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ENVIRONMENT AND CLIMATE CHANGE CANADA (ECCC)

Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#1
Re:	Water Management During Closure		

Comment:

According to Section 3.3 of the plan, contact water management systems will be maintained on site during closure and reclamation until monitoring results demonstrate that water quality is acceptable for discharge of all contact water to the environment without further treatment. Once water quality meets the discharge criteria, the water management systems will be decommissioned to allow the water to naturally flow to the receiving environment.

ECCC notes that untreated contact water from the Project, including the Whale Tail Waste Rock Storage Facility (WRSF), will have to consistently meet discharge criteria over a sufficient period of time to provide confidence in the consistency of discharge and seepage quality.

Recommendation:

ECCC recommends the Proponent ensure that untreated contact water consistently, over a sufficient period of time, meets discharge criteria in order to provide confidence in discharge and seepage quality.

Agnico Eagle's Response to Recommendation:

Agnico Eagle does not agree with ECCC's recommendation. Agnico Eagle will monitor untreated contact water during the Closure phase to provide confidence in the consistency of discharge and seepage quality as per Water Licence monitoring requirements. These will be established prior to the Closure phase in collaboration with ECCC and the Nunavut Water Board (NWB).



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Interested Party:	Environment and Climate Change Canada (ECCC)	Rec No.:	ECCC#2
Re:	Sludge Management		

Comment:

Section 3.1.4.11 of the plan indicates that sludge water from the Water Treatment Plant (WTP) will be discharged into the Whale Tail attenuation pond.

ECCC previously identified a concern with disposing of sludge within the attenuation pond during the environmental assessment of the Project. As the attenuation pond will be located within the drained north basin of Whale Tail Lake, the pond site will ultimately become submerged within Whale Tail Lake upon reflooding of the north basin. Disposing of sludge into the attenuation pond would therefore result in sludge waste within the lakebed of Whale Tail Lake (North Basin) in perpetuity. There would be no way to manage potential environmental effects, such as migration of contaminants from the sludge into Whale Tail Lake over time.

In the August 2017 response to Final Submissions (ECCC-7) the Proponent made the following commitment: Agnico Eagle agrees with the recommendations of ECCC and will dispose of the sludge in the Whale Tail Pit Waste Rock Storage Facility, rather than into the Attenuation Pond.

Recommendation:

ECCC reiterates the recommendation that no sludge be deposited in waters which will eventually be connected to surface waters and frequented by fish.

ECCC recommends disposing of sludge into the WRSF or the Tailings Storage Facility at Meadowbank, rather than into the attenuation pond/Whale Tail Lake.

Agnico Eagle's Response to Recommendation:

For clarification, Agnico Eagle agreed to dispose of sludge in the Whale Tail WRSF during the Whale Tail Pit final hearings and have updated the Water Management Plan to reflect this commitment. However, Agnico Eagle would like to clarify the Water Treatment Plant described in the previous version of the Water Management Plan is the Construction Water Treatment Plant (CWTP). The CWTP is only used to treat total suspended solids generated during the Construction Phase. The text in the Water Management Plan will be modified to:

Sludge water from the Operation Water Treatment Plant (OWTP) will be dewatered with a centrifuge to produce a cake having a density with 20% of solid content. This cake will be stored in the Whale Tail WRSF. The maximum predicted annual volume of cake from the OWTP is approximately 5,760 cubic metres (m³). The OWTP, is designed to treat total suspended solids and arsenic during the Operations Phase.



CROWN-INDIGENOUS RELATIONS AND NORTHERN AFFAIRS CANADA (CIRNAC)

Interested Party:	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	Rec No.:	Background, Results of Review
Re:			

A. BACKGROUND

On July 11, 2018, the Minister of Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC) approved Agnico Eagle Mines Limited's (AEM) Whale Tail Pit Project Type 'A' Water Licence No. 2AM-WTP1826 application. The Whale Tail Pit Project is a gold deposit located near Baker Lake, Nunavut.

The Water Management Plan is to be reviewed by interested parties and approved by the Nunavut Water Board (NWB) as per Part B Item 15 of Water Licence 2AMWTP1826, prior to operation of the Whale Tail Pit.

B. RESULTS OF REVIEW

CIRNAC recommends the NWB not approve the September 2018 Version 2 Water Management Plan for the Whale Tail Pit project until the outstanding concerns are appropriately addressed.

CIRNAC has overall outstanding concerns and it is incumbent on AEM to alleviate these concerns and demonstrate that the Whale Tail Project is able to proceed without postclosure long-term treatment. Specifically, these concerns pertain to: 1) the absence of hydraulic gradient validation field data (i.e. groundwater field data) to reduce the predicted risks for post-closure exceedance of arsenic in the flooded Whale Tail Pit; and 2) the water quality of post-closure seepage from the Waste Rock Storage Facility (WRSF).

1) Absence of hydraulic gradient validation field data (i.e. groundwater field data) to reduce the predicted risks for post-closure exceedance of arsenic in the flooded Whale Tail Pit.

AEM's modelling analysis of post-closure flooded pit water quality relies heavily on a series of assumptions to address important unknowns regarding the groundwater flow regime. It was agreed during the NWB and Nunavut Impact Review Board (NIRB) processes that the Water Management Plan was to include a "hydrogeological characterization study to validate the hydraulic gradient and potential arsenic diffusion scenarios" 1 to minimize those unknowns within an acceptable level of risk in order for the Whale Tail Pit project to proceed.

CIRNAC considers the baseline groundwater field data measuring the hydraulic gradient as necessary to validate AEM's modeled scenarios. Further, it is important that the data be collected pre-disturbance of the water table (i.e. pre-excavation and dewatering of the Whale Tail Pit area). Once disturbed, the baseline groundwater flow conditions will not be restored or measurable until after flooding of the Whale Tail Pit when it is too late to implement pre-emptive mitigation measures for potential long-term treatment of arsenic.



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The September 2018 Version 2 Water Management Plan does not include groundwater flow studies using monitoring wells to validate the hydraulic gradient and potential arsenic diffusion scenarios. In addition, the Water Management Plan does not explicitly address current uncertainties related to the post-closure groundwater flow regime in the vicinity of the flooded Whale Tail Pit nor does it provide mitigation strategies for the still probable but less favourable modelling outcomes provided by AEM. Therefore, CIRNAC recommends the NWB not approve the September 2018 Version 2 Water Management Plan for the Whale Tail Pit project until CIRNAC's outstanding concerns regarding the predicted risks for post-closure exceedance of arsenic in the flooded Whale Tail Pit are alleviated.

CIRNAC and AEM have a meeting scheduled on 17 October 2018 where AEM is to satisfy CIRNAC's requests for groundwater field data. CIRNAC recommends that AEM expand on the number of groundwater wells to be installed pre-disturbance of the water table (i.e. pre-operation of the Whale Tail Pit area), along with the well locations, completion depths, and sampling frequency to measure and validate the hydraulic gradient through the Whale Tail Pit area.

2) Water quality of post-closure seepage from the Waste Rock Storage Facility (WRSF).

CIRNAC's concerns regarding the quality of post-closure seepage from the WRSF remain. CIRNAC has repeatedly indicated that AEM's assumption that the WRSF, and the WRSF cover material, will be constructed solely of "clean" waste rock with low ARD/ML potential may be overly optimistic.

AEM has relied heavily on the data and experience it has obtained from its Meadowbank Gold Mine Project in carrying out its assessment of the Whale Tail Pit Project. However, there is little evidence to suggest that the geology, hydrogeology and waste rock geochemistry of the Whale Tail Pit are similar to that of the Meadowbank Gold Mine Project pits. On the contrary, laboratory tests show that the average leachable arsenic of the Whale Tail Pit waste rock is about 0.86 mg/L while that of the Meadowbank Gold Mine Project is 0.002 mg/L (i.e. 429 times greater).

AEM's model predictions on the post-closure WRSF seepage water quality show that the 4.7-metre "clean" cover needs to be almost contaminant-free to avoid long-term postclosure water treatment for arsenic. While CIRNAC acknowledges the steps that AEM is taking to reduce this risk, there continues to be high uncertainty regarding the robustness of the waste rock segregation program to provide "clean" construction and cover material for the WRSF – and therefore feasibility to achieve no long-term treatment of post-closure seepage water from the WRSF.

Furthermore, the Water Management Plan does not explicitly address current uncertainties related to the post-closure quality of seepage from the WRSF, and provide mitigation strategies for the still probable but less favourable modelling outcomes.

AEM's model results indicate that if 2% of the cover material is arsenic leaching material, long-term water treatment may be required. CIRNAC recommends the NWB not approve the September 2018 Version 2 Water Management Plan for the Whale Tail Pit project until it contains a waste rock segregation program that demonstrates with a higher degree of confidence that non ARD/ML waste rocks are being used as WRSF cover material.



Agnico Eagle's Response to Background and Results of Review Sections:

The relevant items set out in Table 1 "Tasks and Timeline to Address CIRINAC's concerns related to Arsenic concentrations within the reflooded Whale Tail Lake" (as presented in CIRNAC submission of March 16, 2018 and revised by Agnico Eagle's final submission of March 26, 2018) are as follows:

Task	Start Date	Finish Date	Note
Update Management Plans	May 15,	May 15, 2018	60 days prior to
(iii) Whale Tail Pit - Waste Rock	2018		operation of Quarry 2 (if
Storage Facility Management Plan			required) and prior to the
detailing the steps involved in waste			construction of the WRSF
rock segregation; include location of			Berm
thermistor and management of			
Operation of Quarry 2 (if required)	July 1, 2018	February 15, 2019	Note Receipt of licence
			expected on May 16,
			2018
Waste Rock Storage Facility Berm	July 1, 2018	February 15, 2019	Note: Receipt of Licence
Construction			on May 16, 2018.
			Following a 30 day notice
			of berm construction,
			operation will begin
Whale Tail Pit Pre-stripping		Q12019	As early as February
			2019
Whale Tail Pit operations		Q32019	Target date is July 2019

Agnico Eagle has addressed these comments and provided additional clarification during the October 17 & 18 2018 meeting with CIRNAC in Iqaluit plus Agnico Eagle's responses to CIRNAC'S recommendations noted below in this response package.

In addition, Agnico Eagle has included the presentation of the October 17 2018 meeting (Appendix A). Based on this, Agnico Eagle feels the Water Management Plan should be approved in a timely fashion by NWB.



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Interested Party:	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	Rec No.:	CIRNAC#1
Re:	General		

Finding:

CIRNAC has previously expressed concerns regarding the lack of groundwater characterization in the vicinity of the Whale Tail Pit. Specifically, no intrusive investigations (e.g., groundwater flow studies using monitoring wells) have been conducted to date. Instead, AEM's analysis of post-closure flooded pit water quality relies heavily on a series of assumptions to address important unknowns regarding the groundwater flow regime. These unknowns are not described in the current plan.

Recommendation:

The Plan should be revised to include a section that explicitly addresses current uncertainties related to the post-closure groundwater flow regime in the vicinity of the flooded pit. It should also describe the actions that will be taken to reduce the uncertainty.

Agnico Eagle's Response to Recommendation:

Agnico Eagle does not agree with CIRNAC's recommendation that the Plan should be revised to include a section that explicitly addresses current uncertainties related to the post-closure groundwater flow regime in the vicinity of the flooded pit.

As per the meeting held between Agnico Eagle and CIRNAC on October 17 2018, Agnico Eagle and CIRNAC reviewed hydrogeological field data presented during the NIRB Project Certificate and NWB Water Licence process. Agnico Eagle demonstrated that the model does not rely heavily on a series of assumptions. Furthermore, Agnico Eagle agreed to sample the Westbay well in November 2018 to measure the hydraulic heads in bedrock and collect groundwater samples and these data will be provided to CIRNAC and NWB.

A groundwater monitoring plan for the Project was prepared and submitted to Nunavut Water Board (Agnico Eagle, 2018a). As a component of this plan, an updated summary of additional hydraulic data collected since the FEIS was provided. The additional data collection described in the plan included:

- The installation of a Westbay Well System in March and April 2016 and the collection of sitespecific water quality data from three separate depth intervals in 2016;
- Supplemental hydrogeological investigations undertaken between 2015 and 2017 to further characterize the hydraulic conductivity of the bedrock near the Project area. These investigations resulted in an additional 49 measurements of hydraulic conductivity in unfrozen rock.

Expanded documentation of the data collection was provided for the meeting held in Iqaluit on October 17 2018 in two emails from Agnico Eagle to CIRNAC on October 12 2018 related to the July 2018



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meeting and existing information from the FEIS, and summarized in meeting presentation material appended to this document (Agnico Eagle, 2018b). Agnico Eagle communicated in the October 17 2018 meeting that the Westbay Well System will be resampled in November 2018 and this sampling will include the measurement of hydraulic head and vertical gradients, and that the results of the monitoring will be submitted to regulators.

The Westbay well system is described in Golder (2016a, b). This report was provided to CIRNAC for the October 17 2018 meeting. The well was installed in a borehole that was drilled to a depth of 499 m below ground surface. The Westbay system is a multi-level sampling system, in this case consisting of 6 sampling ports, and because of this it is equivalent to installing six conventional wells at different depths and slightly offset spatially. This allows for measurement of a vertical profile of hydraulic head and groundwater quality with the talik. Pressure measurements will provide field verification of interpreted groundwater conditions below Whale Tail Lake for baseline conditions. This allows for the measurement of a vertical profile of hydraulic heads and the collection of groundwater samples from multiple depth intervals in the talik below Whale Tail Lake. Pressure measurements to be collected again in November 2018 will provide field verification of interpreted groundwater conditions below Whale Tail Lake for baseline conditions.

