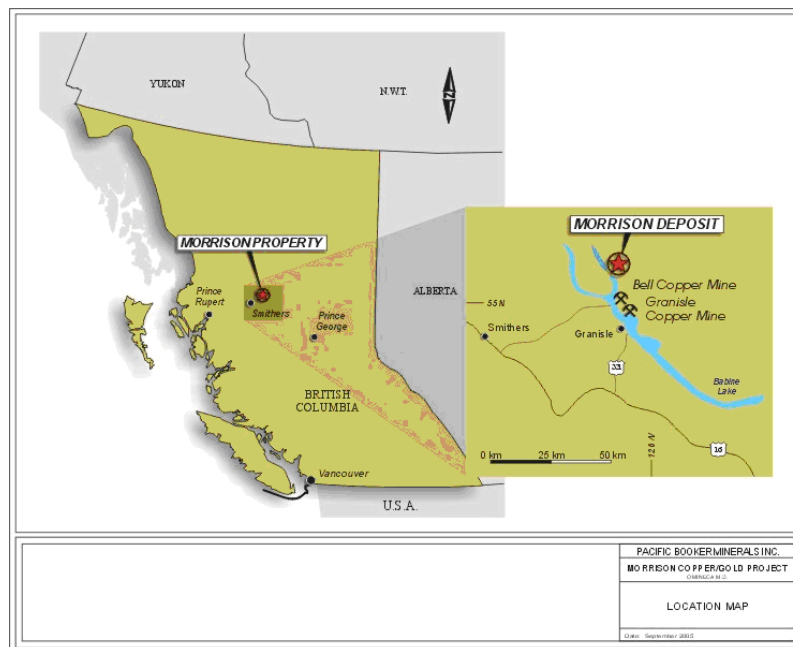


Third Party review of groundwater, water quality and fisheries effects assessment for the proposed Morrison Copper Gold Mine project

A. Background

The proposed Morrison Copper Gold Mine project (proposed Project) is a Copper Gold Mine located 65 kilometres northeast of Smithers, British Columbia. Pacific Booker Minerals (the Proponent) has submitted an application for an environmental assessment certificate (EAC) for an open pit mine utilizing conventional truck and shovel equipment. The ore production rate is proposed at 30,000 tonnes per day or approximately 11 million tonnes of ore per year over a 21 year period. The proposed treatment process is a conventional crushing, grinding and flotation system resulting in the production of approximately 120,000 tonnes of concentrate per year containing copper and gold.



The Project is designed as a zero-surface-discharge facility during operations, with a water treatment plant and discharge to the environment commencing in the closure phase and continuing in perpetuity.

An assessment of the effects of the mine development on the water flow, water quality and fish and aquatic resources has been carried out by the Proponent as part of its application for an EAC. During the course of the EA review, the British Columbia Environmental Assessment Office (EAO) has been advised of concerns from the various regulatory agencies and First Nations with respect to potential effects on fish (salmonids) and aquatic resources and water quality and quantity, primarily with a focus on impacts to Morrison Lake. Specific concerns relate to:

- the sufficiency of the available baseline data;
- whether or not the modeling and analysis assessment is appropriate;

- level of uncertainty of the water quality and water balance predictions, and the resulting effects assessment predictions

B. Potential Effects on Morrison Lake

Morrison Lake is approximately 15 km long and up to 1.5 km wide. The lake flows into Babine Lake, which in turn ultimately flows into the Skeena River. Morrison Lake is a valued ecological component with a high significance rating due to the unique salmon population and its value to First Nations. The main potential effects to the lake from the proposed Project are associated with the following three sources:

- Seepage from the tailings storage facility (TSF), which is located approximately 2 km uphill of the lake.
- Interaction with the open pit, which is located approximately 100 meters from Morrison Lake and will be developed to a level approximately 250 m below lake level. During operations there is a concern about the rate of water flows from the lake to the open pit, potential water flow effects in Morrison Lake, and the influence on the water balance design for the Project.. On closure, there is a concern that contaminated water from the open pit (that will have been backfilled with potentially acid generating waste rock and flooded to the same elevation as Morrison Lake I) would migrate into the lake.
- On closure, contaminated water from the pit walls exposed above the flooded level (walls vary from 25 m to 100 m above the flooded level) will be collected and treated with a high density lime treatment plant and the treated water will be discharged via a pipeline and diffuser in the deepest section of Morrison Lake.

