performance and design, Agnico Eagle will closely monitor the structures in accordance with conditions in the Type A Water Licence. Geotechnical instrumentation will continue to be monitored at Meadowbank and results will be integrated to the updated thermal modelling, which will be used to predict the cover performance of the Whale Tail WRSF. Instrumentation will also be installed in the Whale Tail WRSF for future modelling. Agnico Eagle will review the thermal behavior of the WRSF cover at Meadowbank by September 2017. The review will include thermistor records, comparison between the climate of both sites, as well as physical properties of waste rock.

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_5
Re:	Impact of water level increase on shoreline erosion and permafrost		

Reference to FEIS: Vol. 1, Vol. 3, App. 3-C, Vol. 6, (sec 6.4.3.2)

Information Request / Recommendation Made By Interested Party:

Please clarify whether any assessments have been done to identify shoreline sections or sections of diversion channels that may be susceptible to erosion and the need for mitigation measures.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers NRCan to Section 6.3.2.2 of Volume 6, Section 3.3 from Appendix 6-C, and Section 2.1.3 of Appendix 8.B-2. Agnico Eagle has conducted a preliminary assessment of the shorelines and diversion channels; will continue to do so during the final design stage and will implement best management practices established at Meadowbank to prevent erosion during construction and operation of the Whale Tail Pit project.

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_6
Re:	Groundwater recharge		

Reference to FEIS: Vol.6 App.6-A and App6-B

Information Request / Recommendation Made By Interested Party:

Please provide a map of recharge areas and rates. Apply the recharge rates to the model and provide the updated results.

Agnico Eagle's Response to Information Request / Recommendation:

As presented in Section 3.1 of Appendix 6-A of the FEIS.

In areas of continuous permafrost there are two groundwater flow regimes: a deep groundwater flow regime beneath permafrost, and a shallow groundwater flow regime location in the active (seasonally thawed) layer near the ground surface. Because of the thick layer of low permeability permafrost, there is little to no hydraulic connection between these two flow regimes with the exception of open taliks below surface water bodies. Water in the active layer is stored in ground ice during the cold season, and then released when it thaws in late spring or early summer, providing flow to surface waterbodies (Woo 2011) as opposed to directly to the deep groundwater flow system.

The application of recharge, if applied to the model, would be in areas directly underlain by permafrost and thus separated from the deep groundwater flow regime represented in the model. Recharge would contribute to the shallow groundwater flow regime located in the active (seasonally thawed) layer near the ground surface. Rather than applying recharge to the ground surface in the numerical groundwater model for the approximately 3 months that groundwater flow occurs within the shallow active layer, the volume of water within the active layer was accounted for within the surface water models. In the surface water models all precipitation was assumed to be directed to the lake within the topographic drainage area.

References:

Woo, M.K. 2011. Linking Runoff to Groundwater in Permafrost Terrain. J.A.A. Jones (ed.), Sustaining Groundwater Resources, International Year of Planet Earth, 119 DOI 10.1007/978-90-481-3426-7_8, Springer Science+Business Media B.V. 2011. Pp 119-129.

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_7
Re:	Groundwater modelling		

Reference to FEIS: Vol.6, App6-B

Information Request / Recommendation Made By Interested Party:

Explain the proponent's decision not to model the effect of density.

Agnico Eagle's Response to Information Request / Recommendation:

The effects of density on groundwater inflow quantity and quality are negligible during advancement of the open pit. The reason for this is that the density gradients are much smaller than the hydraulic head gradients that are expected to develop in response to mine dewatering. A method to measure the relative importance of density gradients is presented in Davies (1989).

To consider the potential effects of density-driven solute transport for mining at the Whale Tail Project, a driving force ratio was calculated using:

$$DFR = \frac{\Delta\rho |\nabla E|}{\rho_f |\nabla H_f|}$$

Where: DFR = driving-force ratio [dimensionless]

$\Delta\rho$ = difference between actual fluid density and relative fluid density [g/cm³]

ρ_f = density of fresh water [g/cm³] or 1000 g/cm³

$|\nabla E|$ = magnitude of the gradient of elevation [dimensionless]

$|\nabla H_f|$ = magnitude of the equivalent-freshwater-head gradient [dimensionless]

A driving-force ratio greater than 0.5 is considered a threshold where density-related gravity effects may become significant (Davies 1989).