This groundwater instrumentation method was adopted after failed attempts to install three conventional wells in the talik near the open pit for the collection of representative groundwater samples during the FEIS baseline data collection (Appendix 6A of the FEIS). The location of the Westbay well system was chosen for its ability to intersect an open talik despite drilling restrictions (setbacks, drill angle, and talik location). Near the open pit, the required environmental set back distance for drilling (50 m from the shoreline), combined with the shallow depth of the closed talik near the shoreline and the available borehole drilling angles, limits the practicality of installing wells close to the pit footprint.

The installation of additional wells outside of the Westbay is not considered necessary to further characterize baseline conditions and reduce uncertainties regarding potential environmental effects of the project on the groundwater flow system. Potential hydraulic gradients and flow directions for baseline and long-term post closure conditions can be derived from the relative lake elevations in the study area as described hereafter. During mining, flow will be towards the pit, and the relative elevation of the lake level behind the dike, in combination with the attenuation pond elevation and dewatered pit elevation can be used to estimate hydraulic gradient.

- The planned Whale Tail Pit sits within the closed talik below the North Basin of Whale Tail Lake. The closed talik is inferred to transition to open talik below the South Basin due to the increased width and depth of the lake towards the south. The water table below both basins will be equivalent to the lake surface elevation.
- Permafrost underlies the land surrounding the lake, which restricts the lateral flow of groundwater to the talik and restricts the recharge of the sub-permafrost groundwater flow system by precipitation. Groundwater flow is controlled by surface water elevations in lakes



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with open talik; water moves vertically through the open talik to the underlying sub-permafrost groundwater flow system. In effect, lakes with open taliks in continuous permafrost regions are equivalent to large monitoring wells.

- The maximum hydraulic gradients in the project area can be directly estimated based on the lake elevations and the shortest travel distance between Whale Tail Lake and other nearby lakes with open taliks. This includes the lateral hydraulic gradient in the deeper sub-permafrost flow system and vertical hydraulic gradient in the open talik.
- The closest nearby lakes with open talik, as identified in the baseline report, are Nemo, Mammoth and Lake A60. The relative lake elevations and shortest travel distances between these lakes and Whale Tail Lake are summarized in Table 1. In consideration of these measured lake elevations (Appendix 6C of the FEIS), the hydraulic gradient below Whale Tail Lake can be estimated to range from an upward gradient of 0.01 m/m between Lake A60 and Whale Tail Lake and a downward gradient of 0.004 m/m between the Whale Tail Lake and DS1. These gradients are consistent with model predictions, which indicates that baseline sub-permafrost groundwater flow is from Lake A60 to the south basin of Whale Tail Lake and from the north basin of Whale Tail lake to DS1. These gradients are relatively insensitive to seasonal variations in lake level because of the large travel distances between lakes and the small relative changes between lake levels (i.e., all lake levels rise in the summer due to surface water flow and lower during the winter; therefore, the change in the relative difference in lake levels is small).
- PRecharge and discharge from the base of Whale Tail Lake or a flooded pit lake will be controlled by the hydraulic gradients and the bedrock hydraulic conductivity near the base of the permafrost. The deeper bedrock near the base of the permafrost had an estimated hydraulic conductivity in the FEIS of 1 x 10⁻⁸ m/s to 3 x 10⁻⁸ m/s (Appendix 6A of the FEIS). Considering the approximate area of the pit (0.5 km²), the bedrock hydraulic conductivity, and the conservative estimates of hydraulic gradients, groundwater flux to the flooded pit could range from an inflow of approximately 13 m³/day to an outflow of 11 m³/day. Post-closure modelling, which incorporates gradients calculated from the combined interaction of each the lakes in the study area, predicted a long-term discharge from the pit lake of 1.7 m³/day. Post-FEIS hydraulic conductivity testing has shown that the deeper bedrock hydraulic conductivity is lower than assumed in the FEIS (10⁻⁹ m/s); therefore, flow to or from the lake would likely be lower than these estimates.
- The predicted and estimated maximum flows are negligible compared to the 3,000,000+ m³ of surface water exchanged annually post-closure when flows are re-established, based on average climate year watershed runoff. This indicates that uncertainty in the hydraulic gradient is not critical to the long-term assessment of pit lake water quality.



Table 1: Calculated Hydraulic Gradients near Whale Tail Pit

Lake	Surface Water	Shortest Distance to Whale	Hydraulic Gradient near
	Elevation (m)	Tail Lake (km)	Whale Tail Lake
Whale Tail Lake	152.5	-	-
Lake A60	170.5	1.7	0.01 upwards
Mammoth	152.3	1.1	-0.0002 downwards
Nemo	155.8	1.9	0.002 upwards
DS1	99.4	6.4	-0.008 downwards

Note: Lake elevation based on manual measurements reported in the Hydrology Baseline Report (Appendix 6C of FEIS).

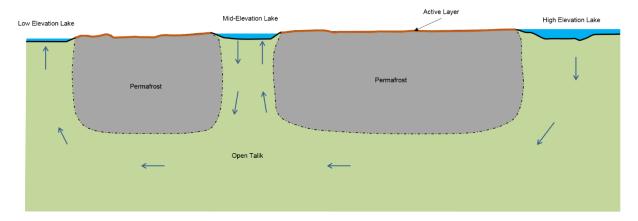


Figure 1: Conceptual Groundwater Flow between Areas of Open Talik

In summary, Agnico Eagle considers the current data set to provide adequate understanding of baseline conditions. Hydraulic head monitoring and groundwater sampling of the Westbay well system will be conducted in November 2018. This data will be used, as required, as input to future updates of the groundwater flow model.

Citation:

Agnico Eagle Mines Ltd. 2018a. Whale Tail Pit Project – Groundwater Monitoring Plan. Version 1. Submitted as part of Project Certificate No. 008, T&C 15 and 16. May 2018

Agnico Eagle Mines Ltd. 2018b. Whale Tail Pit. CIRNAC and Agnico Eagle, Iqualuit, Nu. October 17, 2018.



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Agnico Eagle Mines Ltd. 2016a. Whale Tail Pit Project – Meadowbank Mine Final Environment Impact Statement and Type A Water License Amendments, Volume 6, Appendix 6A. Hydrogeology Baseline Report. Prepared by Golder Associates for Agnico Eagle Mines Ltd. June 2016

Agnico Eagle Mines Ltd. 2016b. Whale Tail Pit Project – Meadowbank Mine Final Environment Impact Statement and Type A Water License Amendments, Volume 6, Appendix 6C. Hydrology Baseline Report. Prepared by Golder Associates for Agnico Eagle Mines Ltd. June 2016

Golder Associates Ltd. 2016a. Westbay System Installation Summary – Whale Tail Pit Project, Nunavut. 7 July 2016.

Golder Associates Ltd. 2016b. Groundwater Quality Investigation, Amaruq, Nunavut. 15 November 2016.





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Interested Party:	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	Rec No.:	CIRNAC#2
Re:	General		

Finding:

CIRNAC has previously expressed concerns regarding the quality of post-closure seepage from the WRSF. In particular, CIRNAC indicated that AEM's assumption the WRSF will be constructed solely of "clean" waste rock with low ARD/ML potential may be over-optimistic. While we acknowledge the steps that AEM is taking to reduce this risk (e.g., robust waste rock segregation programs and environmental quality monitoring), there continues to be uncertainty regarding the post-closure WRSF seepage quality.

Recommendation:

The Plan should be revised to include a section that explicitly addresses current uncertainties related to the post-closure quality of seepage from the WRSF. It should also describe the actions that will be taken to reduce the uncertainty.

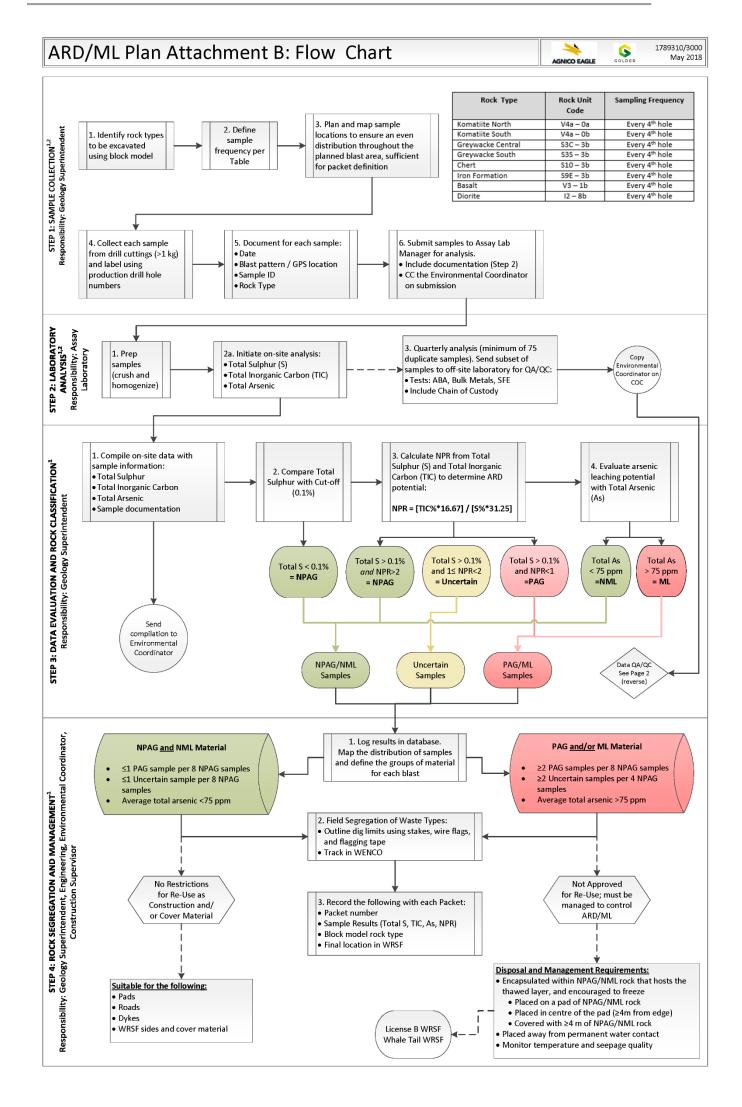
Agnico Eagle's Response to Recommendation:

Agnico Eagle does not agree with this recommendation and would like to mention that using non-PAG clean material is not overly optimistic as the waste rock segregation program developed is thorough. Agnico Eagle refers CIRNAC to the ARD-ML Sampling and Testing Plan Appendix B "Flow Chart for Waste Rock delineation and segregation" shown below. Step 4: Rock segregation and management gives implementable details on how the two (2) different types of waste (i.e. NPAG and NML and PAG and/or ML) will be disposed of during Operations.

Moreover, Agnico Eagle refers CIRNAC to the technical memo "Waste Rock Material Segregation Methodology and Management at Meadowbank" presented in Appendix B for additional clarification on waste rock management practices.

Finally, additional mitigation strategies have been identified in Appendix C "Alternative mitigation strategies for Whale Tail WRSF seepage water management post-closure".

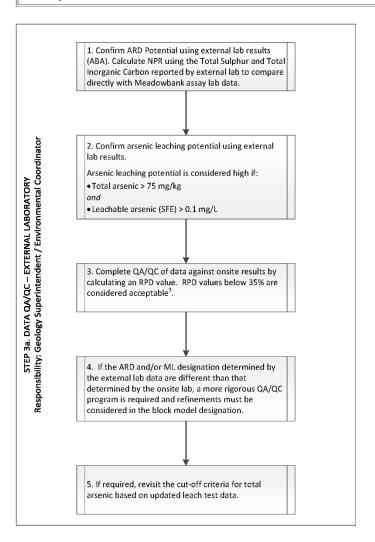






ARD/ML Plan Attachment B: Flow Chart





LIST OF ACRONYMS

ARD: acid rock drainage PAG: potentially acid generating NPAG: not potentially acid generating NPR: net potential ratio ML: metal leaching NML: not metal leaching ABA: acid base accounting
Bulk metals: total metals by ICP
WRA: whole rock analysis
SFE: metal leaching by shake flask extraction XRF: x-ray fluorescence

ppm = parts per million S = sulphur C = carbon As = arsenio

LIST OF ANALYTES AT EXTERNAL LAB

ABA: acid base accounting by Modified Sobek method. Includes paste pH, Bulk NP, analysis of total S and Total C by C/S analyzer (LECO Furnace), Acid Leachable Sulphate and Sulphide by difference.

Bulk metals: trace metals scan by aqua regia digest and analysis by ICP-MS and ICP-OES. Includes Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, Tl, U, V, Zn

WRA: whole rock analysisor major oxides by Borate Fusion XRF. Includes SiO2, Al2O3, Fe2O3, MgO, CaO, Na2O, K2O, TiO2, P2O5, MnO, Cr2O3, V2O5, LOI

SFE: metal leaching by shake flask extraction, 24 hr leach STE: metal leaching by shake hask extraction, 24 nr leach extraction using DI water at 4:1 L/S ratio, and filtered leachate through 0.2 micron filter. Analysis of leachate includes pH, alkalinity, conductivity, anions (CI, SO4, NO2, NO3, Br), ortho-phosphate, fluoride, mercury (by CVAAS), and trace metals by ICP-MS and ICP-OES (Ag, Al, As, B, Ba, Be, Bi, Ca, Cd, Co, Cr, Cu, Fe, K, Li, Mg, Mn, Mo, Na, Ni, P, Pb, Sb, Se, Si, Sn, Sr, Ti, Tl, U, V, Zn).





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Interested Party:	Crown-Indigenous Relations and	Rec No.:	CIRNAC#3
	Northern Affairs Canada (CIRNAC)		
Re:	S.3.1.4.9		

Finding:

The water management for haul road does not discuss snow management during the winter months.

