SEABRIDGE GOLD

September 4, 2017

VIA EMAIL

MiningWatch Canada
Suite 508
250 City Centre Avenue
Ottawa, Ontario
K1R 6K7

Attention: Mr. Ugo Lapointe
Canada Program Coordinator

Dear Mr. Lapointe:

Re: Seabridge's KSM Project, Northwestern British Columbia

Thank you for your letter, dated August 26, 2017. I am concerned by your continued inaccurate portrayal and factual errors regarding the KSM Project. As such corrections, rebuttals, and/or additional technical elaboration to your various comments are provided in the following letter. Of particular concern, is your selective use of text from the 2014 Canadian Environmental Assessment Agency's KSM Comprehensive Report. What you failed to mention in your letter, was that the KSM Project underwent an extensive rigorous independent joint harmonized BC-CANADA environmental assessment over a six year plus period (i.e. 81 months), and that in all instances, the British Columbia Environmental Assessment Office and the Ministry of Energy and Mines, along with the Canadian Environmental Assessment Agency concluded that KSM was not likely to cause adverse environmental effects **when implementation of the proposed mitigation measures is taken into account.** It was on this basis the KSM Project **was approved** by the appropriate federal and provincial regulatory authorities in their role as statutory decision makers on behalf of the Crown and all citizens of British Columbia and Canada.

Size of KSM and Technical Details Pertaining to the Proposed Tailing Management Facility (TMF)

The KSM tailings dam and the water storage dam, as planned, are not the biggest in the world. There are actual operating mines in Chile and in Peru with substantially larger facilities that have operated without incident. MiningWatch's continued focus on the size of KSM and its tailings management facility is an example of ongoing inaccurate portrayal, given the rigour of the recently completed independent environmental assessment processes and the fact that the size of the proposed KSM Project was well communicated throughout the environmental assessment review process and subsequently assessed as such **and ultimately approved**.

106 Front Street East, Suite 400, Toronto, Ontario, Canada M5A 1E1
Telephone: (416) 367-9292 Facsimile: (416) 367-2711 info@seabridgegold.net

The proposed KSM Tailings Management Facility (TMF) is **markedly different** than Mount Polley. The design is similar to BC's Highland Valley Copper and Gibraltar's Mines, both which have not had breaches and in the case of Highland Valleey a substantial operating period. The continued comparison of the KSM Project to the Mount Polley incident is both factually incorrect and inaccurate.

The KSM tailing dams will be major engineered structures that will be constructed over the life of the mine. The dams are designed to the highest standards available as developed by the Canadian Dam Association and will have a high level of operating management controls, engineering oversight, and third party review, both by government regulators and independent experts hired by Seabridge, as was evidenced within the KSM Environmental Assessment (EA) and Seabridge's work since receipt of the 2014 EA approvals.

The main characteristics of the KSM's TMF are as follows:

- The TMF is designed to work within a natural valley which provides natural containment, with extensive and comprehensive monitoring throughout and, in particular, at the two ends of the valley. The KSM TMF is not surrounded by a ring dyke;

- The tailings dams will be constructed of high strength, compacted, non-acid generating, coarse sand, which is produced by cycloning (washing) the tailings. The factors of safety for the dams will exceed the Canadian Dam Association recommended values for static and earthquake stability. The construction material is not till or earthen material;

- The TMF water pond is to be located kilometers upstream of the main north and southeast dams which will reduce the water pressure on the dam and further reduces the risk of piping. The dams will contain extensive monitoring and dewatering systems to ensure that pore pressures do not build up within the structure;

- The dams are resistant to earthquake loading and have been designed for the 10,000-year return period earthquake, as recommended by the Canadian Dam Association;

- The facility has been designed as a contingency to store a peak flow, sustained over 30 days, with a complete failure of all associated surface water diversion ditches;

- The KSM TMF was recently permitted as a discharge facility after undergoing an extensive environment review over the past six years. It has not been designed as a zero discharge facility. As a result, water will not accumulate within the facility;

- Annual release of environmentally acceptable discharge, **without water treatment,** will occur and there will be no downstream environmental impacts. The discharge will be staged to coincide with peak flows in the nearby receiving water courses. The lack of treatment associated with the TMF **directly contradicts** Mining Watch's assertion that the KSM's TMF will require perpetual water treatment;

- Construction and operation will occur in a series of stages with independent cells in each stage. This staged construction approach will minimize surface disturbance and potential environmental impacts;

- 90% of the tailings material will be sand and will be classified as non-potentially acid generating material. Potentially acid generating material, comprising 10% of the tailings material, will be deposited in the centre cell. This cell will be lined and isolated from the main portion of the TMF and the natural environment.

