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Environment and Climate Change Canada's Presentation to the Nunavut Water Board Concerning the Sabina Gold & Silver Corp. Back River Gold Mine Project Type A Water Licence Final Hearing

Avatiliqiniimut Hilaup Uunnakpallianingit Kanata'p Takugakhainit uvunga Nunavut Imaliriyit Katimayit Ihumaaluutigiyangit uvunga Sabina Kulu unalu Havigalik Kuapuriisan Hanningayuk Kuugaa Kuulu Uyaraqtarvik Havaaq Tukinga A Imaq Laisikhaat Iniqpiaqhimayumi Naalagvikhangit

2AM-BRP----

**Nunavut Water Board Final Hearing
Nunavut Imaliriyit Katimayit Iniqpiaqhimayumik
Naalagvikhangit
Cambridge Bay, NU
Iqaluktuutiaq, NU
August 8-9, 2018
Niqliqivik 8-9, 2018**

**Anne Wilson
Hivulliqtiuyuk Imaliriyit Nakuudjuhla
Gabriel Bernard-Lacaille
Himmauhiriyangit Angayuqqaanguyuk
Avatiliqiniimut Ihivriurnikhainnut
Aulapkaiyi**

Overview

Nainaarutaat

- ECCC Mandate
- Relevant Acts and Legislation
- ECCC Recommendations
- ECCC Maliktakhangani
- Nalaumayangit Maligait Maligautingillu
- ECCC Pitquyangit



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NUNAVUT WATER BOARD

Date: August 8, 2018

Exhibit No.: 19

ECCC Mandate

ECCC Maliktakhangani

- Preserve and enhance the quality of the natural environment
- Conserve Canada's renewable resources
- Conserve and protect Canada's water resources
- Forecast daily weather conditions and warnings
- Enforce rules relating to boundary waters
- Coordinate environmental policies and programs for the federal government
- Nunguttailinahuagtut pidjarikhinahuartugulu nakuudjuhinga ilitquhiita avatingit
- Hapummilugit Kanatam nunguyiuttut avatimiuttat
- Hapummilugit huruqhiqtailugillu Kanatam imaup avatimiuttat
- Kangiqhinahuarlugit ubluq tamaat anuringa qanurilinganingit naunaiqtaaqhimalugit
- Pilimmakharlugit maliktakhait ilagiyangit kigiliuqtauhimayut imat
- Aulapkailugit avatimiuttat atuagait piliriakhait haffumani kavamatuqangit kavamaita

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Relevant Acts and Regulations

Nalaumattiaqtut Maligait Maliguarutingillu

- *Department of the Environment Act*
- *Canadian Environmental Protection Act*
- *Fisheries Act – Pollution Prevention Provisions & Metal and Diamond Mining Effluent Regulations*
- *Avatiliriyiitkunnit Maliganga*
- *Kaanatami Avatiliriniqmut Hukhaungiqtailiniq Maligaaq*
- *Iqalungnut Maligaaq – Huruqtailinahuagtut Pittailinahuarningit Ilaliutingit unalu Havigalik Qiplariktuq Uyaraqtarviuyut Halumaittut Maliguarutingit*



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Environment and Climate Change Canada's Participation Avatiliqiniq Hilaup Uunnakpallianingit Kanata'p Ilauqtauhimayut

- Environment and Climate Change Canada provides scientific expertise within our mandate to the Nunavut Water Board
 - Freshwater Environment
 - Monitoring, Mitigation and Management Plans
- Avatiliqiniq Hilaup Uunnakpallianingit Kanata ilaliutivagaat qauyiharnikhainut ayuinningit iluani maligautivut uvunga Nunavut Imaliriyit Katimayit
 - Halumayumik imaq Avatingit
 - Muaqhiiyangit, Ingattaqhittailinahuamikkut Munaqhiiyangillu Upalungaiyautit

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Environment and Climate Change Canada's Participation continued Avatiliqiniq Hilaup Uunnakpallianingit Kanata'p Ilauqtauhimayut aulanngittut

- Environment and Climate Change Canada has participated in all phases of this review process thus far.
- This presentation summarizes Environment and Climate Change Canada's recommendations.
- Environment and Climate Change Canada has reviewed the Proponent's responses.
- Avatiliqiniq Hilaup Uunnakpallianingit Kanata ilauqatauhimagaluaqtut iluani tamainnit ilanganit haffumani qimilurningit piliriakhat taimaa.
- Una takugakhangit nainaaqhimayuyut Avatiliqiniq Hilaup Uunnakpallianingit Kanata'p kiutquiyangit
- Avatiliqiniq Hilaup Uunnakpallianingit Kanata qimilruqhimayaraluangit Havaakhaliuqtunut kiuvangit.

