



ᐱᓕᓕᓐ ᐃᓂᐃᓐ ᑲᐅᐅᐅᓐᑲᓐᑲᓐ

**Kivalliq Inuit Association**

ᑲᓐᑲᓐᑲᓐᑲᓐ/P.O. Box 340, ᑲᓐᑲᓐᑲᓐᑲᓐ/Rankin Inlet, ᓂᓂᓂᓂᓂᓂ/Nunavut X0C 0G0

ᐅᓐᑲᓐᑲᓐ/Tel: (867) 645-5725 ᐱᓐᑲᓐᑲᓐᑲᓐ/Fax: (867) 645-2348/ᐱᓐᑲᓐᑲᓐᑲᓐᑲᓐ/Toll free: 1-800-220-6581

**PROJECT: Meadowbank Complex**

**DATE: July 06, 2020**

**SUBJECT: Review of 2019 Meadowbank and Whale Tail Annual Report**

## 1. Introduction

The Kivalliq Inuit Association (KIA) have conducted a review of the 2019 Annual Report for the Meadowbank Complex, including both the Meadowbank and Whale Tail sites. This document was submitted by Agnico Eagle Mines Ltd. (Agnico Eagle) to address requirements within the following authorizations:

### Meadowbank

- NWB Type A Water License 2AM-MEA1526;
- NIRB Project Certificate No. 004;
- DFO HADD Authorization NU-03-190 AWAR;
- DFO HADD Authorization NU-03-191 Mine Site;
- DFO Authorization NU-14-1046 Phaser Lake;
- CIRNAC Land Leases 66A/8-71-2 (AWAR) and 66A/8-72-5 (AWAR Quarries);
- KIA Production Lease KVPL08D280; and
- KIA Right of Way KVRW06F04.

### Whale Tail

- NWB Type A Water License 2AM-WTP1826;
- NWB Type B Water License 2BB-MEA1828;
- NIRB Project Certificate NO. 008;
- DFO HADD Authorization 16HCAA-00370;
- CIRNAC Land Leases 66H/8-02-1 (Whale Tail Haul Road) and 66H/8-01-4 (Whale Tail Haul Road Quarries);
- KIA Production Lease KVPL17D01;
- KIA Quarry Lease KVCA15Q01, KVCA15Q02, KVCA18Q01; and
- KIA Right of Way KVRW15F01.

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

- Hutchinson Environmental Sciences Ltd. (HESL), aquatic environment specialists
- Aurora Wildlife Research (AWR), terrestrial specialists, and
- GeoVector Management Inc. (GeoVector), geoscience specialists.

Agnico Eagle’s report consisted of the 2019 Annual Report itself, and the following 74 appendices:  
Appendix 1: Meadowbank and Whale Tail Commitments













Reviewer	#	Reference	Comment	Recommendation
HESL on behalf of KIA	4.	2019 Annual Report; 8.5.3.1.7 Portage Rock Storage Facility (ST-16)	<p><i>“The KIA requested that Agnico continue monitoring until there is a 5 year period of non-detect cyanide results. In 2018 (5 previous year), the monitoring indicated that yearly average for CN levels does not exceed the CCME guideline, the MDMER or Water License limit for effluent discharge into the environment for NP2, NP1 and downstream lakes, Dogleg and Second Portage. Thus, based on the analysis of the previous results, Agnico Eagle has suspended the current program in 2019. However, ECCC’s comment regarding the 2018 Annual Report recommended that Agnico continue to monitor Lake NP-2 on a yearly basis for the same suite of parameters as have been measured since 2014. Water quality results for 2019 ST-16 and NP-2 South can be found in Table 8-19 and 8-20, respectively. Monitoring stations are illustrated on Figure 1.”</i></p> <p>Table 8-19 indicates that WAD cyanide decreased between 2014 and 2016, but increased again in 2017. WAD cyanide was again below detection in 2018 and 2019. The intent of the initial request for cyanide monitoring was to demonstrate that the source had been mitigated and cut off. We remain concerned with potential seepage from the tailings facility given that cyanide concentrations as measured at ST-16 are inconsistently low. We therefore concur with ECCC’s recommendation to continue monitoring the full suite of parameters as outlined in Table 8-19 until WAD cyanide measured at ST-16 is below the detection limit for 5 <u>consecutive</u> years.</p>	Agnico Eagle should continue monitoring water quality at ST-16 and in NP-2 for the full suite of parameters as outlined in Table 8-19 and Table 8-20 until WAD cyanide is measured below the detection limit for 5 <u>consecutive</u> years.
HESL on behalf of KIA	5.	2019 Annual Report; 8.5.3.2 Whale Tail Site	<p>Agnico Notes that <i>“there are no applicable license limits”</i> for several lakes in the receiving environment, including Lake A47 (ST-WT-6), Lake A45 (ST-WT-13), Lake A16 outlet (ST-WT-14), Lake A15 (ST-WT-15). These lakes are in the receiving environment and are potentially or may be in the future, impacted by mine activities. Lakes A45, A16 and A15 in particular are part of the Whale Tail Lake and Mammoth Lake flow paths respectively, and will be impacted by both the impoundment of the Whale Tail south basin,</p>	Agnico Eagle should compare results from these sites to a) historical monitoring data to identify if water quality is changing relative to the normal range, and b) CCME WQGs for PAL.