The primary concerns expressed by regulatory agencies and First Nations has been the effects of water quality and water quantity on fish (salmonoids) and aquatic resources.

C. Scope of Third Party Review

EAO wishes to retain an independent, expert, third party consultant to undertake a technical review of the: hydrogeology, hydrology, water balance, water quality, and related aquatic resources and fisheries components of the EA, in particular with a focus on the assessments of the potential effects of the proposed Project on Morrison Lake, Morrison River and, if required, Babine Lake.

The objectives of the review are to:

1. Review available relevant reports (see Section D)
2. Review available government agency and First Nation comments on the Application and information requests
3. Assess the relevant baseline data provided by the Proponent for the effects assessment
4. Assess the validity of the models used for prediction of the effects.
5. Assess the measures, including the Adaptive Management Plans, proposed by the proponent to mitigate the potential effects

6. Determine if the data and assessment support the Proponent's conclusions that the proposed Project will not have a significant adverse effect on the water quality, water flow and fisheries resources of Morrison Lake and Morrison River. If the data and assessment do not support the determination of effects, the consultant shall specifically define what data and assessment is required for the environmental assessment.

D. Documents for Review

1. EAC Application reports – Rescan (2009)
 - Groundwater Baseline 2008
 - Hydrology Baseline 2008
 - Hydrogeology Modeling
 - Water Quality and Water Balance Model
2. Engineering Reports
 - 2006 Geotechnical Site Investigation Report (Knight & Piesold)
 - 2006 Open Pit Geotechnical Investigations (Knight & Piesold)
 - 2007 Geotechnical Site Investigations (Klohn Crippen Berger (KCB))
 - 2009 Geotechnical Feasibility Study – Rev.1 (KCB)
 - 2010 Open Pit Site Investigations (KCB)
3. Environmental Assessment Reports
 - 2010 Lake Effects Assessment (KCB)
 - 2011 Review Response Report – Rev.2 (KCB)
4. Agency and First Nation Review Comments
 - May 2011 NRCAN Hydrogeology Review
 - August 2011 DRT Environmental – Comments for Ministry of Forests, Lands, and Natural Resource Operations
 - Review comments from Ministry of Energy and Mines
 - Review comments from Ministry of Environment – Environmental Protection Division
 - Review comments from Skeena Fisheries Commission
 - Review comments from Environment Canada
 - Tracking tables showing all agency and First Nation comments, and Proponent responses

E. Qualifications

- Technical background in hydrogeology, groundwater modeling and an understanding of water balance as it relates to mining operations
- Technical understanding of lake effects assessments, particularly as they relate to water quality and water quantity on salmonoids in British Columbia.
- An understanding of the regulatory regime for major projects in British Columbia, particularly information required for the environmental assessment and detailed design/permitting phase of mining operations.

F. Deliverables

- A written opinion and recommendations, by October xx, 2011 on the baselines, model validity (design, inputs, assumptions), the effects assessments, and mitigation and adaptive management plans used in the EA for the proposed Project as they relate to hydrogeology, hydrology, water balance (quantity), water quality, and related aquatic resources and fisheries resources.
- If the data and assessment do not support the determination of effects for the EA, the Consultant shall, by October xx, 2011, specifically define what data and assessment is required to appropriately determine effects.
- Follow up recommendations or comments where requested by EAO.

G. Budget

The total budget for this contract is a maximum of \$50,000, inclusive of fees, taxes and expenses.

H. Schedule

Time is a factor and the final report is required within 30 calendar days of issuance of a contract.

I. Evaluation Criteria

- Availability.
- Hydrogeology, hydrology and fisheries experience, particularly as they relate to effects assessment from mining projects.
- Familiarity with environmental assessment and regulatory regimes in British Columbia.
- Proposed approach/workplan.
- References.
- Potential conflict of interest (in your proposal, please state if you have any conflict of interest with the proposed Project or Proponent).
- Budget.

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