The maximum total dissolved solids concentration in the vicinity of the open pit is 750 mg/L, which results in a difference in density ($\Delta\rho$) relative to freshwater (1000 g/cm³) of 0.6 g/cm³. At the end of mining, for a simplified vertical flow path near the pit, the gradient of elevation and equivalent-freshwater-head would be approximately 1 m/m. Considering these values, a driving-force ratio of 0.0006 is estimated at the Whale Tail Project, indicating that during mining, the steep hydraulic gradients will overwhelm density-related gravity effects.

It should be noted, that considering density in the brackish water upwelling would slightly reduce the predicted concentrations because buoyancy effects would tend to impede the upward movement of higher total dissolved solid (TDS) groundwater. Therefore, our analysis during mining is conservative.

References:

Davies, P.B. 1989, Variable-Density Ground-Water Flow and Paleohydrology in the Waste Isolation Pilot Plan (WIPP) Region, Southeastern New Mexico, U.S. Geological Survey Open-File Report.

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_8
Re:	Groundwater modelling		

Reference to FEIS: Vol.6, App6-B

Information Request / Recommendation Made By Interested Party:

Please review the predicted TDS concentration using different settings of boundary conditions. Fixed boundary conditions should be set at the bottom of the model to 200,000 mg/l as shown in Figure 5 (p. 12 of App.6 A Hydrogeology Baseline Part 1-IAAE.pdf). The top boundary condition should be free flux condition. Groundwater flow model must be able to use switch boundary condition for this purpose (FEFLOW allows boundary constraints). Present the outflow concentration over the lifetime of the mine. Pond boundary condition should be linked to the calculated outflow concentrations. Provide concentration maps before exploitation, at the end of mining and at post-closure. Simulate time needed to get back to initial concentration from the time of closure. Use backward travel time to provide a map of the maximum distance to define the water origin envelope reaching the pit.

Agnico Eagle's Response to Information Request / Recommendation:

A no flow boundary was assigned along the bottom of the model at a depth of 1.6 km below ground surface (-1,500 masl). Flow at greater depth is expected to be negligible, and therefore, to have negligible impact on model predictions with respect to groundwater quantity and quality. The assumption of a constant concentration along the base of the model would require concurrent assignment of a constant head to allow in/out mass flux across this boundary (assignment of a constant concentration boundary alone would have no significant effect on model predictions). This would assume an infinite source of groundwater and total dissolved solids (TDS) from greater depths to maintain this concentration, which is unlikely to be the case as the hydraulic conductivity of bedrock typically decreases with increasing depth. Reductions in hydraulic conductivity with depth have been observed at other sites in the Canadian Shield which supports this assumption (Stevenson et al. 1996a,b; Ophori et al. 1996; Ophori and Chan 1994; Bieber et al. 2006; Stober and Bucher 2007).

Figure 6-B-6 of Appendix 6-B presents the initial TDS concentrations near Whale Tail Pit prior to mining. Figure 6-B-9 and Figure 6-B-11 of Appendix 6-B present the predicted total dissolved solids at the end of mining for Base Case Scenario and the Environmental Assessment Conservative Scenario respectively. As presented on these figures, minimal upwelling is observed in the vicinity of the pit at the end of mining, which supports the conclusion that the modelling approach for the base of the model is reasonable and would not affect the predicted TDS concentrations in the discharge to Whale Tail Pit.

Specified head boundaries were assigned to Layer 1 of the model to represent lakes in the model domain that were assumed to have open taliks connected to the deep groundwater flow regime. Each of these boundaries was set to the surveyed average lake elevation. Specified concentration boundaries were assigned to these lakes and were assigned a concentration of zero milligrams per litre (mg/L). While this simplified (and numerically stable) approach to the lake boundary conditions does not allow for the

prediction of TDS concentrations discharging to the surrounding lakes, it does not affect the ability of the model to predict maximum TDS concentrations in the groundwater discharge to the attenuation pond or Whale Tail Pit.