Recommendation:

The Plan should include a snow management strategy, or make reference to a Snow Management Plan that addresses winter water management for haul road. CIRNAC requests that all snow be plowed to the contact side of all road ways to ensure that all snow melt gets collected within the Whale Tail Attenuation Pond (WTAP) and that nearby water ways are not effected with high total suspended solids (TSS) freshet melt water.

Agnico Eagle's Response to Recommendation:

Agnico Eagle does not agree with this comment (i.e snow to be plowed to the contact side of all road ways). Agnico Eagle will follow effective snow removal practices that have been established at the Meadowbank mine over the last ten (10) years.



AGNICO EAGLE

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Interested Party:	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	Rec No.:	CIRNAC#4
Re:	S.3.1.4.11		

Finding:

A total of approximately 75,000 m3 of sludge water with solids content of 2 to 3% will be discharged to the attenuation pond during the operational period. The attenuation pond is within the footprint of the North Basin of Whale Tail Lake which will be flooded during closure. As a consequence, the sludge solids within the flooded attenuation pond will have the potential to become re-suspended and/or may serve as a contaminant source to water within Whale Tail Lake. We have not seen any reference to this potential concern in the current Plan.

Recommendation:

Future revisions to applicable plans should identify how sludge solids deposited in the Attenuation Pond will be managed upon closure to ensure that adverse environmental impacts do not occur.

Agnico Eagle's Response to Recommendation:

Agnico Eagle refers CIRNAC to Agnico Eagle response to ECCC #2 recommendation. Sludge will not be disposed of in the Whale Tail Attenuation Pond but rather to the Whale Tail WRSF.



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Interested Party:	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	Rec No.:	CIRNAC#5
Re:	S.3.3		

Finding:

The Plan states: "Results show that no modification to the water management strategy are needed concerning closure activities and sequence." While this statement may ultimately prove accurate, there continues to be significant uncertainties that could affect the final approach to closure (as indicated in the preceding comments).

Recommendation:

The text should be modified as appropriate.

Agnico Eagle's Response to Recommendation:

Agnico Eagle agrees with CIRNAC's recommendation and is of the opinion that the preceding comments have been addressed. As such, there is no remaining uncertainties at this time.



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Interested Party:	Crown-Indigenous Relations and Northern Affairs Canada (CIRNAC)	Rec No.:	CIRNAC#6	
Re:	S.3.3.1			

Finding:

The Plan states: "Steady-state untreated WRSF contact water released is predicted to meet SSWQO for arsenic in the Lake in the long-term, under the anticipated cover performance scenario". Based on information AEM provided to CIRNAC in a meeting on 26 July 2018, this statement is incorrect; post-closure arsenic concentrations in seepage from the WRSF will be up to 0.345 mg/L which is 14 times greater than the SSWQO. It is only at the boundary of the proposed mixing zone (up to 60 m) that the criterion will be attained.

Recommendation:

The Plan text should be modified as appropriate to reflect the range of performance scenarios for arsenic concentration seepage from the WRSF. In addition, it should explicitly define all proposed mixing zones in surface water receivers.

Agnico Eagle's Response to Recommendation:

Agnico Eagle will modify the text as noted below:

"Steady-state untreated WRSF contact water released is predicted to meet SSWQO for arsenic at the edge of the mixing zone in the long-term, under the anticipated cover performance scenario (from the 4.7 meters cover of low arsenic leaching waste rock). The mixing zone in the Lake is predicted to range from 5 meters (under calm conditions in July when 6% of the seasonal seepage flow occurs), to 60 meters (under medium current conditions in June when 65% of the seasonal flow is predicted to occur at a more dilute arsenic concentration) from the entry point of this seepage into the Lake and along the plume centre line."

Other inflows to Mammoth Lake include natural runoff and overflow from Whale Tail Lake; both of these are predicted to meet SSWQO as described in FEIS Appendix 6H (Agnico Eagle, 2016). The revised version of the Water Management Plan is enclosed with this response package.

Citation:

Agnico Eagle Mines Ltd. 2016. Whale Tail Pit Project – Meadowbank Mine Final Environment Impact Statement and Type A Water License Amendments, Volume 6, Appendix 6-H. Mine Site and Receiving Water Environment Water Quality Predictions. Report Prepared by Golder Associates for Agnico Eagle Mines Ltd. 65 p. June 2016



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Interested Party:	Crown-Indigenous Relations and	Rec No.:	CIRNAC#7
	Northern Affairs Canada (CIRNAC)		
Re:	Figure A.2		

Finding:

The Figure indicates that the North Basin of Whale Tail Lake has been de-watered but water levels in the South Basin have not increased accordingly.

Recommendation:

The figure should be modified as appropriate.

Agnico Eagle's Response to Recommendation:

Agnico Eagle does not agree with this recommendation. The Figure is correct and shows increased South Basin water levels.



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KIVALLIQ INUIT ASSOCIATION (KIA)

Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIA-3.1
Re:	NA		

Recommendation:

Arsenic has a relatively high solids water partitioning coefficient and the small concentrations in the water will result in high concentrations in the Lake sediments. Even after the arsenic concentrations decrease in the water column, sediment concentrations can remain elevated for much longer periods before recovering. There is a potential that arsenic concentrations below the surface water quality objective of 0.025 mg/L could result in sediment concentrations that exceed chronic toxicity thresholds for some organisms. Therefore, the monitoring program should include sediment sampling to assess arsenic uptake in sediments.

The KivIA would appreciate further clarification on the impact of the above issue on the post closure monitoring requirements.

Agnico Eagle's Response to Recommendation:

For clarification, Agnico Eagle has already agreed to comply with the Whale Tail Pit Core Receiving Environment Monitoring Program (CREMP) which includes monitoring of sediment chemistry to assess arsenic concentrations.



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Interested Party:	Kivalliq Inuit Association (KIA)	Rec No.:	KIA-3.2
Re:	NA		

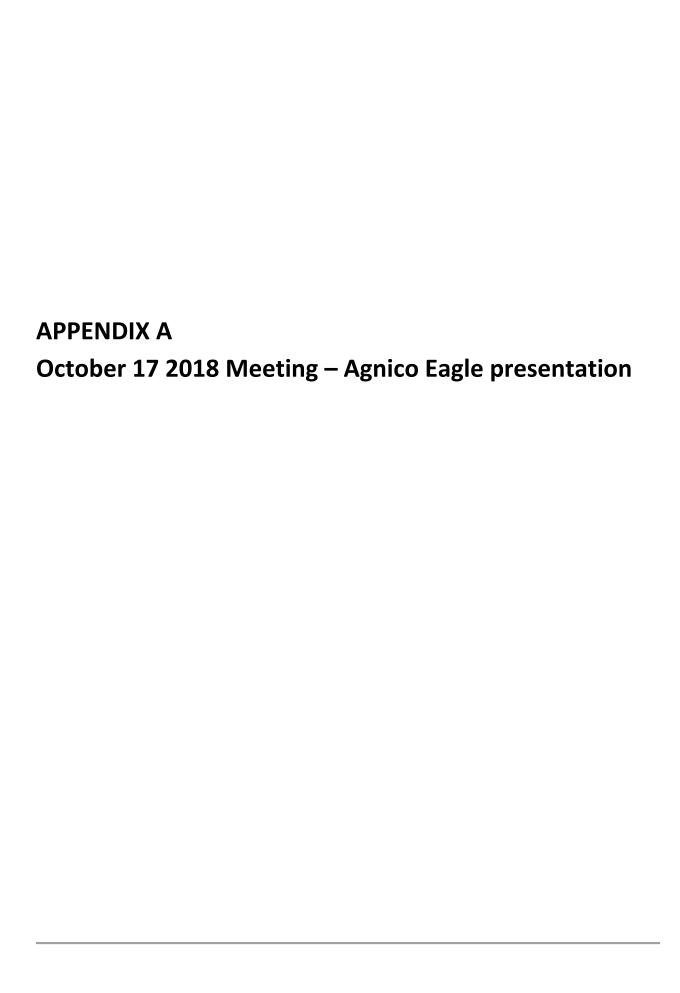
Recommendation:

Well monitoring of lake water is proposed and appropriate, the "failure" of the seepage mitigation system represented by the cover on the waste rock storage facility, may occur over longer time periods than that in the predicted model. Therefore, the monitoring program should be extended to an appropriate time frame that reflects the life of the cover on the waste rock storage facility. Mitigation of elevated concentrations within Mammoth Lake will likely involve collection and management of seepage waters from the waste rock storage facility. This may represent a long term mitigation program and represents a greater effort and a potentially higher cost, if required, then that for mitigating arsenic concentrations in the pit.

The KivIA would appreciate further clarification on the impact of the above issue on the post closure monitoring requirements.

Agnico Eagle's Response to Recommendation:

Agnico Eagle will comply with the approved Interim Closure and Reclamation Plan as per Part B Item 14c of Water Licence 2AM-WTP1826. This Interim Closure and Reclamation plan was approved and signed off by the KIA and CIRNAC.



WHALE TAIL PIT







OCTOBER 17 2018 CIRNAC AND AGNICO EAGLE IQALUIT, NU

PROPOSED AGENDA



- → 9:00 Introductions and teleconference set-up,
- 9:15 10:00 Overview current activities and approved operational plan for 2018-2019
- 10:00- 11:00 Review historical and current data collection that supports our review of hydro-geological model and water quality predictions
- 11:00- 12:00 Approved Operational Monitoring, Mitigation and Management of Activities
- 7 12:00- 12:30 Discussion
- 7 12:30 − 13:30 − Lunch break and deliberation
- → 13:30 14:30 Discussion and next steps

SUMMARY OF MEETINGS TO DATE



In person discussions/ meetings to discuss hydrogeology, water quality predictions, monitoring and management of activities:

- 1. April 28 29th, 2017 Technical Meeting (May 1-2, 2017 PHC)
- 2. June 12, 2017
- 3. June 29, 2017
- 4. August 10, 2017
- 5. September 19⁻ 22nd, 2017 Final Hearings
- 6. July 26th, 2018
- 7. October 17th, 2018
 - 1. Summarize the instrumentation, field and laboratory data collected to date
 - 2. Alignment on current understanding of data: hydraulic gradient and GW data

REGULATORY SUBMISSIONS, APPROVAL AND CONSTRUCTION SCHEDULE /TIMELINES

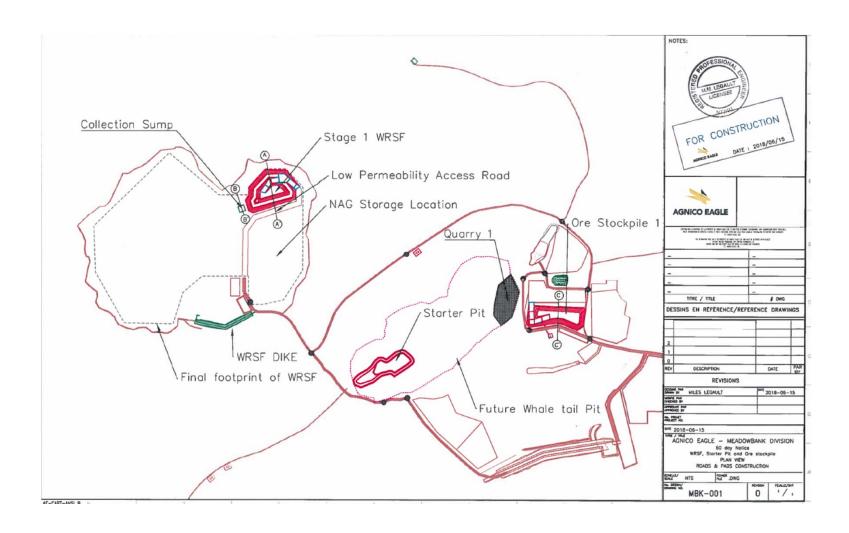


- December 1, 2016 Type 2BB MEA1318 Amaruq Ramp, bulk sample and Quarry permit received
- May 23rd, 2018 NWB letter to Minister
- → June 1st, 2018 30 day notice of dike design to NWB
- June 29th, 2018 60 day notice for site layout to NWB (including starter pit and WRSF)
- July 11th, 2018 Ministers Decision and NWB Type A Received
- July 11th, 2018 Turbidity curtain installation and dike preparation begins on the abutments
- July 25th DFO Authorization received
- July 25th Whale Tail dike construction planned to start
- August, 2018 platform construction
- August to October 2018 Fishout of North Basin
- August 9th, 2018 Received authorization to begin Starter pit, WRSF, Roads, WRSF dike, etc approved.



