

October 30, 2012

Pacific Booker Minerals Inc.  
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Vancouver, British Columbia  
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**Mr. Erik Tornquist**  
**Executive VP and COO**

Dear Mr. Erik Tornquist

**Morrison Copper/Gold Project**  
**EAC Rejection Response**

## 1 SUMMARY

As requested, the purpose of this letter is to clarify the potential issues that may have led to the Minister of Environment's decision to "not" approve the Environmental Assessment Certificate for the Morrison Copper/Gold Project. The "Information Bulletin" released on October 1, 2012 highlighted three areas of concern with the project:

1. There is a potential to impact a genetically unique sockeye salmon population that contributes to the Skeena River sockeye stocks.
2. The potential for long-term liability for the Province and risk to the environment were not acceptable in this case.
3. There is insufficient data about the behavior of the lake, and the potential diminished long-term water quality in Morrison Lake is not an acceptable risk.

Pacific Booker Minerals Inc. (the Proponent) has been in the EA review process for three years and, during that period, have listened to and responded to concerns raised by the First Nations, Stakeholders, and the Environmental Assessment Working Group. The Proponent recognizes the high value placed on salmon and this has resulted in a project which has a negligible risk of a significant adverse effect to the water quality of Morrison Lake and the sockeye population and to First Nations use of the fisheries.

The overall response to the rejection of the project is summarized in this section and more detailed responses to the concerns expressed from the Ministry of Mines (MEM) and Ministry of Environment (MOE) are summarized in the following sections.

Morrison Lake drains into the 175 km long Babine Lake. Babine Lake is drained by the Babine River, a 100 km long river, which is a tributary to the Skeena River. According to Department of Fisheries and Oceans (DFO) Morrison River sockeye escapement represents 3% of the Babine River sockeye escapement. Although most salmon are genetically distinct, Morrison River sockeye is reported to be one of 17 identified distinct wild populations that report to Babine Lake. The Project footprint occupies approximately 0.0000046% of the Skeena River catchment area. The Proponent acknowledges that the protection of the water quality of Morrison Lake is a key environmental component of the project and has appropriately incorporated a high level of protective measures to protect the water quality of Morrison Lake. These measures include:

1. Control of seepage from the tailings storage facility with low permeability tailings overlying a geomembrane liner overlying low permeability soils. The tailings facility is approximately 2 km from the lake.
2. Placement of potentially acid generating mine rock back into the open pit (and below lake level), where it will be submerged and capped with a wetland/pond environment.
3. A closure system that will collect runoff from the residual pit walls for water treatment. Treated water is then mixed with Morrison Lake water, which is not unlike many water treatment systems in British Columbia.

These measures reduce the risk of water quality effects on Morrison Lake. The Mining Industry is facing enormous challenges in permitting mines in British Columbia and the Province has a responsibility to provide transparency in the technical assessment of “unacceptable” risks. Additionally, every new mine in British Columbia will have the potential for long term liability and, with increasing environmental mitigation, there will continue to be significant increases in bonding requirements to assure environmental protection into closure and perpetuity. This is “good” for the Province and should not be reason for not approving a project.

The Proponent has retained Qualified Professionals to carry out the work and their assessment is that the mitigation works and the water quality modeling carried out for Morrison Lake is appropriately conservative and we caution that judgement is required when combining Upper Bound conditions on top of each other. The collection of more data (and modeling) is not expected to change the conclusion that the Project will not have a significant adverse effect on the water quality of Morrison Lake, and hence, the sockeye salmon.

The EAO EA report and Recommendations of the Executive Director’s report determined that the Project does not have the potential for significant adverse effects; yet the Ministers rejected the Proponents Application for an Environmental Assessment Certificate. Rejection of the Application sterilizes \$6 billion (today’s metal prices and mine reserves) of the Provinces mineral resources and results in \$300 million in lost tax revenue.

## 2 MINISTRY OF ENERGY AND MINES

This section provides a response to the concerns raised by the MEM to the EAO, in a Memorandum dated August 8, 2012 from the Manager of Environmental Science and Permitting, Mines and Mineral Resources Division. The MEM comments are provided in underlined-italics in the following sections.