Reviewer	#	Reference	Comment	Recommendation
		Appendix C 2019 Water Balance Report; Appendix A Project Design Document; Table 11: Water Quality and Chemical Loading Input Parameters	<ul style="list-style-type: none"> <li>Initial Mammoth Lake concentrations and natural runoff</li> <li>Initial Whale Tail Lake (North and South Basins) concentrations and natural runoff to Whale Tail Lake (South Basin)</li> <li>Nemo Lake concentrations</li> </ul> <p>However, shallow groundwater input concentrations used the “75<sup>th</sup> percentile of Meadowbank groundwater quality”</p> <p>Rationale was not provided as to why average water quality conditions were appropriate for model inputs for Mammoth, Nemo and Whale Tail lakes as opposed to the more conservative 75<sup>th</sup> percentile. A more conservative model input provides more confidence Agnico Eagle can effectively manage a range of water quality conditions beyond an average “base case” scenario.</p>	<p>Nemo and Whale Tail Lakes as opposed to a more conservative percentile (e.g. 75<sup>th</sup>) of measurements.</p> <p>We further recommend that future updates to the water quality and load balance models for the Whale Tail site use the 75<sup>th</sup> percentile at minimum, and sensitivity analysis using the 95<sup>th</sup> percentile of measured values in those waterbodies.</p>
HESL on behalf of KIA	9.	Appendix 12 Whale Tail Water Management Plan Version 4; Appendix C 2019 Water Balance Report; Appendix A Project Design Document; Table 11: Water Quality and Chemical Loading Input Parameters	<p>It is unclear whether interannual loading to the receiving environment is accounted for in the water quality model. Does the model assume complete flushing of Mammoth Lake each year, or has the model been updated based on the commitments made during the Whale Tail expansion licencing process? Specifically, do the initial lake concentrations increase year over year to account for prolonged loading?</p> <p>Assumed complete flushing of the receiving environment may underpredict future water quality thereby potentially delaying the implementation of management and mitigation measures that may be warranted.</p>	<p>Please clarify whether the water quality model assume complete flushing of Mammoth Lake each year (i.e. return to baseline concentrations) or whether the model accounts for interannual loading to the receiving environment. Please ensure that all future water quality models account for interannual loading to the receiving environment.</p>