- The TMF Facility has been designed, reviewed and approved for the entire life of the proposed KSM Project; and,

- The Mount Polley incident was primarily attributed to a design flaw that did not account for the presence of lacustrine clay layers within the foundation of the dams. Such clay layers do not occur at the KSM TMF site based on the extensive site drilling that has occurred as well has a thorough understanding of the past geological environment, which was not conducive to the development of such clay layers.

Another significant difference between the proposed KSM Project and Mount Polley is that the KSM Project underwent a substantive independent environment assessment review, while it is our understanding that Mount Polley did not undergo an environmental assessment review and was approved via the submission of a Mines Act Permit submitted in the late 1990's.

Based on substantive environmental assessment review of the KSM Project, several design changes, originating from the concerns of local aboriginal groups, with additional costs totalling tens of millions of dollars, added to the TMF design to address concerns. We are of the opinion it **is irresponsible** of Mining Watch to continue to try and compare projects that were approved and put into operation more than 20 years ago, against the projects of today, which must undergo extensive independent scrutiny prior to receiving permission to operate.

Timing and Validity of the Environmental Assessment Approvals

The timing of the BC Environmental Assessment Approval was indeed prior to the Mount Polley incident which occurred on August 4, 2014. However, the Canadian Federal government approval was granted on December 19, 2014, well after the Mount Polley incident and just a few weeks prior to the release of the Mount Polley Panel Report. The Federal government approval, prior to the release of the Mount Polley Panel Report, can be interpreted as a sign of confidence in the design of KSM water management strategy, including the TMF and WSF. It can unequivocally be stated that the approval would have been delayed until after the Panel report was released, had the independent government technical experts who reviewed the KSM design had any concerns with the design.

The ongoing attempt by Mining Watch and other NGO's's opposed to responsible mining activity within Canada, to suggest that KSM's Federal environmental assessment approval is somehow deficient because the assessment process was not a panel review is irresponsible. The KSM Project underwent a joint BC-Canada environmental assessment as mandated by the BC Environmental Assessment Act and the Canadian Environmental Assessment Act (1992) respectively. The federal environmental assessment process was deemed to be a comprehensive study review following public consultation by the Canadian Environmental Assessment Agency (CEAA) in 2010. CEAA classifies three levels of environmental assessment: a screening level review; a comprehensive study review; and, a panel review. It important to note that the level of technical expertise required by the Government of Canada (i.e. CEAA) to complete a

comprehensive study review as compared to a panel review is **identical,** with the only difference in the environmental assessment processes being with the independent experts whom assess the project. For a comprehensive study review, these experts reside within the Federal Government agencies, as compared with a panel review, where three experts are appointed by the Minister of Environment from outside the government.

The Federal Minister in her decision process on the environmental assessment review had the option to:

- Reject the project;
- Approve the project; or
- Request additional information and/or refer the environmental assessment process to a panel review.

Because she approved the project, the Minister was obviously confident in the work completed during the comprehensive environmental assessment review, including the public engagement undertaken by both Seabridge as the proponent, and the various government regulatory agencies on the project, including the work undertaken to address the various concerns of the aboriginal groups**.**

The Minister's confidence in the quality of the work completed during the environmental assessment review, especially pertaining to KSM's water and waste management structures has since been further validated by the Federal government granting various regulatory authorizations to the project, **subsequent to** the EA approval, the publication of the Independent Mount Polley Report and **after** BC Auditor General's report release of May 2016. These authorizations include a permit for the WSF as required under the International Rivers Improvement Act (http://seabridgegold.net/News/Article/642/federal-government-issues-key-water-licence-for-seabridge-gold-s-ksm-project) which was **granted in November 2016** and the Schedule 2 Amendment Approval for the TMF (http://seabridgegold.net/News/Article/675/canadian-government-issues-key-authorization-for-ksm-s-tailings-management-facility), **granted in June 2017,** respectively. Had the Federal Government of Canada had any concerns regarding the design of the TMF or the WSF and these facilities planned operations, these permits and authorizations would not have been issued