*“MEM believes that the Morrison Copper/Gold Project still presents significant risks for the following reasons:*

1. *Large-Environmental Liabilities – MEM’s preliminary analysis of the reclamation, closure and environmental liabilities for the proposed project is in excess of \$300 million. Reclamation liabilities of this scale are currently unprecedented in the province of BC. Approximately 2/3 of the liability is directly attributable to the costs to backfill, lime and flood PAG waste rock in the open pit, at the end of mining operations. If this mine waste were flooded earlier in the mine life, environmental liabilities would be significantly reduced.”*

MEM believes that the proponent should place all mine rock into the tailings storage facility (TSF) during operations in order to reduce the potential environmental liabilities and bonding requirements. The Proponent does not agree and provides the following observations:

- The incremental mining cost of placing waste rock in the TSF is approximately \$210 million, as opposed to the mining cost of placing waste rock back into the open pit, which is approximately \$90 million.
- The Proponent agrees with MEM that the bonding cost, based on placement of waste rock back into the open pit by a 3rd Party Contractor, is approximately \$210 million. However, once the waste rock is placed in the TSF it is a “sunk” cost and the Proponent has no opportunity to recover the \$120 million by placing the waste rock back into the open pit with his own mine equipment.
- The Proponent’s assessment is that placement of mine rock in the TSF, versus the open pit, is less environmentally “friendly” as it will require a higher tailings dam, which will also contain potentially acid generating waste rock.
- The storage of mine rock in the open pit, below lake level, is the lowest risk mitigation option with respect to long term sustainability.
- Placement of mine rock in the open pit provides an opportunity to stabilize the pit wall slopes and provides an opportunity to close the pit lake with a combination of wetland and a limited sized contaminant pond. The recommended MEM alternative would result in a large contaminated lake, with higher pit walls.

*“The magnitude of this liability would represent a serious risk to the Province if the project proceeds to development. If the mine were not able to fully carry out the reclamation and closure plan to meet its obligations, the Provincial Government would have to implement the work to protect the environment. To ensure that taxpayers would not have to pay for the costs of the*

reclamation, closure and long-term environmental protection activities, the full costs of these liabilities would have to be covered by bonding requirements under the Mines Act. Financing liabilities of this scale would be a challenge for any industry client.”

The Proponent agrees with MEM that a significant bond will be required. The Bond will increase over the life of mine as the waste rock is extracted from the open pit. The Proponent does not understand why MEM believes that the financial obligation of bonding versus the financial obligation of placing the waste rock in the TSF presents a higher risk and is more onerous, when they are similar. In fact the opposite is the case as the Proponent will have a high degree of commitment to place the rock back into the open pit because he can do it for almost half of the bonding cost.

The Proponent also does not consider the potential bonding cost to be a “challenge of any industry client”. Mine development costs these days are significant in any event and the bond is just part of doing business in a sustainable and environmentally protective manner.

2. “Inconsistency with Provincial Policy – There are several aspects of the project that are inconsistent with the joint MEM/MOE “Policy for Metal Leaching and Acid Rock Drainage at Mine sites in British Columbia”. The policy requires the prevention of ARD wherever possible, and the minimization of environmental liabilities and risk. MEM believes that the current project is inconsistent with the policy, as there appears to be other technically feasible opportunities to improve the design of the project that have not been fully assessed. These improvements would proactively prevent ARD in waste rock and significantly reduce the liability and risk that are associated with the operational phase of the mine (i.e. prior to full implementation of the closure plan). Flooding the PAG waste rock in the tailings impoundment earlier in the mine life would proactively prevent ARD, reduce environmental liabilities and bonding requirements, as well as significantly reduce the risk to the Province in the case of a default.”

The Proponent believes that the Project is consistent with the Provincial Policy and in fact will be one of the first major mines to proactively place all PAG rock back into the open pit for long term saturation resulting in a negligible long term risk to the environment. The alternative of placing PAG rock in the TSF, as discussed in the previous bullet, increases overall risk and is not recommended. The risk to the Province is mitigated with the Bonding requirements.