Reviewer	#	Reference	Comment	Recommendation
HESL on behalf of KIA	10.	Appendix 12 Whale Tail Water Management Plan Version 4; Appendix E 2020 Freshet Action and Incident Response Plan; Section 4 Snow Management	<p>Pertaining to snow management, Agnico Eagle states <i>“Similarly to the Meadowbank site, a snow management procedure has been developed internally in 2019 and will be updated annually. Temporary snow storage dumps and snow accumulation areas of concern were identified on a map. Removal will be managed accordingly.”</i></p> <p>We note that removal of snow from areas of concern as identified in Section 2 of the 2020 Freshet Action Plan to achieve a target cover depth (e.g. the waste rock storage facility) is not an identified as an activity in Appendix 1, “Freshet Action Plan Procedure”.</p> <p>Removal of snow to achieve a target cover thickness directly impacts the volume of contact water requiring management. We further note that specifying a target snow cover thickness on areas of concern must be provided so that:</p> <ul style="list-style-type: none"> <li>• mine operators understand what duties are expected of them with respect to snow management,</li> <li>• inspectors may evaluate whether Agnico Eagle has complied with Freshet Action Plan, and</li> <li>• reviewers may determine whether the volume of contact water runoff used as input into the water balance model is reasonable.</li> </ul>	<p>Agnico Eagle should include the removal of snow from areas of concern (as defined in Section 2 of the 2020 Freshet Action Plan) as a specified activity in the 2020 Freshet Action Plan. Agnico Eagle should further specify the target snow thickness on each area of concern required to meet the assumptions of the water balance model.</p> <p>The water quality and load balance models should be updated for the 2020 Annual Report using two scenarios related to freshet management: contact water runoff during freshet using the target snow thickness on areas of concern, and an increase of 50% snow volume and the associated increase in contact water as part of a sensitivity analysis to assess whether water management strategies and infrastructure on site are sufficient to mitigate environmental impacts.</p>

