KSM's TMF Design as Best Available Technology (BAT)

In response to the Mount Polley incident, and well in advance of the new BC regulatory requirement, Seabridge immediately committed to (i.e. mid-August 2014) the establishment of an Independent Geotechnical Review Board (IGRB) to oversee and comment of the design of the major structures **planned for and not yet** built at KSM (another difference between KSM and Mount Polley). This board was formed in January 2015 and contains more than 350 years of world wide experience in the management of large scale geotechnical structures. (http://seabridgegold.net/News/Article/503/independent-geotechnical-review-board-established-for-ksm-project). The IGRB confirmed in April 2016 that the design of the proposed structures for our KSM Project were appropriate and were deemed safe and the findings of their first report were made publicly available on the KSM Project website. (http://seabridgegold.net/News/Article/587/design-of-tailing-management-facility-and-water-storage-dam-at-ksm-receives-vote-of-confidence-from-independent-geotechnical-review-board; http://ksmproject.com/independent-review-board/)

Furthermore, Seabridge, in recognition that our Provincial Environmental Assessment Certificate was issued prior to the Mount Polley incident and in response to the Independent Expert Engineering Investigation and Review Panel report on the breach of the Mount Polley tailing storage facility, initiated in August 2015, a further Best Available Tailings (BAT) Technology review of the planned management approach for KSM. This study went back to first principles and reevaluated all prior decisions made with respect to the TMF and reinitiated a review of the proposed TMF location as well as the planned waste depositional approach.

This study confirmed that the existing tailing management facility design, consisting of centerline dams constructed with double cycloned sand and a till core in association with wet tailings deposition, is the best available technology for tailings deposition and the most environmentally responsible design to minimize long term risks associated with the proposed tailing storage facility for the KSM Project. This conclusion confirmed the findings from KSM's Independent Geotechnical Review Board that the TMF's design is robust and appropriate for KSM's site specific characteristics. (http://seabridgegold.net/News/Article/617/seabridge-gold-s-design-of-ksm-project-s-tailing-management-facility-confirmed-as-best-available-technology-by-leading-engineering-firm; http://ksmproject.com/bat-report/).

As a further step in its review process for our proposed tailing management approach well after receipt of the EA approvals, Seabridge commissioned an independent review of the BAT report by Dr. Dirk van Zyl. Dr. van Zyl is a world-recognized expert in tailings, mined-earth structures and sustainability with over 40 years of experience. In his review of the Klohn Crippen report, Dr. van Zyl states: "I support the overall conclusions of the KSM BAT report. The evaluation highlighted that **using filtered tailings at this project is not a feasible option as it will not result in moving to zero failures**. Adding complexity in tailings management, as filtered tailings will do at the KSM site, does not promote the overall goal of moving to zero failures. ((http://seabridgegold.net/News/Article/617/seabridge-gold-s-design-of-ksm-project-s-tailing-management-facility-confirmed-as-best-available-technology-by-leading-engineering-firm)

Contrary to your assertion that it does not represent BAT, Seabridge's TMF design has thus been deemed to be considered BAT by several independent experts. The facility is designed to minimize surface water, promote unsaturated conditions and achieve dilatant conditions through compaction. The conclusions of the BAT report were based on an explicit list of accounts of the impacts from various alternatives and for each account indicator, which gives a clear understandable measurable description of those impacts. This was followed by a value-based decision process whereby indicator values were scored and weighted in a systematic transparent manner leaving the value basis for the effects impacting readily apparent., irrespective of cost. We have brought this very important BAT study to your attention several times.