“The policy also requires that “a proponent must demonstrate the necessary understanding, site capacity, technical capacity and intent to operate in a manner which protects the environment.” The difficult history of this EA review with significant concerns raised, reluctant redesign work for the project, and many packages of incomplete information, places some of these attributes in question.”

The Proponent acknowledges that best practices must and will be adhered to in the design, permitting, operation and closure of the mine. The Mines Act Permit Application will fully define the

detailed environmental management plans, and environmental monitoring plans, to ensure compliance with best practices.

3. ***“Environmentally Preferable Designs Potentially Feasible – MEMs March 2, 2012 review of the 3<sup>rd</sup> Party Review Response concluded that proactive flooding PAG waste rock in the tailings impoundment to prevent ARD appears to be as economically feasible as backfilling PAG waste into the open pit and flooding at closure. This suggests that an environmentally preferable waste management plan that would reduce environmental liabilities and risk is technically and economically feasible, but has not been proposed or fully assessed.”***

This is addressed in Item 1 and 2 above.

4. ***“Potential Future Changes to the Project – PBM intends to reassess mine waste volumes and storage requirements at the permitting stage. MEM believes that in light of PBM’s recent cost estimates and given that alternative waste management plans appear feasible, there is a high likelihood that future modifications will be made to the project that could change EA certificate approvals.”***

It is normal practice, after obtaining the EA Certificate, to proceed with detail design of the project for permitting and construction. During this process there are typically changes to the project to reflect the details for the design, mine economics (metal prices), bonding requirements, etc. This is true for every mine and the Proponent does not believe the Morrison Project is different. The Proponent agrees that placing PAG waste rock in the TSF is feasible, however, as discussed in Item 1, it is not recommended.

5. ***“In-Perpetuity Aspects of Liabilities –Water from the mine facilities will require water treatment prior to discharge to Morrison Lake, likely during operations as well as long after mine closure. At closure, the pit lake will have to be kept at a lower elevation than Morrison Lake to prevent contaminated water from migrating to the lake, and surplus water to the open pit will require water treatment with HDS Lime and secondary treatment technologies. MEM acknowledges that if mining were to proceed these liabilities could not be prevented. The EAO Assessment report notes the long term nature of these mitigation requirements as 100+ years and also notes the long term nature of the effects to water quality. MEM wishes to emphasize to the EAO, that pit water elevations and water quality will have to be managed and treated “in-perpetuity” to protect water quality and the resources in Morrison Lake. Pit wall rock will continue to erode and oxidize making likely that ARD processes will continue for hundreds, if not thousands, of years. This also means that water quality effects from the project should be considered permanent and irreversible.”***

The Proponent acknowledges these comments and provides the following additional perspective:

- The “equivalent” mine rock in the open pit walls that will contribute to ARD is approximately 5 Mt, which by modern day mining volumes is a small quantity. The ARD loadings will increase over a period in the order of 50 years, as the neutralization capacity is used up, and then will slowly decrease with time. The Proponent believes that the majority of the loadings will be measured in hundreds of years.
- 6. **“Uncertainty with Water Treatment Proposed – The protection of aquatic resources in Morrison Lake is reliant on the implementation of effective water treatment and the discharge and thorough mixing of effluent throughout the lake. MEM believes that substantial uncertainty remains regarding the effectiveness of secondary water treatment measure to meet proposed effluent targets, especially for cadmium and aluminum.”**

The Proponent has committed to implementation of “best available, practical technology” to, as far as possible, reduce effluent concentrations. MEM has indicated their concern with cadmium and aluminum and the Proponent has the following observations:

- Aluminum, even without secondary treatment is marginally above baseline. Notwithstanding that the Proponents believes that lower aluminum concentrations can be achieved, the Proponent should not be criticized for being proactive in pursuing the “objective of lowest technically/practical technology.”
- Cadmium, without secondary treatment, approaches BCWQGs and the Proponent acknowledges that cadmium is being used as an indicator by MOE with respect to the effects on Morrison Lake water quality. The Proponents water treatment expert believes that secondary treatment of cadmium can reduce concentrations below the “standard” 0.5 ppb, to as low as 0.1 ppb. For example: recent pilot scale tests on a similar project indicated a value of 0.2 ppb (dissolved). Again, the Proponent should not be criticized for pursuing the “objective of lowest technically/practical technology”. Additional discussion on the environmental effect on water quality in Morrison Lake and the requirement for “thorough mixing of effluent throughout the lake” is addressed in Section 3 (Item 3) of this letter.