During operations (pit dewatering and pit filling), time-variable specified head boundaries were assigned to Layer 1 of the model to represent the Whale Tail Lake dewatering and back-flooding in the area within the dike. During dewatering and re-flooding of Whale Tail Lake, a free exit transport boundary condition was assigned to the diked portion of the lake, which allows groundwater to exit the model at the predicted concentration of TDS within groundwater. Mass and flow was not allowed to enter or exist along the permafrost boundaries under the assumption that the permafrost is essentially impermeable.

For simplicity and to be conservative, a specified concentration of 499 mg/L was assigned to the seepage from the attenuation pond to the groundwater flow system. A free exit transport boundary condition was assigned to the groundwater discharge to the attenuation pond, and the behavior of this boundary during inflow or outflow was controlled using boundary constraints. The assigned concentration of 499 mg/L represents the average TDS concentration within the talik in the area of the open pit, and assumes that the water in the pond will be dominated by groundwater inflow to Whale Tail Pit that will be placed in the attenuation pond during mining. In reality, the TDS concentration in the pond outflow will likely be lower as the pond receives additional fresh water sources (both surface water inputs and less saline groundwater inflow), and because initially the pit intersects less saline water. Overall, during mining no water from the attenuation pond was predicted to reach the pit and during pit refilling, the contribution of water to the pit lake from the attenuation pond was predicted to be less than or equal to one per cent.

At post-closure density transport will dominate. At other mining projects in the north in the Canadian Shield it was found that to get near to initial concentrations it would take thousands of years, the associated groundwater fluxes are very low and the effects to the environment are negligible.

References:

- Bieber, C., Chorley, D., Zawadzki, W., and Reinson, J. 2006. Hydrogeologic Data Collection and Development of Conceptual Models to Predict Mine Inflow Quantity and Quality at Diavik Diamond Mine, NWT, *59th Canadian Geotechnical Conference and 7th Joint CGS/IAH-CNC Groundwater Specialty Conference*, Vancouver, BC, Canada. M6-B Data Collection II.
- Ophori, D.U., Brown, A., Chan, T., Davison, C.C., Gascoyne, M., Scheier, N.W., Stanchell, F.W., and Stevenson, D.R. 1996. Revised Model of Regional Groundwater Flow in the Whiteshell Research Area. AECL Whiteshell Laboratories, Pinawa, Manitoba.
- Ophori, D.U., and Chan, T. 1994. Regional Groundwater Flow in the Atikokan Research Area; Simulation of 18O and 3H Distributions. AECL-11083. Manitoba
- Stevenson, D.R., Kozak, E.T., Gascoyne, M., and Broadfoot, R.A. 1996b. Hydrogeologic Characteristics of Domains of Sparsely Fractured Rock in the Granitic Lac du Bonnet Batholith, Southeastern Manitoba, Canada. AECL-11558, Whiteshell Laboratories, Pinawa, Manitoba
- Stober, I, and Bucher, K. 2007, Hydraulic Properties of the Crystalline Basement. *Hydrogeology Journal*. 15: 213-224.

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_9
Re:	Groundwater modelling		

Reference to FEIS: Vol.6, App6-B

Information Request / Recommendation Made By Interested Party:

Please provide a 2D map of maximum drawdown area and describe the effect and impact on surface water.

Agnico Eagle's Response to Information Request / Recommendation:

Predicted drawdown at the end of mining for the Base Case Scenario and the Environmental Assessment Conservative Scenario were presented on Figure 6-B-9 and Figure 6-B-11 of Appendix 6-B (Volume 6). The predicted drawdown has also been reproduced for the Environmental Assessment Conservative Scenario in this response to provide additional resolution on the extent of drawdown for the most conservative scenario and this is presented as Figure 1 at the bottom of this response.