NWB APPROVAL OF 2018- 2019 WHALE TAIL PIT ACTIVITIES

60 DAY NOTICE – SENT JUNE 29TH, 2018; APPROVAL OF BELOW SITE LAYOUT ON AUGUST 9^{TH} , 2018 – WHICH INCLUDES THE STARTER PIT AND WRSF



CURRENT OPERATIONAL TIMELINES



PRESENT TO JULY 2019

- Quarry 1 activities are ongoing
- Starter Pit (Quarry 2)
 - Nov 5th, 2018 overburden excavation for the next 20 days
 - Nov 5th, 2018 February 9th, 2019 (~4 months) exhaust Starter Pit
 - December 2018 onward begin excavation of larger pit that follows the dewatering schedule
- Construction of the WRSF is beginning based on material availability
- WRSF dike construction
 - Presently, excavating the foundation at the moment (presently, Agnico Eagle doesn't have enough material from Quarry 1; Starter Pit is
 - Plan to finish in March, 2018
- Mammoth Dike January to March 2018
- Construction of Whale Tail Dike
 - Underway as soon as the permits were received on July 11th, 2018
 - Continue construction January/ beginning in February 2019
- Dewatering beginning of February to July 3- 5 months to dewater depending on water quality
- West-bay data collection October November 2018
- July 2019 production of larger open pit



NWB APPROVAL UNDER NWB 2AM WTP 1826

QUARRY 2/ STARTER PIT OPERATION/ & WASTE ROCK STORAGE FACILITY OPERATION

- → Page 6 Part B General Conditions Item 14 16
 - 14. The Licensee shall, for all Plans submitted under this Licence, implement the Plans as approved by the Board in writing. The Board has approved (or accepted) the following Plans for implementation under the relevant sections in the Licence. Any changes to the plans deemed significant shall be considered as an amendment to the plan(s) or as a modification and must be approved by the Board.
 - a. Amaruq Gold Wastewater Treatment System Operation and Maintenance Plan (December 2015)*;
 - Meadowbank and Whale Tail Bulk Fuel Storage Facilities: Environmental Performance Monitoring Plan, Version WT, (June 2016)[^];
 - c. Whale Tail Pit Interim Closure and Reclamation Plan, Version WT (June 2016)^;
 - d. Whale Tail Pit Landfill and Waste Management Plan, Version 1 (January 2017);
 - e. Whale Tail Pit Haul Road Management Plan, Version 1 (June 2016)
 - f. Whale Tail Pit Waste Rock Management Plan, Version 1 (January 2017);
 - g. Whale Tail Pit Water Management Plan, Version 1 (January 2017);
 - h. Whale Tail Pit Water Quality and Flow Monitoring Plan, Version 2 (May 2017); and
 - Whale Tail Pit Water Quality Monitoring and Management Plan for Dike Construction and Dewatering, Version 1 (January 2017).

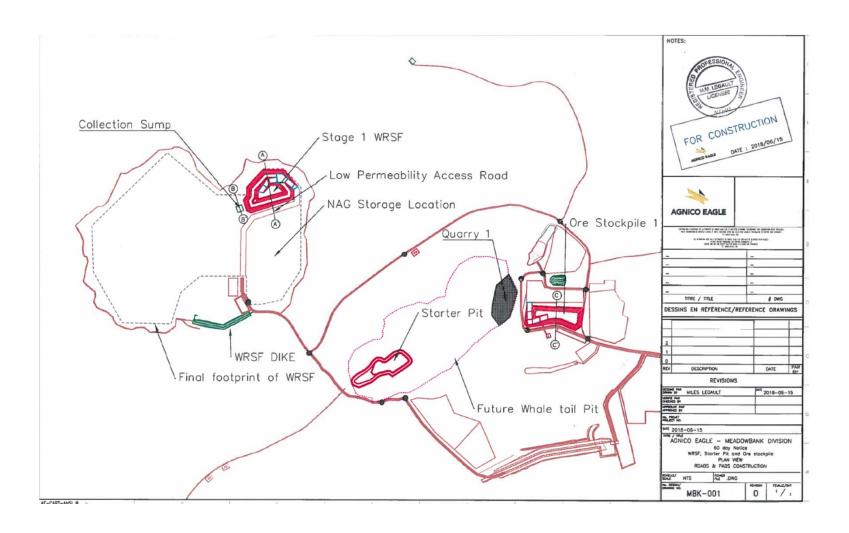


HYDROGEOLOGICAL AND WATER QUALITY

APPROVED OPERATIONAL MONITORING, MITIGATION AND MANAGEMENT OF ACTIVITIES



NWB 2AM WTP 1826 - OPERATION OF QUARRIES, WRSF AND IMPLEMENT PLANS



NWB 2AM WTP 1826



QUARRY 2/ STARTER PIT OPERATION/ & WASTE ROCK STORAGE FACILITY OPERATION

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 - Whale Tail Pit Water Quality Monitoring and Management Plan for Dike Construction and Dewatering, Version 1 (January 2017).

NWB 2AM WTP 1826



QUARRY 2/ STARTER PIT OPERATION/ & WASTE ROCK STORAGE FACILITY OPERATION

- Page 6 Part B General Conditions Item 14
- Implement the Plans as approved by the board
- Page 9 Agnico Eagle January 2017 Year 1: 2018 Whale Tail Pit Waste Rock Management Plan

Table 3.2 Projected Mined Tonnages and Ore Stockpile Balance (2018 – 2022)

Year	Period	Ore Mined (t)	Waste Rock Excavated (t)	Overburden Excavated (t)	Total Material Excavated (t)	Total Material Excavated (t/day)	Strip ratio	Ore Stockpile Balance (t)
	June to Sept.	-	400,782	610,973	1,011,754	8,431	-	-
2018	Q4	160,020	1,080,812	807,105	2,047,937	22,260	11.80	160,020
	Sub-total	160,020	1,481,594	1,418,078	3,059,691	14,433	18.12	160,020
	Q1	366,229	1,905,908	820,072	3,092,209	33,980	7.44	526,249
2019	Q2	610,012	2,299,406	122,351	3,031,769	33,316	3.97	1,136,261
	Q3	418,663	4,307,676	2,350,185	7,076,524	77,764	15.90	733,674
	Q4	895,072	5,284,473	826,373	7,005,917	76,988	6.83	807,495
	Sub-total	2,289,976	13,797,463	4,118,981	20,206,420	55,360	7.82	807,495
	Q1	800,463	6,111,564	81,160	6,993,187	76,848	7.74	786,709
	Q2	931,458	5,816,680	139	6,748,277	74,157	6.24	896,916
2020	Q3	763,882	5,120,892	0	5,884,773	64,668	6.70	839,548
	Q4	856,512	4,455,358	0	5,311,869	58,372	5.20	874,809
	Sub-total	3,352,314	21,504,494	81,300	24,938,107	68,324	6.44	874,809
2021		2,476,834	9,320,843	0	11,797,677	32,322	3.76	66,644
2022		0	0	0	0	0	0	0
Total		8,279,144	46,104,394	5,618,359	60,001,895		6.25	0

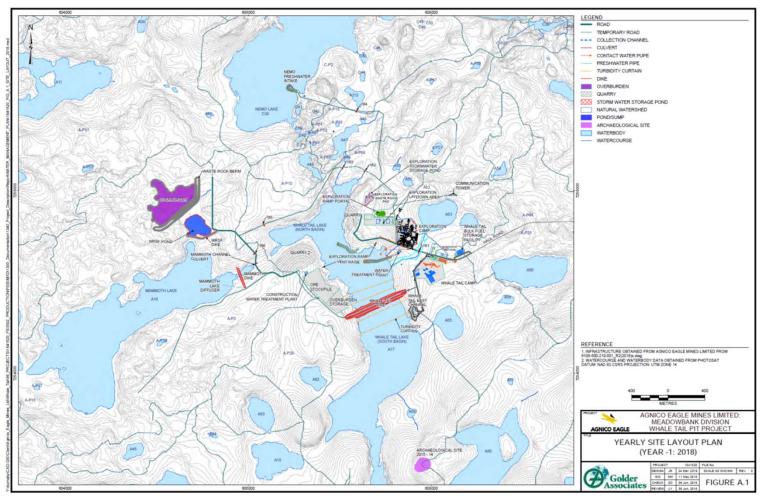
t = tonne; t/day = tonnes per day.



END OF 2018

PRESENTED IN WHALE TAIL PIT FEIS/ NWB APPLICATION REVIEW - PERMITTED UNDER 2AM WTP 1826

Agnico Eagle January 2017 - Figure A.1 – Year : 2018 – Whale Tail Pit Waste Rock Management Plan

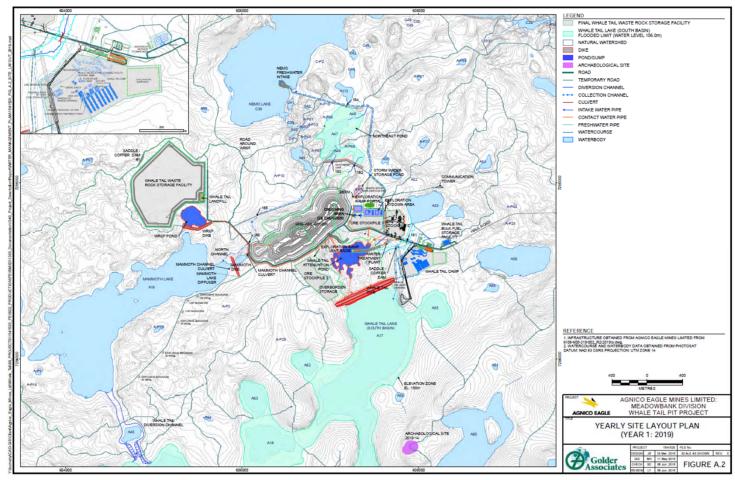




END OF 2018

PRESENTED IN WHALE TAIL PIT FEIS/ NWB APPLICATION REVIEW - PERMITTED UNDER 2AM WTP 1826

Agnico Eagle January 2017 - Figure A.2 – Year : 2019 – Whale Tail Pit Waste Rock Management Plan



WRSF PLAN / CLOSURE AND RECLAMATION PLANNING



- Adhere to ARD/ML Monitoring Plan, WRSF Management Plan, WQ and Flow Monitoring Plan
- Use knowledge/ data gained from Meadowbank (active closure of Vault Pit)
- Proactive Monitoring and Decision Making will ensure post closure goals are met
 - Geochemical
 - Thermistor
 - Water Quality in sumps and pit
 - Modelling
- Establish Triggers

Continuous evaluation and planning

Adaptive Management















Trading Symbol: AEM on TSX & NYSE

Investor Relations: 416-847-8665 info@agnicoeagle.com

agnicoeagle.com

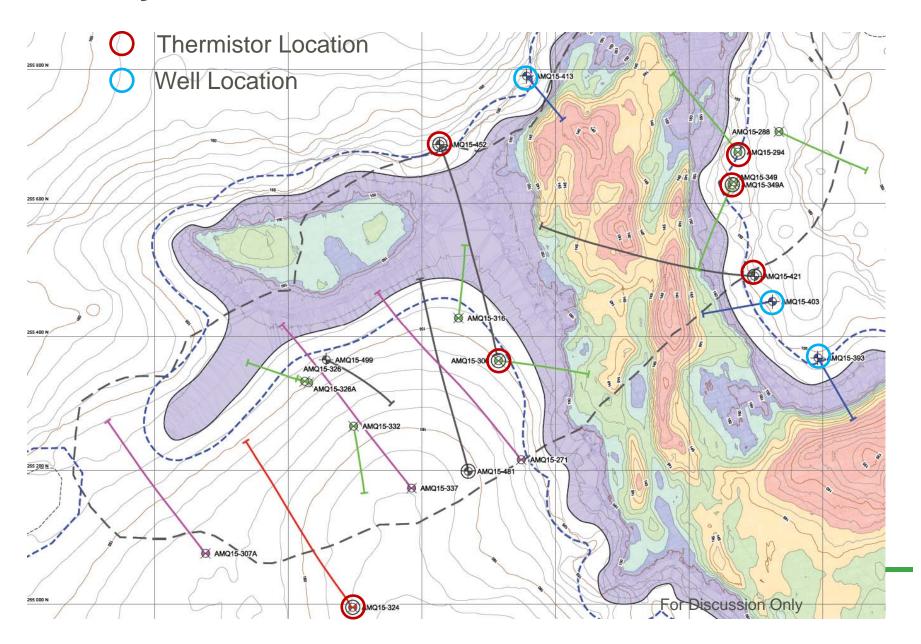


Topics for Discussion / Clarification

- Data Collection / Understanding of Conditions near Quarry 1 / Starter Pit
- Data Collection –FEIS and since
- Pre-development / Post Closure Model Predictions / Hydraulic Gradients
- Whale Tail Flooded Pit Lake Water Quality Long Term Water Quality