### 3 MINISTRY OF ENVIRONMENT

This section provides a response to the concerns raised by the MOE to the EAO, in a letter dated August 2, 2012 from the Section Head of the Environmental Protection Division. The MOE comments are provided in underlined-italics in the following sections.

1. *“First and foremost, Morrison Lake and Creek are pristine, high-valued ecosystems supporting many important fish species, including genetically distinct sockeye salmon with an irreplaceable gene pool.”*

The Proponent acknowledges that sockeye salmon, in addition to other fish species, are important and, accordingly, have included appropriately conservative mitigation measures. Morrison Lake drains into the 175 km long Babine Lake. Babine Lake is drained by the 100 km long Babine River, which is a tributary to the Skeena River. The Project footprint occupies approximately 0.0000046 % of the Skeena River catchment area.

Sockeye salmon spawn in over 70 distinct sites and rear in 27 lakes in the Skeena River watershed, with over 90% of the sockeye production attributed to Babine Lake and its tributaries. According to DFO, Morrison River sockeye escapement represents 3% of the Babine River sockeye escapement. Although most salmon are genetically distinct, Morrison River sockeye is reported to be one of 17 identified distinct wild populations within the Skeena River drainage.

2. *“The environmental and economic liabilities associated with very long term (100+ years) collection and treatment of contaminated mine water, production and storage of water treatment sludge, uncertainty associated with the feasibility of the proposed treatment, and “in-perpetuity” maintenance of site infrastructure adjacent to a lake with a unique salmon stock.”*

Water treatment of residual mine water on closure is a requirement for any new copper/gold mine that has potentially acid generating rocks remaining on the final pit walls, or with residual PAG rock piles. The management plans and operating procedures for the facilities are standard practice. The Morrison Project has the favourable storage volume of the open pit that allows it to attenuate inflows in the event of equipment breakdown, extreme flood, or other systems upsets.

The closure bond for the project protects the Province against the economic and environmental liabilities.

3. *“In Morrison Lake, aluminum, copper, selenium and cadmium are predicted, under a liner and secondary treatment scenario, to approach water quality guideline concentrations, which are thresholds above which impacts to water quality may occur. In addition, sulphate concentrations are expected to increase substantially. Furthermore, metals will accumulate in the sediments of the lake and, under certain conditions, may re-suspend into the water column increasing the metals loading to the lake’s water. EPD is concerned about allocating assimilative capacity of the lake for these contaminants to one water user.”*

A Third Party Review of the lake water quality model was carried out for the EAO by Dr. Bernard Laval, PhD, P.Eng., and his findings are summarized in his report dated 19 June 2012. While the report was forwarded to the Proponent, the Proponents had been advised by the EAO not to communicate with the 3<sup>rd</sup> Party Reviewers, and, therefore have not had the opportunity for a technical discussion regarding the review. Nonetheless, the Proponents reading of the review report is that it supports the EAO's and the Proponents assessment of the lake water quality predictions and the resulting conclusion that the Project can be designed to mitigate the potential for an adverse effect on Morrison Lake.