As presented in Volume 6 of the FEIS, budget analyses was performed to estimate the changes to pre-mining groundwater inflows and outflows from lakes with open taliks within the hydrogeology baseline study area (BSA) during mining and following closure as a result of the predicted drawdown. Table 6.2-6 of the FEIS presents a summary of the lakes within the hydrogeology BSA that had a predicted change (greater than one cubic metre per day) in groundwater inflow and outflow relative to pre-Project (current) conditions. These lakes included A16, A60, A65, A81, DS1, and DS2. As presented in Table 6.2-6 of the FEIS, changes in groundwater inflows/outflows at the end of mining ranged from 6 to 33% less than pre-project conditions. At post-closure, no change in groundwater inflow and outflow was predicted due to the re-establishment of near to pre-mining hydraulic gradients and groundwater flow directions once the open pit and dewatered portion of Whale Tail Lake are flooded. These changes in groundwater inflow/outflow rates are expected to be negligible compared to surface water discharge regimes, resulting in negligible effects to surface water levels (Volume 3, Appendix 3-C, Table 3-C-6, Surface Water Quantity Pathway #8).

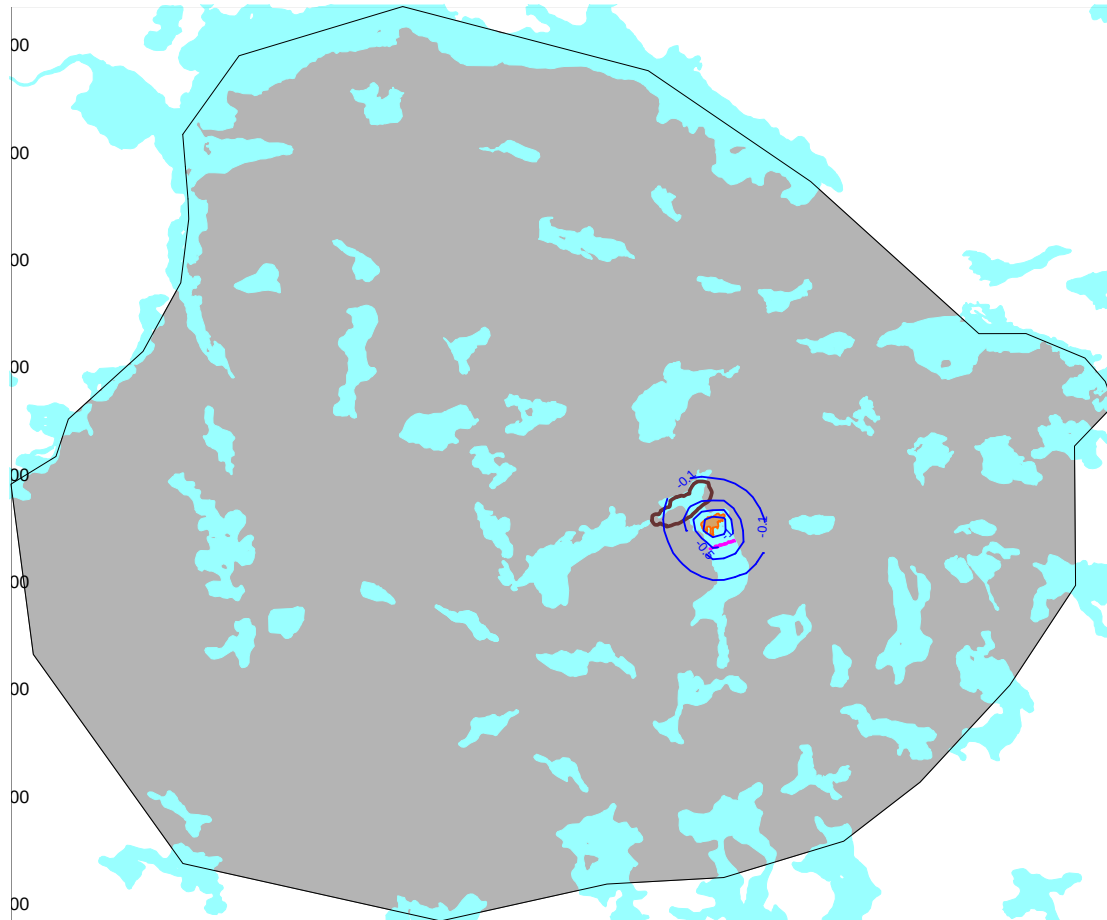


Figure 1: Predicted Drawdown at Base of Permafrost – End of Mining – Environmental Assessment
Conservative Scenario