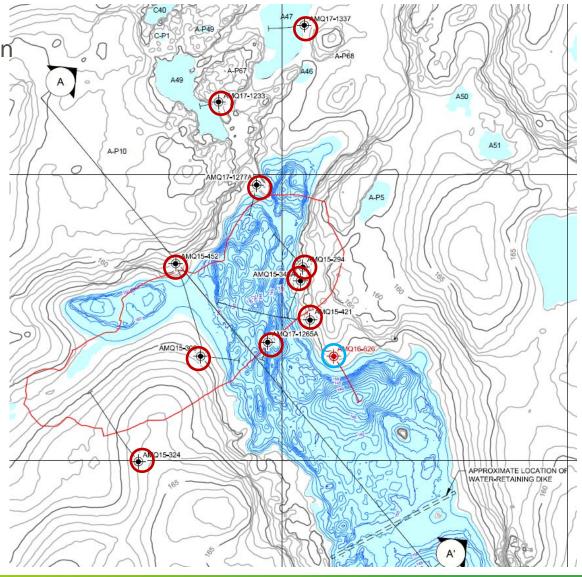
Quarry 1 Pit / Starter Pit – 2015 Data



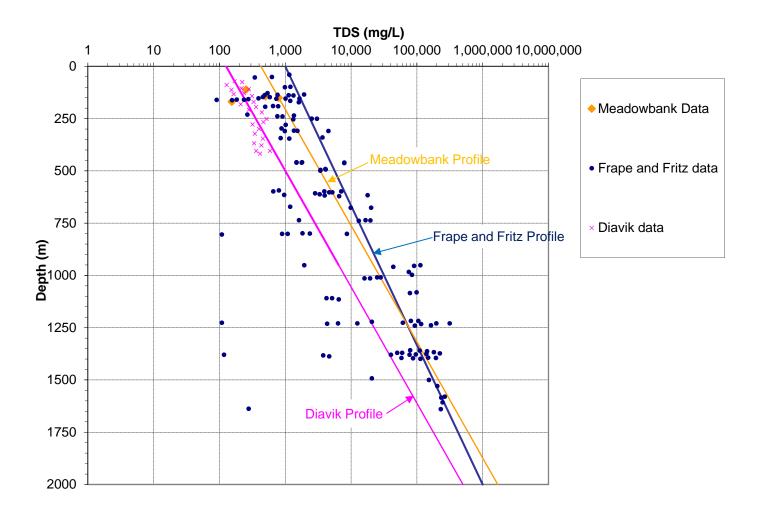
Current Network – Thermistors & Wells

Thermistor Location

Well Location

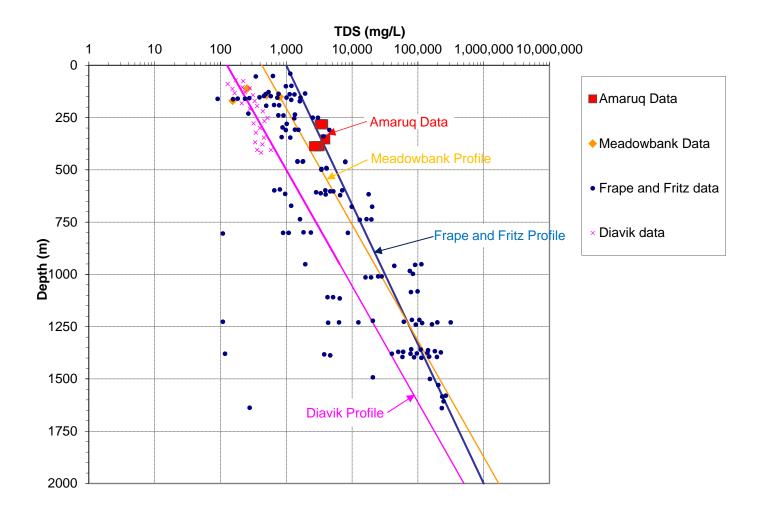


Groundwater Quality - FEIS





Groundwater Quality – Since FEIS



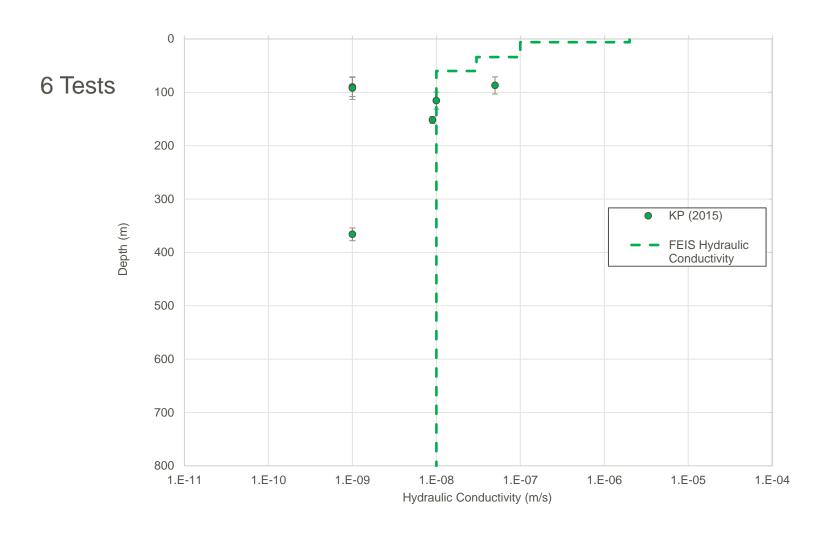


Note - Amaruq Type BB MEA1318 page 5 -

Within its responses to interveners' comments, AEM included a Water Management Plan entitled
"Water Management and Water Balance related to Amarua Exploration Portal/Ramp Program,
Quarry and Advanced Underground Exploration and Bulk Sample Amarua Exploration Site,
Nunavut" dated November 15, 2016 and completed by Golder Associates Limited (Golder).
The Board has approved this Plan under Part C, Item 2 of the Licence.

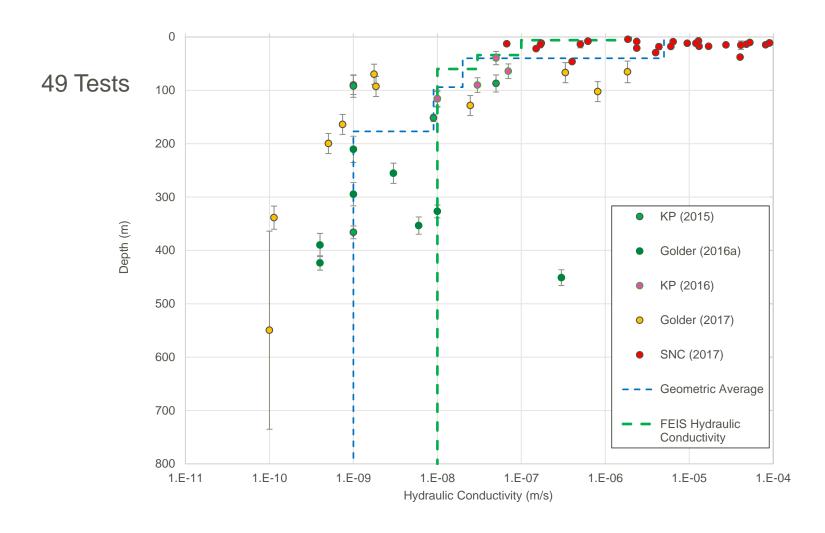
The Licensee also included in its responses a document entitled "Groundwater Quality Investigation, Amaruq, Nunavut" dated November 15, 2016 and completed by Golder. The Board is aware that as part of the baseline studies for the development of Whale Tail Pit Project, groundwater samples were collected from a Westbay monitoring well installed to target the talik zone below Whale Tail Lake, which is the area targeted for the development of the underground ramp to access the ore for bulk sampling. The Licensee is advised to update the Board with groundwater quality investigation's new results whenever new information becomes available.

Hydraulic Conductivity - FEIS





Hydraulic Conductivity – Since FEIS





Hydrogeological and Geochemical Modelling Assessments

FEIS – Supporting Data

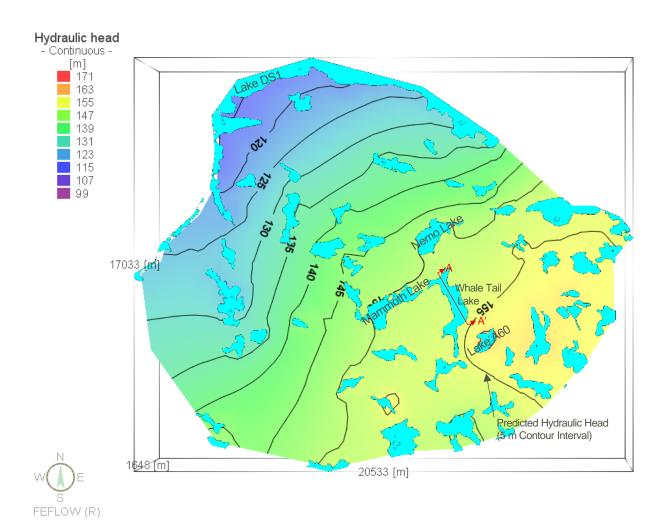
- Data collected for FEIS (Hydraulic Conductivity/Meadowbank Water Quality)
- Lake surface water levels (Hydrology Baseline)
- Contact water leaching of pit wall from tests on site materials, including arsenic transference from submerged pit from early test

IR Modelling – Post-Closure Hydrogeological Model, Diffusion Model, Hydrodynamic Models for Pit Lake and Mammoth Lake

- Updated thermal analysis evolution of permafrost below pit
- Used predicted conditions at end of closure as a starting condition for Post Closure.



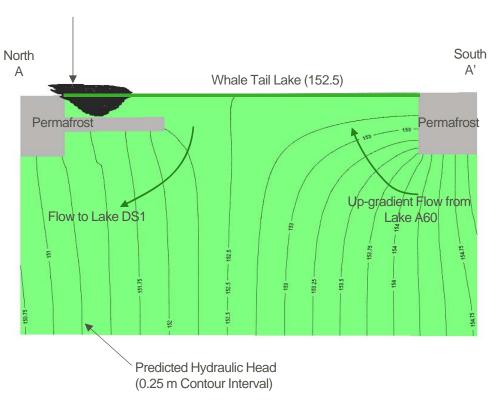
Hydraulic Gradients – Predicted Baseline





Hydraulic Gradients – Predicted - Baseline

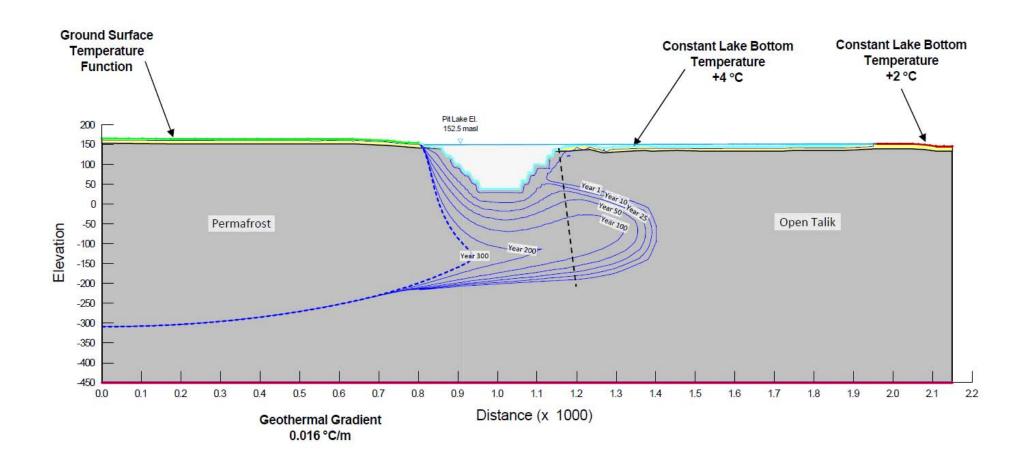
Whale Tail Pit Projected on Section For Relative Reference)



FEFLOW (R)



Post-Closure Thermal Analysis





Post Closure

- 2D Analysis, with 3D closure predictions used as initial condition
- Incorporated thermal analysis that predicted evolution of permafrost
- Considered density dependent flow

Years Following Closure	Groundwater Inflow to Pit Lake (m³/day)	Pit Lake Outflow to Groundwater (m³/day)
1	2.2	1.1
10	1.1	0.8
100	0.2	0.8
500	0.1	1.7

Long-term Predicted
Groundwater
Recharge Boundary

 TDS Groundwater Quality - from 650 mg/L (Year 1 post-closure) to 77 mg/L (500 years post-closure)



Hydrogeology Summary

- Larger baseline dataset
 - 49 packer tests
 - Site-Specific Water Quality Measurements
 - Ability to measure vertical gradient
- Sufficient testing in Quarry 1 / Starter Pit to confirm permafrost and absence of groundwater during development



Water Quality Discussion Points

Available Site Data

Whale Tail Flooded Pit Lake Water Quality

- Predicted Long Term Water Quality
- Assumptions on Arsenic Transfer to the Flooded Pit

Mammoth Lake Water Quality



Site Data input to the Water Quality Model

Available Site Data: data collection 2015-2017 – FEIS Baseline and updates

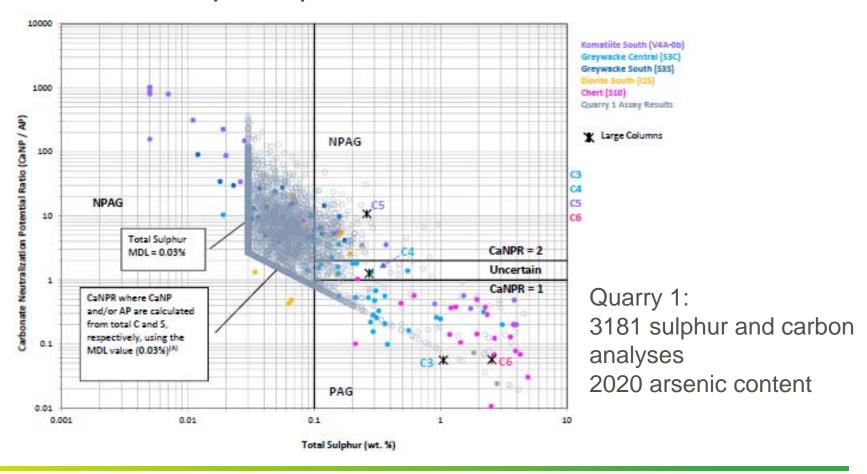
- <u>296 samples:</u> Chemical composition of rock, overburden, sediment:
- 328 static tests, 31 kinetic tests, 2 field cells: leachate quality
- 21 samples of groundwater
- Site water quality data, flow data, bathymetry, Environment Canada weather data, mine plan.