Reviewer	#	Reference	Comment	Recommendation																																																																																																																							
		Plan Version 8, Appendix C – 2019 Meadowbank Water Quality Forecasting Update, 2.4.1 Additional Mill Effluent Water Quality Results	<p>were two orders of magnitude smaller than in 2018 (0.007 vs. 0.131 mg/L).</p> <p style="text-align: center;">Table 2-4: Mill Effluent Concentrations Sampled in 2019</p> <table border="1"> <thead> <tr> <th rowspan="2">PARAMETER</th> <th colspan="6">MILL EFFLUENT CONCENTRATION (mg/L)</th> <th>SOUTH CELL (mg/L)</th> </tr> <tr> <th>Average 2015</th> <th>Average 2016</th> <th>Average 2017</th> <th>Average 2018</th> <th>Average 2019 w/o Whale tail</th> <th>Average 2019 Whale tail</th> <th>Average 2019</th> </tr> </thead> <tbody> <tr> <td>Total Cyanide (CNT)</td> <td>18.2</td> <td>9.3</td> <td>20.4</td> <td>6.263</td> <td>11.730</td> <td>11.780</td> <td>0.95</td> </tr> <tr> <td>Total Aluminum (Al)</td> <td>0.629</td> <td>0.326</td> <td>1.541</td> <td>2.249</td> <td>0.394</td> <td>109.533</td> <td>0.10</td> </tr> <tr> <td>Total Arsenic (As)</td> <td>0.036</td> <td>0.026</td> <td>0.018</td> <td>0.025</td> <td>0.034</td> <td>9.007</td> <td>0.02</td> </tr> <tr> <td>Total Cadmium (Cd)</td> <td>0.0020</td> <td>0.0003</td> <td>0.0072</td> <td>0.0004</td> <td>0.0002</td> <td>0.0035</td> <td>0.0001</td> </tr> <tr> <td>Total Chromium (Cr)</td> <td>0.002</td> <td>0.001</td> <td>0.009</td> <td>0.005</td> <td>0.002</td> <td>3.496</td> <td>0.001</td> </tr> <tr> <td>Total Copper (Cu)</td> <td>11.0</td> <td>3.6</td> <td>5.3</td> <td>0.161</td> <td>3.925</td> <td>9.149</td> <td>1.61</td> </tr> <tr> <td>Total Iron (Fe)</td> <td>5.9</td> <td>2.8</td> <td>6.9</td> <td>6.533</td> <td>5.575</td> <td>401.733</td> <td>0.42</td> </tr> <tr> <td>Total Nickel (Ni)</td> <td>0.423</td> <td>0.024</td> <td>0.982</td> <td>0.026</td> <td>2.661</td> <td>7.664</td> <td>0.10</td> </tr> <tr> <td>Total Selenium (Se)</td> <td>0.131</td> <td>0.166</td> <td>0.076</td> <td>0.131</td> <td>0.007</td> <td>0.143</td> <td>0.005</td> </tr> <tr> <td>Ammonia (NH<sub>3</sub>-NH<sub>4</sub>)</td> <td>127</td> <td>105</td> <td>79</td> <td>84</td> <td>64</td> <td>75</td> <td>22.3</td> </tr> <tr> <td>Nitrate (NO<sub>3</sub>)</td> <td>15.9</td> <td>13.3</td> <td>12.7</td> <td>8.978</td> <td>10.030</td> <td>12.867</td> <td>-</td> </tr> <tr> <td>Chloride (Cl)</td> <td>775</td> <td>558</td> <td>630</td> <td>515</td> <td>660</td> <td>767</td> <td>206.3</td> </tr> <tr> <td>Fluoride (F)</td> <td>0.545</td> <td>0.645</td> <td>0.335</td> <td>0.680</td> <td>0.565</td> <td>0.297</td> <td>0.422</td> </tr> </tbody> </table> <p>What were the possible reasons for these deviations in mill effluent concentrations for nickel and selenium in 2019?</p>	PARAMETER	MILL EFFLUENT CONCENTRATION (mg/L)						SOUTH CELL (mg/L)	Average 2015	Average 2016	Average 2017	Average 2018	Average 2019 w/o Whale tail	Average 2019 Whale tail	Average 2019	Total Cyanide (CNT)	18.2	9.3	20.4	6.263	11.730	11.780	0.95	Total Aluminum (Al)	0.629	0.326	1.541	2.249	0.394	109.533	0.10	Total Arsenic (As)	0.036	0.026	0.018	0.025	0.034	9.007	0.02	Total Cadmium (Cd)	0.0020	0.0003	0.0072	0.0004	0.0002	0.0035	0.0001	Total Chromium (Cr)	0.002	0.001	0.009	0.005	0.002	3.496	0.001	Total Copper (Cu)	11.0	3.6	5.3	0.161	3.925	9.149	1.61	Total Iron (Fe)	5.9	2.8	6.9	6.533	5.575	401.733	0.42	Total Nickel (Ni)	0.423	0.024	0.982	0.026	2.661	7.664	0.10	Total Selenium (Se)	0.131	0.166	0.076	0.131	0.007	0.143	0.005	Ammonia (NH <sub>3</sub> -NH <sub>4</sub> )	127	105	79	84	64	75	22.3	Nitrate (NO <sub>3</sub> )	15.9	13.3	12.7	8.978	10.030	12.867	-	Chloride (Cl)	775	558	630	515	660	767	206.3	Fluoride (F)	0.545	0.645	0.335	0.680	0.565	0.297	0.422	
PARAMETER	MILL EFFLUENT CONCENTRATION (mg/L)						SOUTH CELL (mg/L)																																																																																																																				
	Average 2015	Average 2016	Average 2017	Average 2018	Average 2019 w/o Whale tail	Average 2019 Whale tail	Average 2019																																																																																																																				
Total Cyanide (CNT)	18.2	9.3	20.4	6.263	11.730	11.780	0.95																																																																																																																				
Total Aluminum (Al)	0.629	0.326	1.541	2.249	0.394	109.533	0.10																																																																																																																				
Total Arsenic (As)	0.036	0.026	0.018	0.025	0.034	9.007	0.02																																																																																																																				
Total Cadmium (Cd)	0.0020	0.0003	0.0072	0.0004	0.0002	0.0035	0.0001																																																																																																																				
Total Chromium (Cr)	0.002	0.001	0.009	0.005	0.002	3.496	0.001																																																																																																																				
Total Copper (Cu)	11.0	3.6	5.3	0.161	3.925	9.149	1.61																																																																																																																				
Total Iron (Fe)	5.9	2.8	6.9	6.533	5.575	401.733	0.42																																																																																																																				
Total Nickel (Ni)	0.423	0.024	0.982	0.026	2.661	7.664	0.10																																																																																																																				
Total Selenium (Se)	0.131	0.166	0.076	0.131	0.007	0.143	0.005																																																																																																																				
Ammonia (NH <sub>3</sub> -NH <sub>4</sub> )	127	105	79	84	64	75	22.3																																																																																																																				
Nitrate (NO <sub>3</sub> )	15.9	13.3	12.7	8.978	10.030	12.867	-																																																																																																																				
Chloride (Cl)	775	558	630	515	660	767	206.3																																																																																																																				
Fluoride (F)	0.545	0.645	0.335	0.680	0.565	0.297	0.422																																																																																																																				
HESL on behalf of KIA	24.	Appendix 11 – Meadowbank 2019 Water Management Report and Plan Version 8, Appendix C – 2019 Meadowbank Water Quality Forecasting Update, 6.2	<p>The SNC-Lavalin Water Quality Forecasting Update makes several recommendations, to improve the predictive ability of the model for the Reclaim Pond and Portage and Goose Pits, all of which Agnico Eagle commits to implementing. One of the recommendations is to</p> <p><i>“Perform a bench scale water treatment test to evaluate containment removal efficiency using treatment approaches such as lime neutralization, coagulation/flocculation with aluminum sulphate or ferric sulphate, and coagulation/flocculation with proprietary coagulants designed for metal removal as well as alternate treatment options.”</i></p>	Please discuss when different treatment options will be tested for the Reclaim Pond and Portage and Goose Pits.																																																																																																																							