Legend

- Area of Permafrost
- Lake with Open Talik
- 1 Drawdown Contour (m; negative number indications a reduction in hydraulic head relative to pre-mining conditions)

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_10
Re:	Groundwater modelling		

Reference to FEIS: Vol.6, App6-B

Information Request / Recommendation Made By Interested Party:

Please add these parameters in the sensitivity analysis.

Agnico Eagle's Response to Information Request / Recommendation:

Longitudinal and transverse dispersivity were assumed based on typical values published in literature (Schulze-Makuch 2005) and are considered reasonable for bedrock in the area of Whale Tail Pit. Uncertainty in the predicted total dissolved solid concentrations is considered adequately quantified by the sensitivity analysis presented in Section 6.B3.7.3 of Appendix 6-B of the FEIS. The greatest source of uncertainty in these predictions is the total dissolved solid depth profile. Furthermore, based on experience at other sites in the Canadian Shield longitudinal and transverse dispersity have less influence on predicted concentrations than bedrock hydraulic conductivity. This is because the hydraulic conductivity provides the primary control on advective transport of the deeper saline water as it migrates towards the pit in response to dewatering activities.

References:

Schulze-Makuch, D. Longitudinal Dispersivity Data and Implications for Scaling Behavior. Ground Water, V.43, No.3 May-June 2005 (pp. 443-456).

Interested Party:	Natural Resources Canada (NRCan)	Rec No.:	NRCan_11
Re:	Groundwater modelling		

Reference to FEIS: Vol.6, App6-B

Information Request / Recommendation Made By Interested Party:

The proponent will be required to update and calibrate the groundwater model based on groundwater quantity (inflow and head) and quality evolution. The monitoring plan must be regularly updated on the basis of the motoring results.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle agrees with this recommendation and will update the site water balance to include groundwater quantity and quality evolution throughout the mine's lifecycle as may be required under a Type A water licence. .

NUNAVUT IMPACT REVIEW BOARD

Interested Party:	Nunavut Impact Review Board (NIRB)	Rec No.:	NIRB-01
Re:	Characterization of residual effects and criteria for evaluating significance of residual impacts to vegetation, terrestrial wildlife and birds, surface water quality, fish and fish habitat.		

Reference to FEIS: Volume 3, Appendix 3-E

Information Request / Recommendation Made By Interested Party:

The Proponent should provide rationale or justification for using the same definitions for categories of criteria for the characterization of residual impacts on valued components representing vegetation, terrestrial wildlife and birds, surface water quality, fish and fish habitat. Specifically, the Proponent should further discuss the reasons why the criteria used in its evaluation are not valued component-specific.

In addition, the Proponent should provide, and justify, information on specific quantitative and/or qualitative thresholds/benchmarks used in determining the significance of residual effects on each of the valued components representing vegetation, terrestrial wildlife and birds, surface water quality, fish and fish habitat. The thresholds/benchmarks should present the limits of acceptable change in a measurable parameter(s) or state of a valued component.

Agnico Eagle’s Response to Information Request / Recommendation:

For succinctness the overarching definitions were provided in one table as they are consistent across these disciplines. However, the criteria are specific to the valued components (VC) because the criteria inherently included VC specific information in the effects analysis and assessment. The baseline conditions, measurement indicators, effects analysis, and resulting determination of significance are specific to each VC. For example, magnitude is measured against the baseline condition for each VC, and baseline conditions (e.g., population status and habitat amount and distribution) differ among valued components. Measurement indicators are described in Volume 3, Table 3.2.1 of the FEIS. Baseline conditions and effects from changes in measurement indicators are described throughout the FEIS for each discipline. The impacts are specific to the valued components as described in the pathway tables (Volume 3, Appendix 3-C).