Site Data

CHEMISTRY OF WASTE ROCK

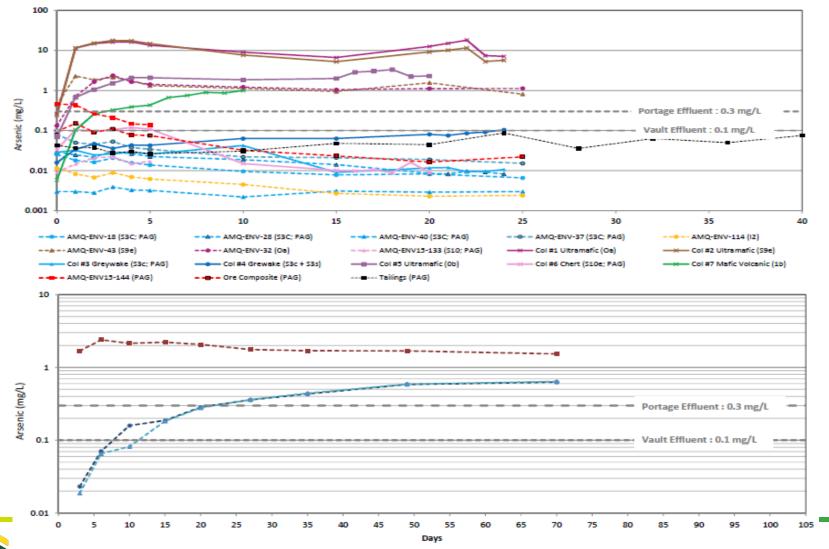
Kinetic test sample representativeness





Kinetic test results - FEIS

LABORATORY DATA BASED ON SITE SAMPLES



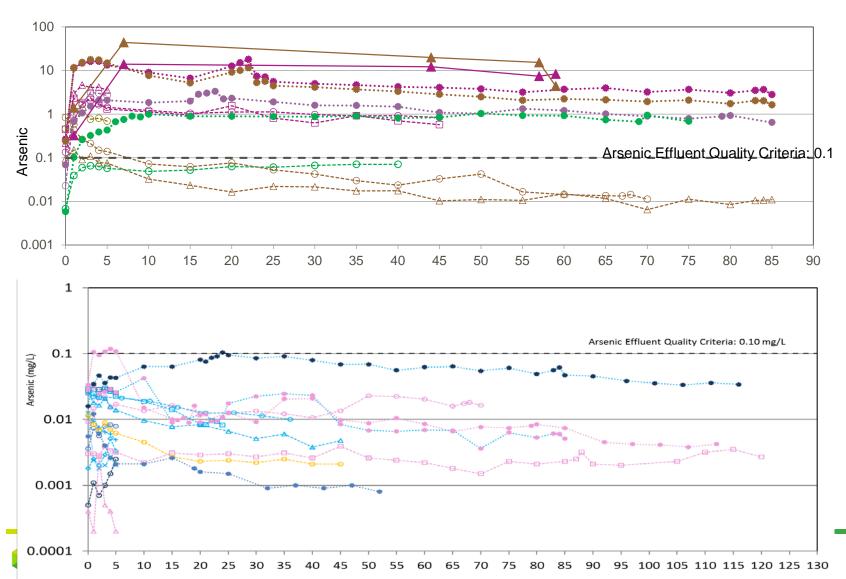
---- Port 2

---- Port 3



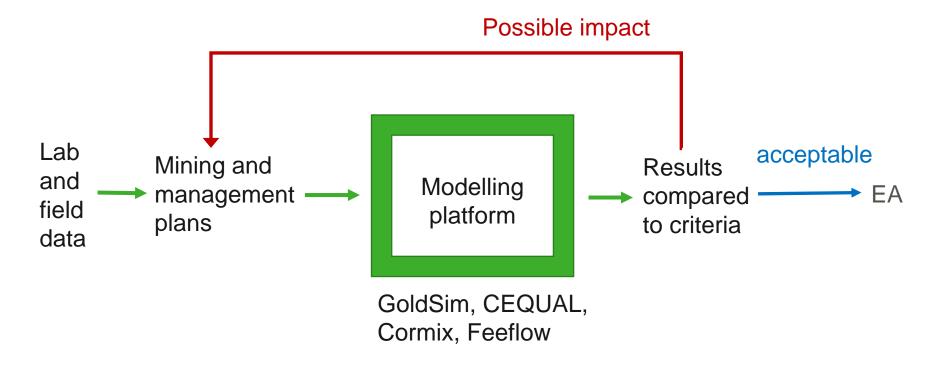
Kinetic test results – since FEIS

LABORATORY DATA BASED ON SITE SAMPLES



Modelling Method

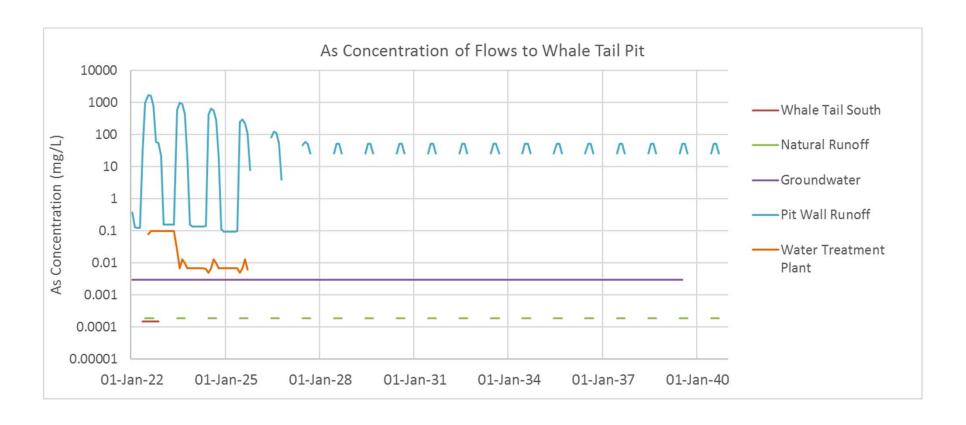
Modelling approach





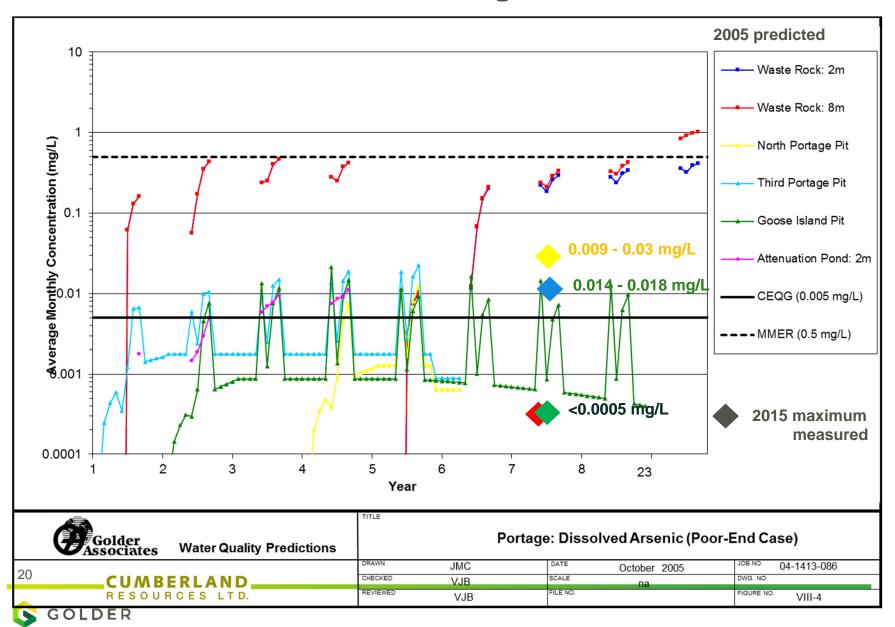
Input to Water Quality Model

ARSENIC SOURCES TO PIT FLOODING

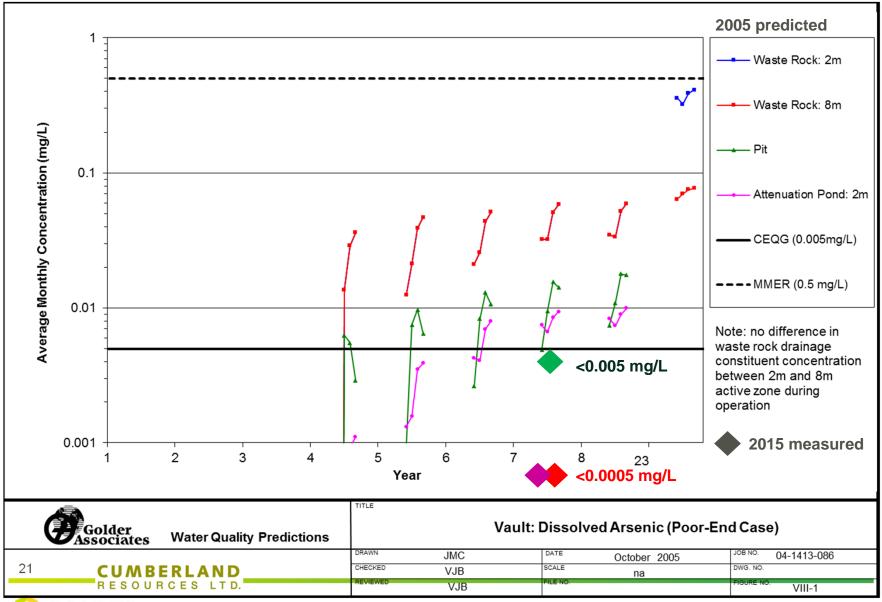




Arsenic at Meadowbank - Portage Area



Arsenic at Meadowbank - Vault Area





Predicted Water Quality

SIMILARITY BETWEEN MEADOWBANK AND WHALE TAIL

'...On the contrary laboratory tests show that the average leachable arsenic of the Whale Tail Pit waste rock is about 0.86 mg/L while that of the Meadowbank Gold Mine Project is 0.002 mg/L (i.e. 429 times greater)'

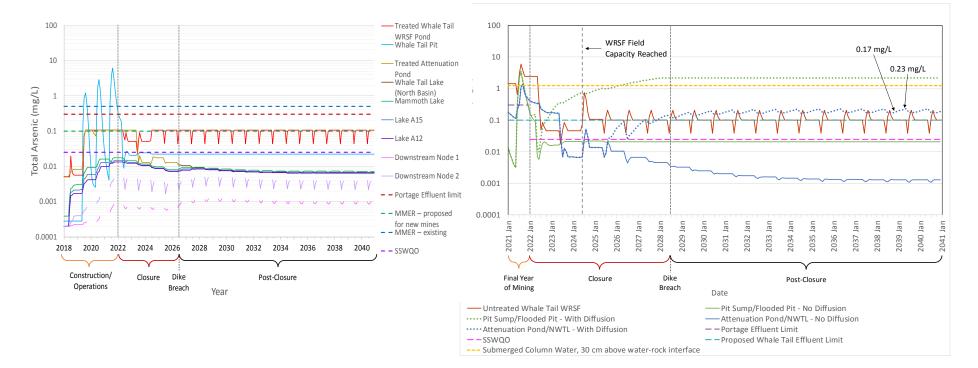


Whale Tail Pit Lake Water Quality

Sensitivity Analyses, IR Response, August 2017:

FEIS predictions with north wall push back, no effect from submerged pit walls

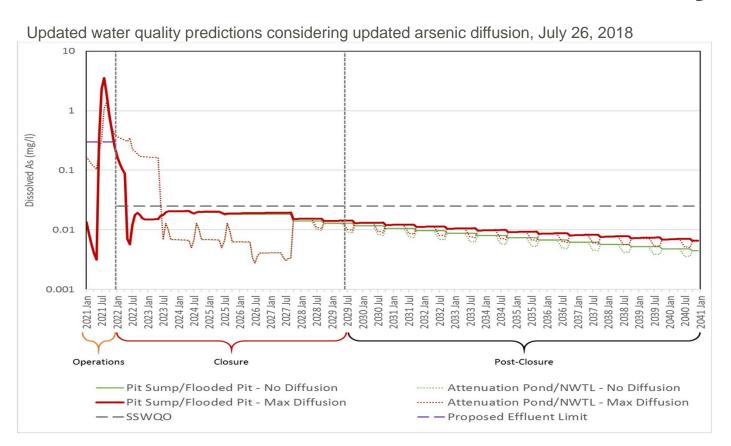
No treatment of arsenic from WRSF seepage – does not affect Whale Tail Pit Lake because released to Mammoth Lake



Flooded Pit Lake water quality consistently predicted to be below SSWQO, without maximum release from submerged pit wall



Whale Tail Pit Lake Water Quality



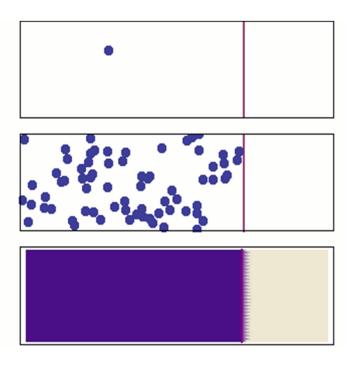
Flooded Pit Lake water quality still predicted to meet SSWQO once pit is fully flooded and decreased arsenic concentration in time.



Arsenic Release from Pit Walls

THEORY AND CONCEPT

- Pit wall contain arsenic-sulfide minerals that oxidize when exposed to air and water, forming mineral salts containing arsenic – laboratory kinetic leaching tests
- Upon flooding of the pit, mineral salts will dissolve,
 be released to water = first flush effect
- Once flooded, sulfide minerals in the pit walls will stop oxidizing, stop generating mineral salts, supply exhausted
- Diffusion: the slow release of stored salts to the open water – this will decrease in time from the finite quantity of salts





Refinement of Diffusion Model

Inputs:	FEIS, June 2016	Refined Diffusion Model, July 2017
Conceptual Model	Single, unchanging rate. No equation to evaluate potential.	Separate diffusion model to determing rate of mass release based on concentration of arsenic in pit.
Source Data	Submerged column: high arsenic leaching waste rock stagnant water, perpetual 'first flush' = overly conservative double couting	Submerged columns and kinetic tests: multiple samples, steady state release continual oxidation, release of arsenic = conservative mass loading
Affected Areas of Pit	High arsenic lithologies (50% of pit)	High arsenic lithologies, north wall push back (25% of pit)
Arsenic release rate	In perpetuity at first flush rate	In perpetuity at steady state rate
Concentration gradient (dC)	no concentration gradient considered: capped at maximum stagnant HCT result (2.16 mg/L)	Assumed 0 mg/L in flooded pit
Diffusion distance (dz)	Not considered (maximum release)	1 cm (likely in the meter scale)
Formation Porosity (ϕ)	Not considered	0.03 (weathered bedrock)



Predicted Whale Tail Pit Lake Water Quality

ARSENIC DIFFUSION

Conclusion on Arsenic Diffusion from Submerged Pit Walls:

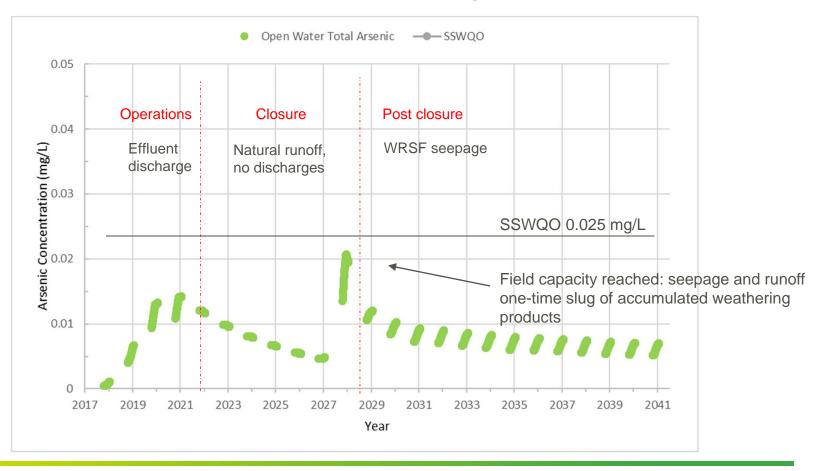
Diffusion of arsenic from all pit walls has no significant effect on water quality in short and long-term.