Reviewer	#	Reference	Comment	Recommendation
			capacity hauling, and even at these 2019 levels Appendix J (Whale Tail Haul Road - Remote Camera 2018/2019 Summary; S 3.3, pg 6) indicates caribou delayed crossing the haul road in fall 2018 by 1–90 minutes after a convoy vehicle.	
AWR on behalf of KIA	35.	S 3.6.7 Road Surveys; Caribou Responses to Mitigation	While Table 3.12 (pgs 34-35) is useful to see annual patterns of crossing, these data are not an evaluation of caribou responses to mitigation. For example, it is unclear what mitigation was in place when these crossing events occurred. Also, it is unclear whether caribou movements across the road were delayed or deflected in any way prior to crossing (Appendix J suggests delays occur). Did a shift in range patterns cause the increase in caribou sightings in 2019, and what were the implications for mitigation?	Agnico Eagle should clarify what mitigation was in place to facilitate caribou road crossings, and the behaviour of caribou groups prior to crossing. This should include details of convoys relative to road closures.
AWR on behalf of KIA	36.	S 6 Caribou Satellite-Collaring Program	<i>“In 2019, most Caribou appeared to migrate through the RSA and across the AWAR and Whale Tail Haul Road without major deflections. This positive result may be due to the number of road closures, timing of initial road closures and/or a combination thereof that were initiated in 2019 in response to Caribou presence”</i> (S 6.6, pg 58). This statement has a number of qualifiers ( <i>“most caribou”</i> ; <i>“appeared”</i> ; <i>“major deflections”</i> ; <i>“may be due to”</i> ) which highlight the fact that there has been no analyses at the local scale to support the statement.	Agnico Eagle should conduct analyses at the local scale to quantify collared caribou movements through the mine sites and roads.  Agnico Eagle should also clarify that if the road closures were so successful at enabling caribou to move through the roads (as indicated by the statement), why is the company restricting the extent of road closures in TEMP Version 8, and what successful mitigation measures would road closures be replaced with.
AWR on behalf of KIA	37.	S 7 Height of land monitoring	Height of land (HOL) surveys were designed to help trigger enhanced mitigation when caribou were within 4 km of the haul road, an early warning system for detecting caribou approaching the haul road. While significant numbers of caribou were observed in some seasons (Tables	Agnico Eagle should provide information linking monitoring with management actions.









### 3. Closing

KIA appreciates the opportunity to provide comments on the 2019 Annual Report for the Meadowbank and Whale Tail Gold Project. Please contact Luis Manzo, Director of Lands, should you require more information.

Regards,

Luis Manzo P, Ag.  
Director of Lands  
Kivalliq Inuit Association  
Tel: (867) 645-5731  
[dirlands@kivalliqinuit.ca](mailto:dirlands@kivalliqinuit.ca)