The approach used to assess significance is consistent with Agnico Eagle’s most recent final environmental impact statement for the Meliadine Project. As stated of the Whale Tail Pit FEIS in Section 3.7.2: “*The evaluation of significance for biophysical VCs considers the entire set of primary pathways that influence a particular assessment endpoint rather than explicitly assigned to each pathway. The relative contribution of each primary pathway and measurement indicator is used to determine the significance of the Project (and other developments) on an assessment endpoint*”. Assessment endpoints are described in Section 3.2.2 (Table 3.2.1 lists the assessment endpoints used in the FEIS) and are qualitative expressions of the significance threshold. Significance is a binary response and determined using the weight of evidence from the magnitude, geographic extent, and duration of effects due to changes in measurement indicators associated with the different pathways. The Project either has a significant impact or it does not; significance is not given a ranking of low, medium, or high.

Ideally, effect threshold values for significance of a VC are known, and changes in measurement indicators can be quantified accurately with a high degree of confidence to evaluate whether or not a threshold has been exceeded. However, critical thresholds such as amount or distribution of habitat required to maintain a population or the assessment endpoint are rarely available for most disciplines and vary by species and habitat type. Consequently, a detailed and transparent account of likely effects associated with estimated changes to each measurement indicator was provided for each valued component using available scientific literature, data collected in the study area, Agnico Eagle's experience in Nunavut, and logical reasoning (i.e., a weight of evidence, or reasoned narrative approach). Where guidelines/thresholds or benchmarks are available (e.g., surface water quality) they are incorporated into the effects assessment.

Interested Party:	Nunavut Impact Review Board (NIRB)	Rec No.:	NIRB-02
Re:	Spatial boundaries for air quality and noise and vibration		

Reference to FEIS: Volume 4, Section 4.1.3

Information Request / Recommendation Made By Interested Party:

The Proponent should provide rationale or justification for specific LSA and RSA boundaries used in the assessment of potential project impacts on air quality, and noise and vibration.

Agnico Eagle’s Response to Information Request / Recommendation:

Air Quality

The air quality modelling domain and receptor grid spacing is summarized in Figure 4-C-4 of Appendix 4C. A model domain of 60 km x 60 km, centered on the Whale Tail Pit was selected to determine the effects of the Project on air quality. The size and configuration of the modelling domain is consistent with existing “Air Quality Modelling Guidelines” provided by provincial regulators in Western Canada (i.e., BC, AB and SK). This guidance indicates that the selected model domain should be large enough such that predicted concentrations of criteria air contaminants should be approaching background concentrations near the edge of the modelling domain. Figures 4-C-6 through 4-C-18 plot isopleths of maximum plus background ground level concentrations for each CAC over different averaging periods (e.g., 1-hr, 24-hr, annual). The first color-contour of each figure is selected to roughly coincide with the background concentration of the CAC for that averaging period.

Using the 24-hr PM_{2.5} air quality standard as an example (see Figure 4-C-17), the air quality model predictions are in good agreement with the guidance documentation. Predicted 24-hr average concentrations of PM_{2.5} drop to below 7 µg/m³ (background = 6.6 µg/m³) for three of the four wind directions at the model boundary. The exception is the southern boundary, which is associated with the dominant wind direction in the region and for which predicted concentrations are between 7 and 14 µg/m³.

The model boundary does not include the entire length of the Haul Road from Whale Tail to Meadowbank because it would require a very large modelling domain, which would not produce more informative results.

Noise and Vibration

Specific LSA and RSA boundaries for the Project noise and vibration assessment were selected in accordance with the overall rationale for identifying spatial boundaries described in Section 3.3.1 of the FEIS. The RSA boundary was established as a buffer surrounding the Project footprint at a distance of 7 km for consistency with the noise assessment completed as part of the Meadowbank FEIS (Cumberland 2005a). In accordance with research suggesting that noise sources farther than 5 km from the Project will not meaningfully influence cumulative noise levels in the area (Drew and South 2009), the LSA boundary was established as a buffer surrounding the Project footprint at a distance of 5 km.