Arsenic transfer to the open pit by diffusion from the submerged pit walls is not significantly affected by the hydrogeological regime/hydraulic gradient to/from the flooded open pit.



Mammoth Lake Hydrodynamic Model

Arsenic in effluent discharge during operation and arsenic released from cover (4-meter active thaw depth cover with low leaching waste rock).

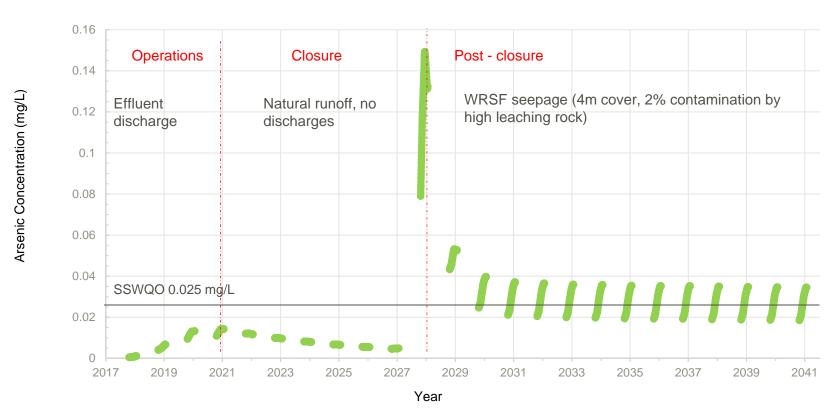




Mammoth Lake Hydrodynamic Model

Arsenic release from 4-m cover with 2% contamination of high leaching waste rock



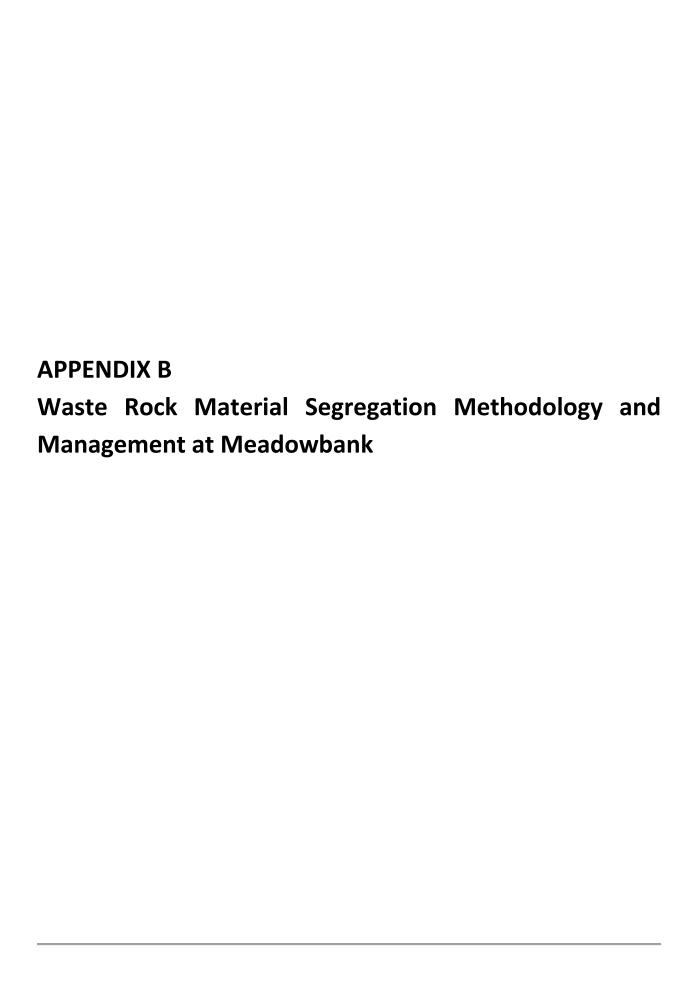




Mammoth Lake Water Quality

- Waste Rock Management Plan in place to segregate waste rock, progressive covering – Implemented plans at Meadowbank are effective
- Water Quality Monitoring Plan to validate water quality predictions and manage adaptively, to meet Water Quality Objectives during operations through post-closure:
- 10 years of monitoring for adaptive management and release when demonstrated absence of impact in the receiving lake outside the mixing zone
- Alternatives: release contact water to Whale Tail Pit Lake







Technical Memo

Date: August 8, 2017

To: Luiz Manzo, Director of Lands, Kivalliq Inuit Association

From : Jamie Quesnel, Agnico Eagle Mines, Environment Superintendent Nunavut; Erika Voyer, General Supervisor

Environment Nunavut, Agnico Eagle Mines

Subject: Waste Rock Material Segregation Methodology and Management at Meadowbank

SUMMARY

Segregation of ore, waste rock as potentially acid generating (PAG) or non-potentially acid generating (NPAG) material based on operational testing during mining activity to differentiate waste rock type is part of the Meadowbank waste rock management plan. Sampling and testing of waste materials for acid rock drainage (ARD) is conducted during mine operation in order to segregate PAG waste from NPAG waste rock material, so that waste material can be assigned to specific locations or use. This practice has been ongoing since the beginning of the mining operations at Meadowbank, and will continue during the remaining operation period. The same methodology will be put in place during the construction and mining operations at Whale Tail Project, in order to segregate adequately the waste rock material.

Operational sampling and analysis is completed on site during mining activities in order to identified and delineate the material type in the pits during mining. Agnico Eagle sampled approximately 25% of all blast holes and analyzed the percentages of sulphur and carbon. The results from these analyses are used to differentiate the PAG and NPAG materials. Once characterized, the waste rock material is segregated and placed in appropriate location.

The geochemical properties of all Meadowbank mining wastes have been confirmed, by certified laboratory, through both static and kinetic testing on numerous representative samples, by various test methods and through multiple project development stages. These data were used to develop a mine waste management plan that was adequately protective of the environment and was authorized by regulatory agencies.

Information regarding the waste rock characterization is also managed and recorded by the mine dispatch Wenco system, tracking in real time load of material, including waste rock, and their respective destination. The system and the dispatcher in charge, guides the operators and ensures the ore and waste rock material is transported to the appropriate destination. The system displays in real time information about equipment location and destination, as well as pit development information. All production data, including all waste rock haulage to the PAG and NPAG waste rock storage facilities (RSF), as well as construction use are recorded into a database. The Waste Rock Management Plan is updated annually with current production quantities and actual Life of Mine, dictating the production and mining schedule. Waste rock management is also part of the weekly planning of the mine engineering department. Because of the large material requirement for construction and NPAG rock cover as well as the importance for adequate placement of material, waste rock management is a fundamental component of the mining planning at Meadowbank.

The Meadowbank waste rock segregation and management protocol were presented in several mining and environmental conferences and symposiums (*International Conference on Acid Rock Drainage, 2012; Cold Covers Practice, 2014; Quebec Mines Conference, 2014; Symposium sur l'Environment et les Mines, 2015*) as well as presented in technical papers (*The Meadowbank Gold Mine – Reclamation Planning in an Arctic Environment, 2012; Waste Rock Management and Closure Planning in Northern Climate: The Meadowbank Mine, Nunavut, 2015*).



ON SITE WASTE ROCK ANALYSIS

The Draft Guidelines and Recommended Methods for the Prediction of Metal Leaching and Acid Rock Drainage at Mine sites in British Columbia (Price, 1997) provide factors for the conversion of total sulphur and total inorganic carbon to maximum potential acidity (MPA) and carbonate neutralization potential (NP), respectively, which are then used to classify material as PAG/NPAG. Since it was possible to equip the Meadowbank onsite assay laboratory with the equipment required for these analyses, their use as a surrogate for the complete suite involved in traditional ABA testing was assessed and confirmed using exploration drill cores (Golder, 2005a).

As a result of these analyses, the Meadowbank onsite assay lab has been equipped to analyze total sulphur and total inorganic carbon in waste rock, allowing for the characterization of acid generating potential onsite, with overnight turnaround times. The same laboratory and method are planned to be used for the Whale Tail Project.

ON SITE WASTE ROCK CHARACTERIZATION

The most conventional method of characterizing the acid generation potential of waste rock is to classify it as PAG, NPAG or of uncertain acid generating potential (uncertain ARD potential, treated as PAG material) based on its Net Potential Ratio (NPR). The NPR of a material is calculated as the ratio of its measured carbonate neutralization potential (NP) to its calculated maximum potential acidity (MPA). Geology staffs apply the following procedures to characterize the waste rock at Meadowbank.

Samples of drill cuttings are analyzed on-site for total sulphur and total inorganic carbon. The results from these analyses are used to calculate the Net Potential Ratio which defines NPAG from PAG materials. The following steps lead to the calculation of the **NPR**:

- i. Total sulphur is converted into a maximum potential acidity (**MPA**) value by multiplying the total S wt% by 31.25 which yields an MPA value in kg CaCO₃ equivalent.
- ii. Total inorganic carbon is similarly converted into a carbonate neutralization potential (**NP**) by multiplying the total wt% inorganic carbon (reported as %CO₂) by 83.34 which yields an NP value in kg CaCO₃ equivalent. NP = ((%C x 100.09)/12.01)x10
- iii. The Net Potential Ratio (NPR) for the blast hole drill cutting sample is then calculated as NPR = NP/MPA.

WASTE ROCK CLASSIFICATION PAG/NPAG

The ARD potential of waste rock, till (overburden) and tailings materials from the Meadowbank mine were previously classified by Golder Associates using the NPR-based guidelines published by INAC (INAC, 1992. Guidelines for ARD Prediction in the North – Northern Mine Environment Neutral Drainage Studies No. 1), which are summarized in Table 1 below. The NPR guideline value to differentiate between uncertain and NPAG has been adjusted from 3 to 2 using the criteria described in the INAC reference guide (knowledge of rock chemistry, mineralogy and reactivity of neutralizing minerals). For example, the use of carbonate NP as a surrogate for bulk NP was examined using data obtained from exploration drilling. Carbonate NP and bulk NP correlate well, which suggests that NPR values calculated using carbonate NP would be comparable to NPR values calculated using bulk NP. It also emphasizes that at Meadowbank measured NP is equal to carbonate NP and is thus fully available for neutralization of any acid generated (i.e, there does not appear to be any carbonate that is lost as iron carbonate or other mineral forms that cannot provide neutralization potential).

The NPR ratio adjustment was accepted during the NIRB environmental assessment process.



Initial Screening Criteria	ARD Potential
NPR < 1	Likely acid generating (PAG)
1 < NPR < 2	Uncertain
2 < NPR	Non-potentially acid generating (NPAG)

Table 1: Summary of ARD guidelines used to classify Meadowbank waste rock and overburden (based on INAC, 1992).

QA/QC PROGRAM

The onsite lab carries out a quality control quality assurance (QA/QC) program that includes the following elements:

- Use of certified reference materials to verify the precision of analytical methods;
- To validate the method used by Agnico Eagle, approximately 300 rock samples (quarterly analysis of a minimum of 75 duplicate samples) of the main rock types from production drill holes are sent annually to an accredited commercial lab (external lab) for acid base accounting (ABA) analysis using the Modified Sobek Method (MEND, 1991) for determination of NP/AP and metal leaching using the Shake Flask Method (Modified ASTM D3987). The results confirmed Agnico Eagle methodology and results to differentiate PAG/NPAG rock. The results are reported to the Geology Superintendent and the Environment staff.

FIELD METHODS – SAMPLING AND DELINEATION OF WASTE ROCK

Field sampling of rock material for use in NPR analyses proceeds according to the following guidelines:

- Drill holes are sampled in accordance with the frequency set out in writing by the Geology Superintendent. The default sampling frequency is the sampling of every fourth drill hole in each drill hole pattern;
- Each sample should weigh no less than 1 kg;
- The sample is labeled using a convention that is readily traceable back to the production drill hole numbers;
- Composite samples are not to be used because they confuse the data and render it more difficult for use in model creation or comparison.

Following laboratory analysis, geology staff will classify waste rock and overburden as NPAG if the NPR value is greater than 2; PAG if the NPR value is less than 1 and uncertain for NPR values between 1 and 2 (Table 1). These criteria can be re-evaluated when judged relevant by the Geology Superintendent in consultation with the Mine Engineer, as additional test data become available. ARD classifications of all samples are logged in Meadowbank's GEMCOM database.