Failure Effects Mode Analysis (FEMA), Contingency Planning and Project Costs

As a component of the environment assessment application, Seabridge was required **to submit a failure effects mode analysis** (FEMA) and two such analyses were completed in 2009 and 2012 respectively. They are summarized in Chapter 35 of the EA application documents that were reviewed by the appropriate government agencies. Additionally, key risks specifically associated with the KSM TMF were identified and reviewed as a component of the Best Available Tailing Technology for the KSM Project report that is publicly available. An additional FEMA will be completed on the project as the project moves thru project feasibility development and into construction.

The dam break scenario which was referenced in your letter and summarized in the CEAA Comprehensive Study Report, is actually the start of the contingency planning for the KSM Project as discussed in Chapter 35 of the EA application documents. Detailed contingency plans for a tailings dam failure or a mining spill are required for the provincial regulatory processes, and are currently in development. Additionally, detailed Quantitative Performance Objectives will be developed as a component of the overall project feasibility process.

Further it is highlighted that costs for long term (i.e. perpetual) water treatment and monitoring **have actually** been accounted for and are publicly available in our recently updated and published 2016 pre-feasibility study.(http://seabridgegold.net/pdf/NR/NOct6-16.pdf), contrary to your assertion that no such costs have been identified.

"In addition to sustaining capital, a further US$688 million has been charged against the project including US$528 million set aside in a sinking fund during the production period to pay for estimated water treatment obligations which continue after closure and US$160 million for physical reclamation after mining operations have ceased."

The project finances are robust even with this long term financial commitment factored into the project's financial model.

There is no such requirement in Canadian law, or the US for that matter, for a company to provide upfront funds for potential downstream effects. As was highlighted by both the BC and Canadian Government approvals, the KSM Project was approved on the basis **that it will not cause significant adverse environmental effects.** Should an incident occur, mitigation activities and costs, which are the responsibility of the proponent, will be identified and implemented immediately at that time.

Water Quality within the Unuk River

Regarding water quality, the conclusion of no significant adverse effects to water quality, fisheries or aquatic resources in the Unuk River (and therefore downstream water bodies in Alaska) was based on the recommendations of those several qualified professionals working for and on behalf of the federal and provincial assessment agencies. This conclusion also covered the closure period associated with the project.

In your discussion of water quality within your August 26, 2017, letter you **failed** to discuss the importance of baseline conditions and their significance in determining the absence or presence of potential environmental impacts associated with a project. Due to the presence of naturally occurring mineralization in the area, baseline total and dissolved metal concentrations within water flowing with the Unuk River (and other rivers ands teams associated with the project) **frequently exceed** BC and Alaska water quality guidelines for the protection of freshwater aquatic life; such is the case for parameters identified in the letter 26-August-2017 (Table 1).

Baseline guideline exceedances were commonly observed for dissolved aluminum, total cadmium, total chromium, total cobalt, total copper, total iron, total lead, total selenium, and total zinc (see Appendix 14-A of the Application). Parameters with existing guideline exceedances, that are not measurably changed due to the potential project's influence, **are not considered a Project-related effect.** Of note, water treatment associated with the project is predicted to lower the concentration of many parameters in the Unuk River at the Alaska Border (sample station UR2), including

cadmium, copper and iron. Further, mercury, cadmium, and selenium are predicted to be below applicable guidelines for the protection of aquatic life; as water quality guidelines are determined by the State of Alaska (and the BC Ministry of the Environment) to be protective of the most sensitive freshwater biological receptors, there is **no potential for adverse effects** to water quality for these parameters, **contrary to** the assertion in your letter.

In summary, water quality predictions associated with the project exceed **guidelines only where baseline levels exceed guidelines**.

Also, it is relevant to note that the main discharge for the project is actually to lower Mitchell Creek, where there is very little to no aquatic resource value (or fish) to protect within the initial dilution zone (IDZ); the Unuk River is kilometers downstream of the planned discharge point and WSF Flows (i.e., contact flows from the Project) represent a maximum of 1.5% of average monthly flows at UR2. It is also noted that the identification and use of an IDZ **is within compliance** with the applicable BC regulatory standards.