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Environment and Climate Change Canada's Resolved Issues Avatiliqiniq Hilaup Uunnakpallianingit Kanata'p Ihuaqhihimayangit Akihautaa

- During the Technical Review, the Department provided comments on
 - Mitigation for in-water works
 - Ore stockpile Metal Leaching and Acid Rock Drainage
 - Waste Rock Storage Freeze Back
 - Dissolved versus total fractions of metals
 - Seep Surveys
 - Post-Closure monitoring
 - Arsenic Site Specific Water Quality Objective
- These issues were resolved prior to and during the Technical Meeting held in Cambridge Bay on May 1-2, 2018.
- Qauyihamikkut Qimilruqhutik, Havagviata Ilaliutihimayangit kiuviniit ukunanngat
 - Ingattaqhittalinikkut haffumani iluani-imaq havaangit
 - Uyaraq ilirihimayangit Havigalik Maqhihayut unalu Hivuuranagtumik Uyaqqat Imaiyaqhihayut
 - Aturuiqhihayut Uyaraq Tutquumayangit Qiqiffaamiyukhaq
 - Nunguttallianingit ukunanngat atauttimut ilainnaatigut havigalingnit
 - Maqhihayut Nalunaiyaiyut
 - Iniqpiaqhihayut-Umigutaat munaqhiyangit
 - Hivuuranagtut Havagviat Ihumagiviniuk Imaq Nakuudjuhia Ilittupkainiq
- Tahapkuat akihautaat ihuaqhiffaahimayayut pinahuaqtinnagu uvunga pivutiktatq Qauyihamikkut Katimaviutik Iqaluktuutitq uvani Qiqaiyaluarvia 1 mit 2 mut, 2018 mi

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ECCC#1 – Closure Objectives and Criteria : Receiving Water Quality ECCC#1 – Umigutaanit Ilitturnikhainut Qanurilinganingit: Tuniyahimayut Imaq Nakuudjuhingit

- The Proponent proposes to meet Site Specific Water Quality Objectives or the *Metal and Diamond Mining Effluent Regulations* criteria at final discharge points during closure and proposes to defer discussions until a better understanding of water quality at the site is obtained.
- ECCC#1 Recommendation**
 - ECCC recommends that the Proponent, in future iterations of the Interim Closure and Reclamation Plan, include explicit statements on receiving water quality objectives, as well as clarify discharge points and where objectives are to be met.
- Una Havaakhaliutunut tukhiutigiyangit tikinnahuaqhugu Havagviat Ihumagiayuyut Imaq Nakuudjuhingit Ilitturnikhainut uuminngaluuniit Havigalik unalu Qiplariktumik Uyaraqtarviuyut Halumaitigut Maliguarutingit qanurilinganingit uvani Iniqpiaqhihayumik unguvaqhihayangit tiliugait uvani umigutaanit tukhiutigiyangillu nuuttukhayut niplautigiyangit kangiqhittaryuummiriangani haffumani imaq nakuudjuhingit havagviatut pigiaqahutik.
- ECCC#1 Pitquyangit**
 - ECCC kiutquiyangit taamna Havaakhaliutunut, hivunngani kiuffaarmigiaqatqangit haffumani Atullakhihayangit Umigutaanit Ihuaqhaffaarmiyakhangillu Upalungaiyautingit, ilaliutihimayangit tutqittiaqtumik kiuviniit tuniyahimayangit imaq nakuudjuhingit ilitturnikhainut, uuminngalu tutqittiaqtumik ahivaiyaqhihayangit tiliugait humiliqaak ilitturnikhainut katilvuihimayayut.

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ECCC#2 – Saline Water Pond Closure Site Specific Water Quality Objective
ECCC#2 – Taryulik Imaq Tahiraq Umigutaanit Havagviat Ihumagiayuyut Imaq Nakuudjuhingit Ilitturnikhainut

- Due to chloride in sediment pore water at the bottom of the Saline Water Pond, chloride may be of concern when reconnecting Umwelt Lake to surface waters. The target chloride concentration proposed by the Proponent is 120 mg/L.