NPR values will be transferred to the mine plans for that specific blast. Once blasting is complete the mine surveyor will use NPAG and NPAG outlines from the drill pattern to outline the respective "dig limits" in the open pit. Different material categories are separated into packets, identified in the field using stakes, wire flags and flagging tape so that each packet can be excavated and sent to the appropriate destination. Packets classified as NPAG should include no more than one



acid-generating sample (NPR>2) for every 8 non-acid-generating samples (NPR<1). Neither should they include more than one sample of uncertain acid-generating potential (1<NPR<2) for every 4 non-acid-generating samples (NPR<1).

Photo 1 and 2 below illustrates the sampling of the drill holes and the delimitation of the packets in the blasted rock material. Figure 1 presents a schematic view of the packet stakeout in the field after the material has been blasted.



Photo 1: Preparation of the samples from drill cuttings Photo 2: Differentiation of PAG/NAG rock and ore after a blast based on laboratory results and blast pattern

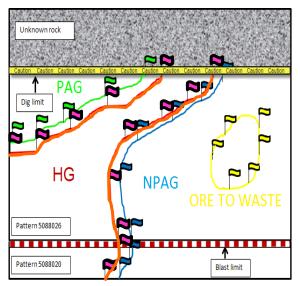


Figure 1: Sample packet stakeout in the field.

MATERIAL TRACKING - FLEET MANAGEMENT SYSTEM AND MATERIAL DATABASE

Information regarding the waste rock characterization is also managed and recorded by the mine dispatch Wenco system, tracking in real time load of material, including waste rock, and their respective destination. The information for each area



ready to mine prepared by geology is imported in the system. The system and the dispatcher in charge, guides the operators and ensures the ore and waste rock material is transported to the appropriate destination.

Wenco system is a computer system used to manage and control surface mining equipment. The system offers real time fleet management and machine guidance technology that records data related to mining equipment activity, location, time, production, and maintenance. This information is also displayed to machine operators and other mining personnel. The system connects with mobile computers on field equipment such as excavators and haul trucks. For example, operators of loading equipment in the pit have information on screens about the type of material they are excavating. The haul truck drivers also have access to information in their equipment, about what they are hauling and where is the appropriate destination for the material. In fact, the system will even warn a haul truck operator if a load is being misdirected based on GPS movement of the hauling equipment. One of the purposes of this system is to track material, to ensure ore, as well as waste rock PAG and NPAG goes to the appropriate location.

The system displays in real time information about equipment location and destination, as well as pit development information. As shown on Photo 3, the dispatcher in charge constantly follows the evolution of the pit development and production, having access to live maps and tables showing the different equipment and types of material in exploitation. Figure 2 presents an example of a map showing the location of different production equipment within the pit, as well as defined sectors including different types of ore and waste rock, color coded. Figure 3 presents a typical table including the status of different loading equipment, their location, the type of rock material they are working in, as well as production data, such as quantities of material excavated and which haul trucks are assigned to an area.

Dispatchers follow the system during hours of production and will intercept loads of material going into the wrong location. It is also possible with the system to locate where material was placed, in order to recover it, if required due to a misdirected load, and bring it to the right location.

All production data, including all waste rock haulage to the waste rock storage facilities (NPAG and PAG RSF's) and construction use are recorded into a database. This database includes all quantities of material placed in different locations, and is used to confirm quantities of material and follow the waste rock management plan.



Photo 3: Dispatcher in charge of the fleet management system during operations



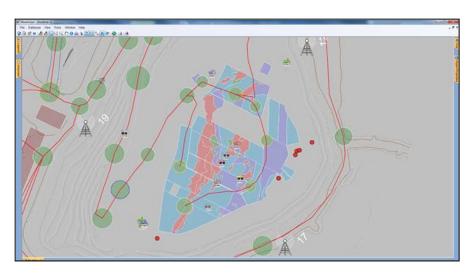


Figure 2: Map showing the location of production equipment within the pit, ore and PAG/NPAG material in color coded zones

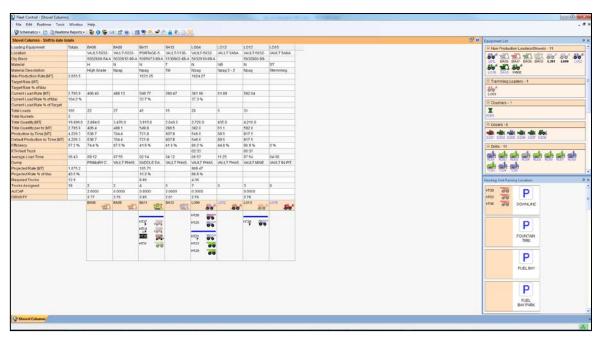


Figure 3: Table including the status of different loading equipment - location, type of rock material and production data.



WASTE ROCK MANAGEMENT PLANNING

Waste rock and till produced during mining was used in the construction of the mine site infrastructure, including dikes, roads, pad foundations, while some of the NPAG waste rock is being put aside for capping at closure and for underwater structures for fish habitat compensation. The balance of the PAG or NPAG waste rock that will not be used is placed and will remain in the dedicated rock storage facilities for PAG or NPAG material. Figure 2 presents the waste rock storage facilities for Meadowbank, with the specific waste rock type they contain.

As a first step in waste rock management planning, options were developed to define the main use and destination for each rock type based on the results of geochemical testing. The second step required accounting of the quantity and timing of extraction of each waste rock type on an annual basis. This included further refinement of the quantity, type and timing of construction material requirements for each infrastructure project. To this end, the lithology of waste rock was added to the geological block model for each deposit and a detailed account of construction requirements was made based on the most advanced infrastructure designs available at the moment of planning. The Waste Rock Management Plan is updated annually with current production quantities and actual Life of Mine, dictating the production and mining schedule. Planning of the placement of waste rock material is reviewed for each Life of Mine exercise, considering the different waste rock facility locations and capacity, as well as the closure NAG cover requirements.

Waste rock management is also part of the weekly planning of the mine engineering department. Part of the mining planning includes the management of waste rock, to ensure the plan established with the Life of Mine is followed, to ensure material required for construction or closure purposes are properly stored, and also to plan for adequate and permitted storage areas. Figure 5 shows an example of the waste rock management diagram updated and included in the weekly planning discussion between engineering, geology and mine production. Because of the large material requirement for construction and NPAG rock cover, as well as the importance for adequate disposal to meet closure objectives, waste rock management is a key component of the mining planning at Meadowbank.



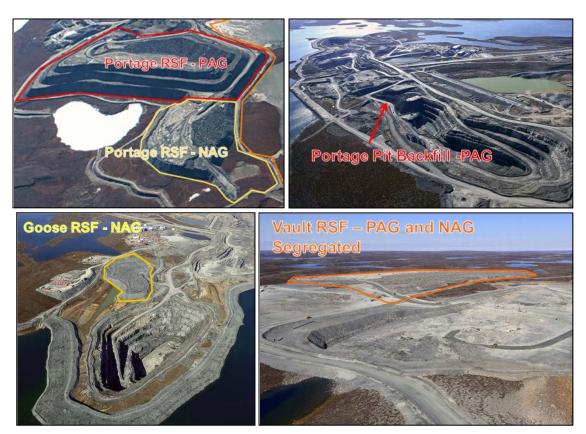


Figure 4: Waste Rock Storage Facilities at Meadowbank

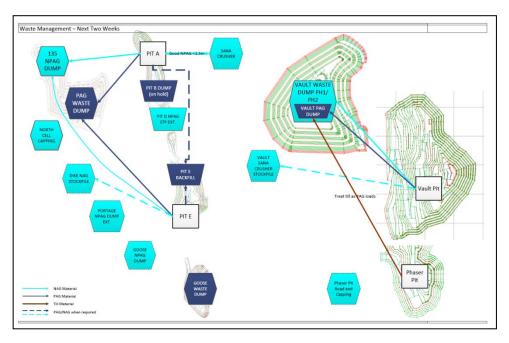
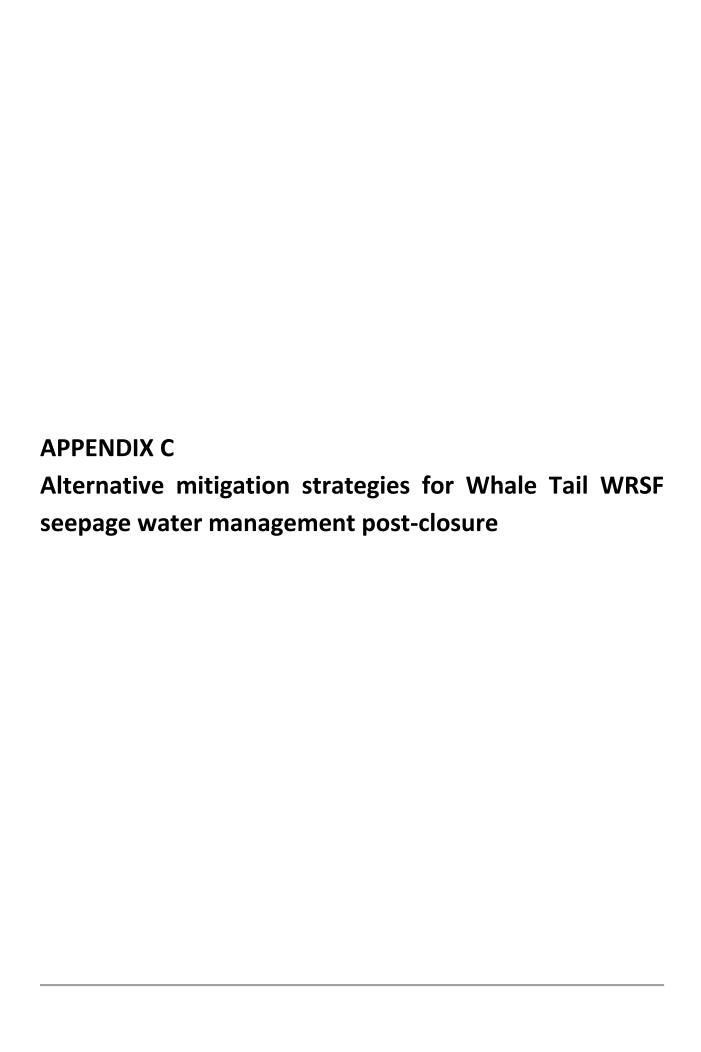


Figure 5: Two Weeks Waste Rock Material Management Diagram





TECHNICAL MEMORANDUM

DATE October 25, 2018 **Project No.** 1789310-236-TM-Rev0

TO Jamie Quesnel

Agnico Eagle Mines Limited

CC Michel Groleau

FROM Valérie Bertrand EMAIL vbertrand@golder.com

ALTERNATIVE MITIGATION STRATEGIES FOR WHALE TAIL WRSF SEEPAGE WATER MANAGEMENT POST-CLOSURE

The Whale Tail Waste Rock Storage Facility (WRSF) seepage is planned to be released directly to the receiving environment at post-closure only. During WRSF construction, operations, and closure, WRSF seepage will be intercepted and treated as necessary prior to discharge. Post-closure WRSF seepage water quality is conservatively predicted to have an arsenic concentration that is higher than the Site-specific Water Quality Objective (SSWQO). It is predicted that mixing of WRSF seepage into Mammoth Lake will meet SSWQO outside a mixing zone of between 5 m (in June when 65% of the flow is predicted to occur at a dilute concentration) and 60 m (in August when 9% of the flow could occur at a less dilute concentration) from the point of entry of this seepage into Mammoth Lake.

Water quality limits regarding WRSF seepage mixing zone will be established prior to post-closure. At that time, a large database of historical results on seepage volume, quality and pile freeze back will be available to update the water quality model and enhance the certainty of predictions.

As due diligence, the following mitigation strategies for WRSF seepage will be considered:

Modification of water diversion infrastructure around WRSF: the ponds, berms, ditches, and water conveyance strategies around the WRSF can be modified to minimize the effect of chemical mass transfer on water quality in the receiving environment. The water conveyance strategy will be evaluated and optimized during operations and closure for implementation at post-closure.

Modification of the geotechnical and/or hydrogeological properties of the cover: The geotechnical and hydrogeological properties of the cover can be modified to optimize the desired features of the cover and minimize release of chemicals from the WRSF. Features such as water evaporation capacity, enhancement of seepage or runoff can be modified by design of the WRSF and/or cover material properties and placement. This will be evaluated during operation as the pile gets progressively built and covered.

Additional cover with non-potentially acid generating (NPAG), low leachable (NML) waste rock. Should WRSF seepage water quality be affected by unfrozen PAG or ML rock, the cover can be thickened where needed. There will be significant excess NPAG/NML material available to thicken the cover if needed based on field monitoring results during operation through closure and this cover material, if required, can be sourced from

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October 25, 2018

the south greywacke rock from the south pit wall. The ARD/ML segregation criteria described in the ARD/ML Sampling and Testing Plan together with experience in rock segregation for environmental purposes at Meadowbank is anticipated to facilitate the piling of good quality, NPAG/NML waste rock on the east side of the WRSF.

Release of WRSF contact water to Whale Tail Pit Lake: The mixing dynamics of WRSF seepage in the receiving environment are expected to be greater in Whale Tail Pit Lake than in Mammoth Lake given the areal extent of this lake and substantially larger volume (27,000,000 m³ compared to 6,200,000 m³ for Mammoth Lake; 4.3 times mixing volume) to receive the 180,000 m³ predicted average seasonal volume of the Whale Tail WRSF seepage. The Whale Tail and Mammoth dikes retaining water in the Whale Tail Pit Lake constitute an additional risk mitigation measure to minimize water quality effects to Mammoth Lake prior to reconnection.

VJB/jr