The following figures excerpted from the Review report illustrate the predicted lake concentrations for aluminum, cadmium, copper, selenium and sulphate. The initial concentrations shown in the figures in the beginning of the project are baseline concentrations. The BC water quality guidelines are also shown as a dashed blue line. The various coloured lines represent concentrations for different mixing conditions in the lake at different times of the year. The Proponents observations from the figures are summarized as follows:

- The concentrations of aluminum, copper and selenium are marginally over baseline conditions and it is misleading of MOE to include these as contaminants of concern. It is also misleading to refer to these as “parameters that approach water quality guideline concentrations”.
- Modeling has been carried assuming all of the Upper Bound conditions, which include:
  - ◆ upper bound seepage rates from the TSF;
  - ◆ assumption that all TSF seepage reports directly to the lake with no attenuation or adsorption;
  - ◆ upper bound groundwater flow rates into the open pit on closure;
  - ◆ assumption that all pit water will be at a low pH at all times and not including any consideration of lag times and depletion of sulphides with time;
  - ◆ use of, what the proponent considers to be an highly unlikely scenario, the freshet overflow condition for lake mixing; and
  - ◆ climate change, which has 6° increase in water temperature, combined with all of the above.

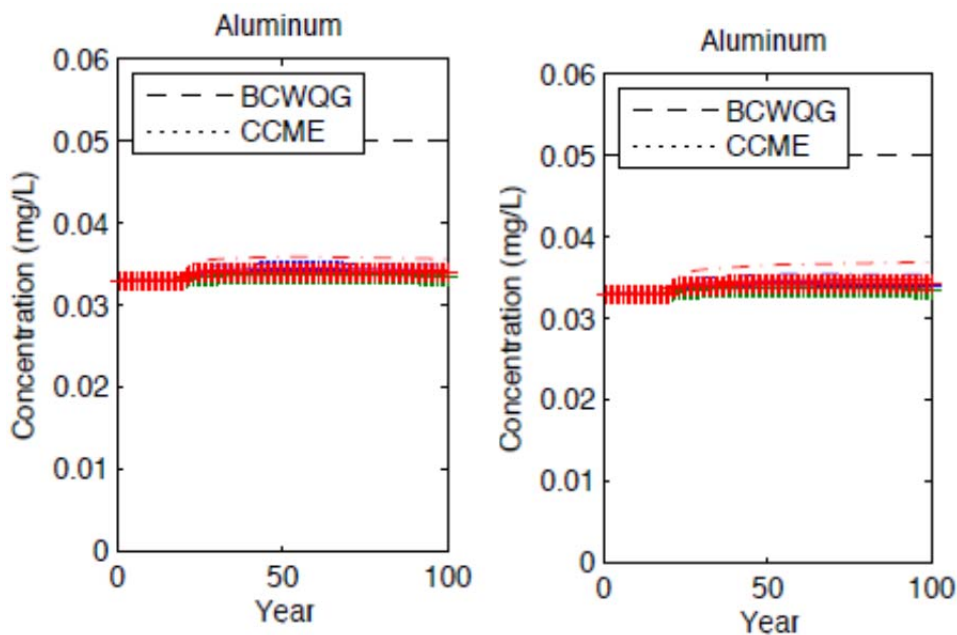
The combination of all of the Upper Bound conditions results in a very low likelihood that they will all occur, or that they will persist.

- MOE has indicated a concern that secondary treatment of cadmium and aluminum has not been demonstrated to their satisfaction. Neither EAO nor MoE have provided any quantitative assessment of the potential water quality if secondary treatment is not feasible. The Proponent's has provided calculations to EAO and MEM that indicate that without secondary treatment the predicted water quality is still below guidelines.
- With respect to the increase in sulphate with time for the climate change case, EAO has not provided any clarification with respect to the likelihood of the overflow freshet case



coinciding with the climate change, nor whether the predictions increase with time or stabilize, or decline. The Proponent's lake modeller's expert opinion is that the likelihood of this occurring is extremely unlikely.

- The Proponent believes that the scenario of "metals will accumulate in the sediments of the lake and, under certain conditions, may re-suspend into the water column increasing the metals loading to the lake's water" is not a realistic scenario to raise a concern. For example, the estimated cadmium un-dissolved metals equates to approximately 25 kg over a hundred years. Considering that the metals may or may not settle, and that they could settle over a large portion of the lake, the relative effect would not be measureable.
- The Proponent acknowledges MOE's concern with allocation of assimilative capacity to one user. The Proponent is not aware of any other potential mines in the region that could, in the foreseeable future, request the use of the assimilative capacity of Morrison Lake.