ECCC#2 Recommendation

- ECCC recommends that the Proponent include in their Saline Water Management Plan provisions for tracking sediment pore water chloride concentrations for the Saline Water Pond in order to ensure appropriate water quality for the reconnection of Umwelt Lake to surface waters.

- Ilaurutiqaramik hiuralingnit imarmi ataanittut haffumani Taryulik Imaq Tahiraq, ilaurutilik ihumaaluutauhimayuq katilviuffaarumik uvani Umwelt Tahiq qulaaniittut imat. Hivumuuqhimayangit ilaurutik hakugingnia tukhiutigiyangit ukunangat Havaakhaliuqtunut hamnauyuq 120 mg/L.

ECCC#2 Pitquyangit

- ECCC kiutquiyangit taamna Havaakhaliuqtuq ilaliutigiyakhaat iluaniittumi Taryulik Imaq Munaghilyakhat Upalungaiyautingit ilaliutiniit naunaqhimagianganit hiuralingnit imaq ilaurutilik hakugingningit haffumani Taryulik Imaq Tahiraq pidjarkhigiami nalaumayumik imaq nakuudjuhingit katilviuffaarianganit haffumani Umwelt Tahiq qulaaniittut imat..

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ECCC#3 – Nitrite

ECCC#3 – Naitrait

- The Department had concerns with the predicted levels of nitrite in surface waters and seeks clarification on nitrite inputs to the water and load balance model.

ECCC#3 Recommendation

- ECCC recommends that the Proponent clarify nitrite inputs for rock sources and identify the reasons for reductions in predicted nitrite concentrations.

- Una Havagviat ihumaaluutiqaqhutik kangiqhihimayaayut qaffiuningit naitraitmik qulaaniittut imat tutqiqhimayumik qiniqhiavluk naitrait iluaniittut imarnut illiriyayut uuktuutigiyangit maliktangit.

ECCC#3 Pitquyangit

- ECCC kiutquiyangit taamna Havaakhaliuqtuq tutqiqhigiaqaqtut naitrait ilaliutauhimayut uyaramit aallatqiit nalunaqhiyangillu hungmangaat nailiyauhimayut kangihuutigiyangit naitrait atuqhimayangit

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ECCC#4 – Aquatic Effects Management Plan

ECCC#4 – Imarmiuttat Atuliqtauningit Munaqhiiyangit Upalungaiyautit

- The Proponent has made progress on the design of the Aquatics Effects Management Plan, in consultation with ECCC. ECCC notes that there is further work to be done with respect to the study design and characterization of natural variability, and acknowledges the Proponent's ongoing work in this regard with further monitoring in 2018.

ECCC#4 Recommendation

- ECCC recommends that an updated version of the Aquatics Effects Management Plan be submitted for approval following the issuance of a water licence and looks forward to ongoing work the Aquatics Effects Management Plan.
 - Una Havaakhaliuqtuq nakuuyumik pivalliyukhat tiliyauhimayunit haffumani Imarmiuttat Atuliqtauningit Munaqhiiyangit Upalungaiyautit, katimadjutigivlugit ukunani ECCC nit. ECCC nalunaqhiiyangit hivuani havaakhaqaqhutik ihumagivluniuk illituqhiiyangit tiliugait unalu ilitquhiita nanminiriyangit aallatqiinguyut, ilitarivlugulu hamna Havaakhaliuqtu'p havaraaqhimaningit uvanngat amiqhiraariaqaqtangit uvani 2018 mi.
- #### **ECCC#4 Pitquyangit**
- ECCC kiutquiyangit nutaannguqtighimalugit numikhimayunit haffumani Imarmiuttat Atuliqtauningit Munaqhiiyangit Upalungaiyautit tuniyauglaqaqtuq angiqtaugiaqaqhuni malikhugillu haffumani titirariqhimaumik imaq laisikhaat hivumuunilugulu aturaaqtakhainit havaangit haffumani Imarmiuttat Atuliqtauningit Munaqhiiyangit Upalungaiyautit.

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Thank you! Quanaqutin !

- ECCC would like to say thank you for the opportunity to participate in this water licencing process



- ECCC quyagiyumayangit ilingnut angmaumayumik ilauqataugavit uvani imaq laisikhaanut piliriakhaq.

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