References:

Cumberland (Cumberland Resources Ltd.). 2005a. Meadowbank Gold Project – Environmental Impact Statement. October 2005.

Drew, T. and South, D. 2009. Cumulative Effects and the 1.5 km Boundary. Alberta Acoustics and Noise Association Spring Noise Conference. May 2009.

Interested Party:	Nunavut Impact Review Board (NIRB)	Rec No.:	NIRB-03
Re:	Spatial boundaries for vegetation and wildlife		

Reference to FEIS: Volume 5, Section 5.1.3

Information Request / Recommendation Made By Interested Party:

The Proponent should provide rationale/justification for not establishing LSA and RSA boundaries that are valued component specific for vegetation and wildlife.

Agnico Eagle's Response to Information Request / Recommendation:

As described in Volume 3, Section 3.3 (Spatial and Temporal Boundaries), selection of the boundary for effects study areas was based on the physical and biological properties of VCs. Section 5.1.3.1.2 describes that the LSA was defined to include the primary source of impacts (i.e. all direct effects), while the RSA is intended to capture the maximum spatial extent of potential effects from the Project (i.e., indirect effects).

Vegetation and wildlife share an LSA and RSA because the mechanisms for direct and indirect effects are largely the same for both VCs, and because impacts to vegetation are a pathway of effects to wildlife. The LSA includes all direct disturbance to Ecological Land Classifications and wildlife habitat, and changes that may occur immediately adjacent to the Project (such as may result from changes in drainage). The RSA is intended to describe the surrounding environment, and to capture larger scale processes that are relevant to both vegetation and wildlife (such as dust emissions), and sensory disturbance that may change wildlife behaviour (such as noise and smells).

TRANSPORT CANADA

Interested Party:	Transport Canada (TC)	Rec No.:	TC-01
Re:	Dike Construction and Dewatering of Mammoth Lake and Whale Tail Lake		

Reference to FEIS: Volume 1 1.1.10.2, Volume 1 1.2.5.4 Appendix 1-B, Appendix 1-C, Appendix 1-E

Information Request / Recommendation Made By Interested Party:

Transport Canada's Navigation protection Program (NPP) will require the following: A Notice Of Work form that will list out the water body details along with the specific types of work that will impact the water bodies; Transport Canada will need to conduct a navigability assessment on Mammoth Lake and Whale Tail Lake for the dewatering of the proposed Whale Tail Pit.

Transport Canada requests the following:

1. Characteristics of the Mammoth Lake and Whale Tail Lake

a) Do the physical characteristics of the waterway support carrying (floating and traversing) a vessel of any size (e.g. canoe/kayak) from one point to another?

2. Is there evidence of current use by the public, for navigation purposes, of Mammoth Lake and Whale Tail Lake as an aqueous route?

3. Is there evidence of past/historical public use, for navigation purposes, of Mammoth Lake and Whale Tail Lake as an aqueous route?

4. Is there a reasonable likelihood of use by the public, for navigation purposes, of Mammoth Lake and Whale Tail Lake as an aqueous route?

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle will provide TC a "Notice of Work" form and continue to work with TC in their evaluation of the navigability assessment of Mammoth Lake and Whale Tail Lake. Below are specific responses to the items below:

1. Mammoth Lake and Whale Tail Lake support carrying a vessel (i.e. a small boat or canoe) across the lake.
2. There is no evidence of current public use of Mammoth Lake and Whale Tail Lake as an aqueous route for navigation purposes.
3. Agnico Eagle refers TC to Volume 7, Appendix 7-A –Inuit Qaujimajatuqangit Baseline Report. Although the regional area has historical traditional land use, there is no evidence of historical public use, for navigation purposes, of Mammoth Lake and Whale Tail Lake as an aqueous route. Agnico Eagle refers TC to Section 2.0 of Appendix 6-K that provides photos of channels documenting the poor connectivity of the DS1 lake to A16 (Whale Tail Lake). From these photos it is evident that it is unlikely that these

headwater lakes would have been used as an aqueous route, as they would be challenging or impossible to canoe given their poor connection to the DS 1 downstream lakes.