**Figure 3.1 Aluminum Concentrations without Climate Change (left figure) and with Climate Change (right figure), (Laval 2012)**

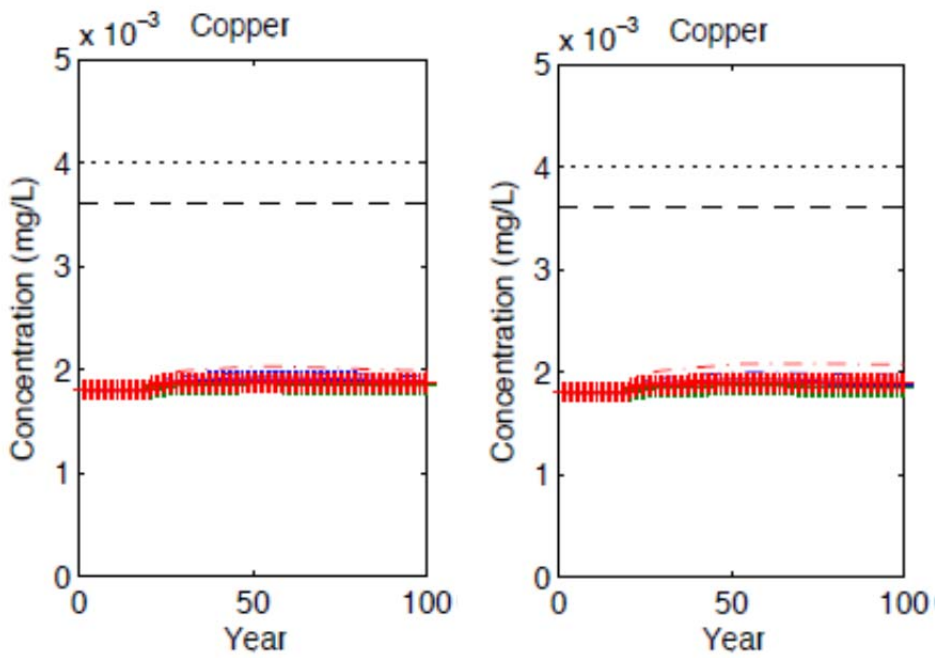


Figure 3.2 Copper Concentrations without Climate Change (left figure) and with Climate Change (right figure), (Laval 2012)