Table 1. Summary of Baseline and Predicted Water Quality (Post-Closure) for the Unuk River

Parameter	**Alaska Water Quality Standard (mg/L)**		**Unuk River, Site UR1**		**Unuk River, Site UR2**	
			95th observed, Baseline	**95th Predicted**	**95th observed, Baseline**	**95th Predicted**
	Chronic	**Acute**				
Copper	0.0098	0.013	*0.102*	*0.0821*	*0.0652*	*0.0309*
Iron	-	1	*16.7*	*19.4*	*8.95*	*8.66*
Lead	0.0006	0.041	0.0086	0.0081	0.0045	0.0052
Mercury	0.00077	0.0014	0.000025	0.00005	0.000021	0.000051
Cadmium	0.00078	0.0011	0.00112	0.000716	0.000485	0.000229

For the purposes of this summary, hardness-dependent guidelines were conservatively calculated using annual average baseline hardness (80 mg/L)

Cadmium Guidelines: Acute [e^1.0166(ln hardness)-3.924]; Chronic [1.101672-[(ln hardness)(0.041838)]

Copper Guidelines: Acute [e^0.9422(ln hardness)-1.700]; Chronic [e^0.9422(ln hardness)-1.700]

Lead Guidelines: Acute [e^1.273(ln hardness)-1.460]; Chronic [e^1.273(ln hardness)-4.705]

- guideline not available

Grey highlighted values are greater than applicable chronic guidelines

Italics values are greater than applicable aquatic guidelines

Indigenous Groups in the KSM Area

Your letter's discussion of First Nations and their applicable rights **was also lacking** in significant details and pertinent information to those interested in KSM. Seabridge worked closely with all interested parties, including the local Indigenous people, to ensure that their concerns were received, acknowledged, addressed, and reflected in the Project record throughout the EA review processes. As such, Seabridge has fulfilled the extensive engagement requirements under existing domestic law. The Governments of Canada and British Columbia (i.e. the Crown) agreed with the work as documented by Seabridge during the environmental assessment review and based on their own consultation measures undertaken for the project, as evidenced by the fact the **environmental assessment approvals for the project were granted.** Additionally, you failed to highlight that

the KSM Project was approved as having met the environmental assessment requirements of the Nisga'a Final Agreement (NFA).

The KSM Project is situated within the traditional territory of the Tahltan Nation and the planned TMF occurs within the Nass Area as defined by the NFA. The project is situated topographically upgradient of the Gitxsan traditional territory, including the *wilp* Skii km Lax Ha, as defined by the Crown, and the Gitanyow traditional territory. The project also lies outside the traditional Metis territory.

Due to our engagement efforts, Seabridge signed a Benefits Agreement with the Nisga'a Nation in June 2014 and an Environmental Agreement with the Gitanyow First Nation also in 2014. Seabridge received a letter of support from the Gitxsan Hereditary Chiefs' office during the environmental assessment, and Seabridge addressed the environmental and social concerns of the Tahltan as stated within the report submitted by the Tahltan Heritage, Resources, Environmental Assessment Team. Discussions continue with the groups to negotiate additional agreements.

While we remain receptive to the ongoing concerns of Alaskans and Alaskan Tribal groups and answering their questions, it must be noted that the concerns of Alaskans, particularly as it relates to water quality and aquatic resources, were addressed within the KSM Environmental Assessment and the subsequent approval by the Canadian Government (and BC Government). The Federal Minister of the Environment, in making her decision to approve, relied upon the Canadian Environmental Assessment Agency scientific report which stated, *"The agency has concluded that no significant adverse impacts on water quality, water quantity, fish, or human health are expected on the Alaskan side of the Unuk River."*

While Seabridge is always willing to discuss legitimate ongoing concerns associated with the project, we are dismayed with the ongoing attempts of Mining Watch Canada, and other groups opposed to mining in general, to continue to communicate incorrect and inaccurate information regarding the KSM Project, and we will continue to publicly correct such misinformation. If you would like to discuss further, I can be reached via email, brent@seabridgegold.net, or by telephone at (416) 367 9292.

Regards,

Brent Murphy
Vice President, Environmental Affairs

RBM/…

CC. Shannon McPhail, Executive Director
Skeena Watershed Conservation Council

Jamie Kneen
Mining Watch Canada

Dan Woynillowicz
Clean Energy Canada

Alan Young
Materials Efficiency Research Group