4. There is no likelihood of use by the public, for navigation purposes, of Mammoth Lake and Whale Tail Lake as an aqueous route.

Interested Party:	Transport Canada (TC)	Rec No.:	TC-02
Re:	Intake on Nemo Lake and Whale Tail Lake, Diffuser on Mammoth Lake, Water Management Infrastructure, and Haul Roads		

Reference to FEIS: Volume 1 1.1.10.2, Volume 1 1.2.4.2, Volume 1 1.2.4.3, Volume 1 1.2.5.1, Volume 1, 1.2.5.5, Volume 1 1.2.7, Appendix 1-B, Appendix 1-C, Appendix 2-I, Volume 6 6.3.2.2.2, Appendix 6-D,

Information Request / Recommendation Made By Interested Party:

Transport Canada requests Agnico Eagle Mines Ltd. provide information whether they will choose to “Opt-In” to Transport Canada’s legislative regime and the NPA review process for any of the in-water works proposed in or on non-Scheduled waterways

Agnico Eagle’s Response to Information Request / Recommendation:

Agnico Eagle will not “opt-in” to Transport Canada’s legislative regime and NPA review process for the Intake on Nemo Lake and Whale Tail Lake, Diffuser on Mammoth, Whale Tail Dike, and other water management structures located at the Whale Tail Pit Project and the proposed expansion of the exploration access road to a haul road. Agnico Eagle refers TC to TC letter dated October 15, 2015 regarding the Amaruq Exploration Access Road. At this time, Agnico Eagle does not intend to alter the road alignment, culvert locations nor bridge design during the expansion of the exploration access road to a haul road. As a result, Agnico Eagle expects the original decision by TC regarding the exploration access road to carry forward into the proposed expansion to a haul road.

Interested Party:	Transport Canada (TC)	Rec No.:	TC-03
Re:	Aboriginal Consultation – Alteration of existing waterways, impacts to Aboriginal people's usage of navigable waterways		

Reference to FEIS: Volume 7 7.4.3.1, Appendix 7-A 3.5, Appendix 7-A 3.6

Information Request / Recommendation Made By Interested Party:

Transport Canada requests further details regarding Aboriginal groups' issues in relation to the historic, current, and future use of Mammoth Lake and Whale Tail Lake as an aqueous route. As such, Transport Canada requests information about whether Agnico Eagle Mines Ltd. has held any Aboriginal consultation activities with Aboriginal groups in the area to discuss any specific concerns related to potential adverse impacts on potential or established Aboriginal treaty rights of any in-water works to be submitted to Transport Canada.

Please provide consultation records of any consultation between Agnico Eagle Mines Ltd. and any Aboriginal group in the area who may have an interest in the use of Mammoth Lake and Whale Tail Lake as an aqueous route. Please provide information about Aboriginal consultations, including but not limited to: concerns raised by the Aboriginal groups as well as the measures taken by Agnico Eagle Mines Ltd. or proposed to be taken by Agnico Eagle Mines Ltd. to address those concerns. We are interested in concerns raised by Aboriginal groups generally, but we are particularly interested in any concerns raised by Aboriginal groups with respect to Transport Canada's potential approval(s) regarding works located at the location of works subject to approval under the Navigation Protection Act.

Agnico Eagle's Response to Information Request / Recommendation:

Agnico Eagle refers TC to Volume 2, Appendix 2-G- Consultation Log and Volume 7, Appendix 7-A – Inuit Qaujimajatuqangit Baseline Report which documents the concerns and results of numerous meetings, workshops, and consultations with Inuit and local stakeholders regarding the traditional land use of the project area. Agnico Eagle refers TC to Figure 3-1 and 3-2 of Appendix 7-A, which document the trails and harvest sites. Although there has been historical use of the region near the proposed Whale Tail haul road, hunting and fishing activities primarily occur opportunistically while traditional land users are enroute during the winter to other important traditional land use sites or while travelling to the Back River area by snowmobile (i.e., from Baker Lake to Gjoa Haven).