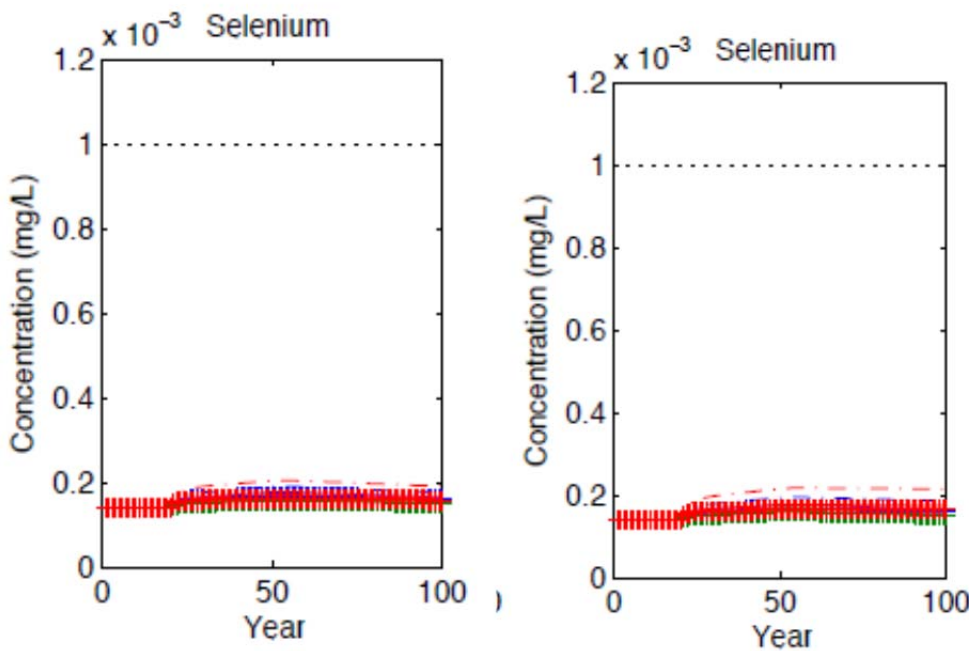


Figure 3.3 Selenium Concentrations without Climate Change (left figure) and with Climate Change (right figure), (Laval 2012)

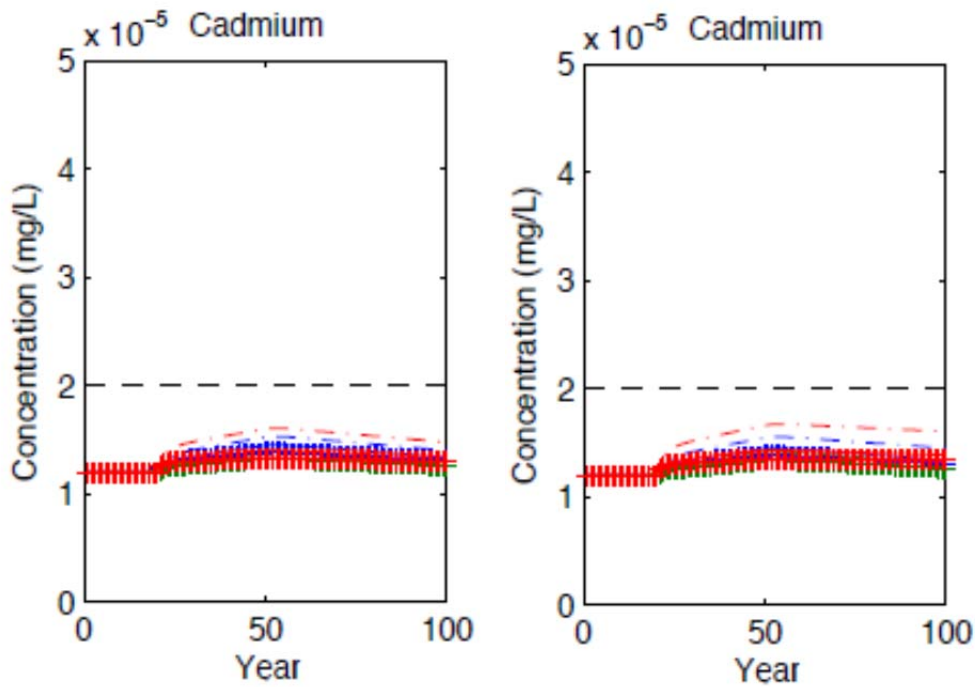


Figure 3.4 Cadmium Concentrations without Climate Change (left figure) and with Climate Change (right figure), Laval 2012)

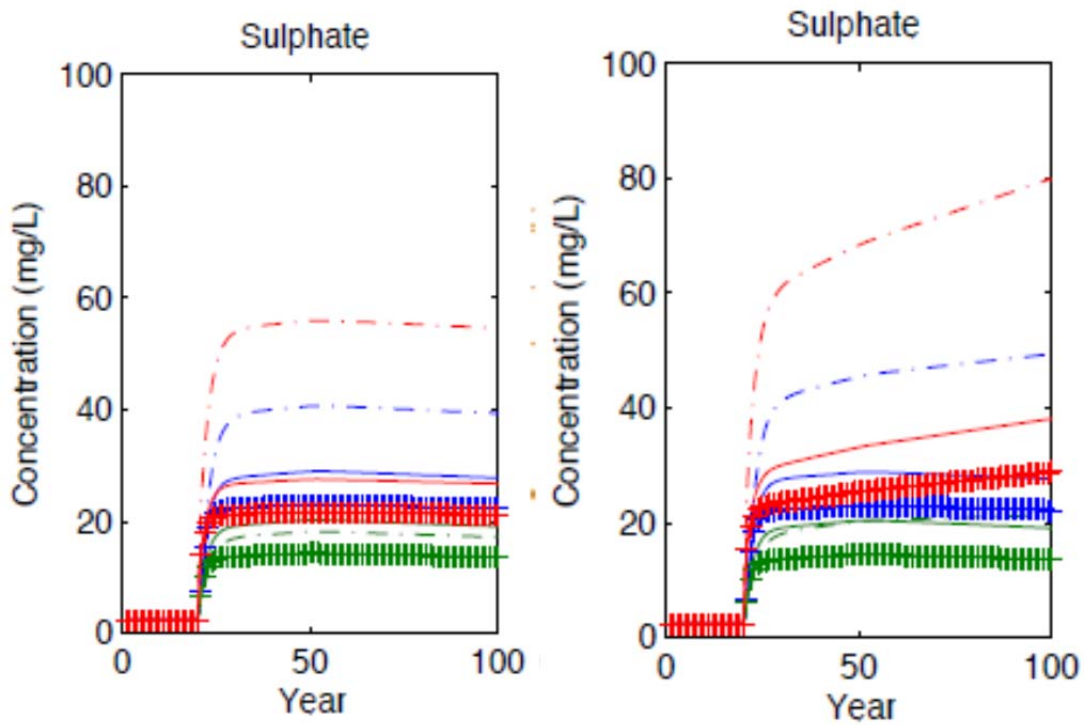


Figure 3.5 Sulphate Concentrations without Climate Change (left figure) and with Climate Change (right figure), (Laval 2012)

4. “Some areas of the lake will likely have higher levels of contaminants than predicted due to incomplete mixing. The highly idealized lake model does not account for the possibility of incomplete mixing within the lake. According to Laval (2012), the “model is designed to provide an outer bound for the maximum lake-wide average concentration, not the overall maximum in the lake.”

The 3<sup>rd</sup> Party Review assessed the potential for incomplete mixing and presented the Upper Bound case where effluent only mixes with a portion of the freshet flows (freshet overflow case), as well as several other cases representing different levels of mixing. The Proponent acknowledges that concentrations will be higher in the relatively small diffuser mixing zone. Higher localized concentrations due to seepage from the tailings facility are not predicted to occur even though they have been conservatively included in the lake mixing model.

5. “The behavior of the discharge plume from the diffuser is uncertain, and although engineering solutions may exist, the worst case scenario is that contaminated water will settle to the bottom of the lake for months at a time until the lake “turns over”.

The 3<sup>rd</sup> Party Reviewer concurs that the diffuser can be designed to mitigate this concern.

6. “The ongoing risk from the possibility of un-controlled drainage, spillage and erosion.”

The Proponent acknowledges that during operations the Project facilities will have detailed Environmental Management Plans and Environmental Monitoring Plans to mitigate these concerns. As is standard practice, the details of this work will be incorporated into the Mines Act Permit Application and subject to approval. On closure, all works will be decommissioned, except for the water treatment plant. Spills and erosion from this area report directly to the closed open pit, where they can be managed, contained and treated.

7. “The significant knowledge gaps related to the physical lake limnology (e.g. currents, flushing rate) and the lake ecosystem contribute to the high uncertainty relating to predicting the actual impacts to the Morrison Lake ecosystem.

The Proponent acknowledges that the collection of additional information, particularly with respect to the physical behavior of the lake, will support a more detailed water quality and lake mixing model. However, the Proponent wishes to identify that the more refined models are expected to indicate lower water quality impacts on Morrison Lake than the simplistic, but more conservative models used for the EA assessment. Accordingly, the Proponent has committed to the collection of the data and development of a more refined model for inclusion in the Mines Act Permit Application.

The Proponent also indicates that apart from the footprint of the small effluent discharge pipeline the Project has no other physical effect on the lake. The only measureable effect on the lake is related to water quality changes.

Yours truly,  
**KLOHN CRIPPEN BERGER LTD.**



Harvey McLeod, P.Eng., P.Geo.  
Principal

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