
HAMMOND REEF GOLD PROJECT RESPONSE TO COMMENTS ON FINAL EIS/EA

COMMENT – T-40

Source: Canadian Environmental Assessment Agency

Summary of Comment

The Proponent has assumed no seepage out of facilities collecting water, and from facilities such as the TMF.

HDPE liners will degrade over time and thereby increase seepage and interflow rates. Conservative assumptions about hydraulic conductivities for dams, overburden, and bedrock need to be made, and sensitivity analyses conducted based on higher than expected conductivities (e.g. by assuming the maximum measured conductivities instead of the geometric mean).

At the TMF and WRMA, seepage through containment dams constructed of waste rock will likely be large due to their relatively high hydraulic conductivity (i.e. they are not proposed to be constructed with a low permeability core). This seepage is likely to have higher levels of contamination as compared to surface water runoff and therefore may pose a larger risk, particularly in the post-closure phase.

Groundwater/seepage modelling conducted for various Project components such as the Tailings Management Facility (TMF), Waste Rock Management Area (WRMA), ore and overburden stockpiles will provide a clear understanding of what the effects of seepage will be upon water quality in the receiving environment, as well as inform the design of mitigation to intercept seepage, and any monitoring networks.

Proposed Action

Conduct groundwater/seepage modeling for the Tailings Management Facility (TMF), Waste Rock Management Area (WRMA), and the various ore and overburden stockpiles.

Reference to EIS

Site Water Quality TSD: Section 3.3.5 – Seepage Hydrogeology TSD Version 2

Response

On April 28, 2014 Canadian Malartic Corporation hosted a water quality workshop with the Government Review Team. We also initiated communications with the Regional Groundwater Group Leader for MOE's Northern Region who stated on May 15, 2014 that upon further clarification he is "satisfied at this time with the estimates of seepage to Lizard Lake."

Measures to limit, prevent and collect seepage from the TMF, WRMA, ore, low-grade ore, and overburden stockpiles have been developed at the conceptual level only at this time and consist of a series of collection ditches, and pumping stations. There are many proven ways to intercept seepage from a given site. During the detailed design stage for the Project additional drilling will be undertaken along the dam alignments, ditch alignments and near the edges of proposed stockpiles, and at that time it will be appropriate to further specify the details of the seepage collection system design. Considerations during detailed design will include bedrock and depth of overburden conditions, and use of pumping; however it is not possible for Canadian Malartic Corporation to fully define these measures at a detailed design level without appropriate funding and Project EIS/EA approval.

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The water quality of seepage has been predicted and assessed in the final EIS/EA Report. All infiltration from Project facilities was assigned a water quality (as identified and discussed in the responses to information requests from the Draft EIS/EA Report) and direct discharge of this water from the facilities was evaluated. Infiltration water is expected to be compliant with applicable MMER and O. Reg 560/94 criteria. In addition, concentrations for each potential point source were considered (as part of IR-MOE-NR-GW-16 in Appendix 1.IV of the Final EIS/EA Report) and it was found that direct discharge of these concentrations into a water body would not result in adverse aquatic impacts.

At the request of the Government Review Team, additional 3D groundwater modelling efforts were undertaken for the eastern portion of the TMF. The preliminary 3D groundwater model was constructed using available information and, through this evaluation, it was shown that capture of greater than 90% of seepage could be achieved by the proposed control system given the current TMF design configuration and the current understanding of the tailing properties and geologic conditions of the site. Further details of this modelling evaluation are provided in the *attached* memorandum entitled 'Tailings Management Facility, 3D Groundwater Modelling' which is also provided in Part D of the Addendum to the Version 3 EIS/EA as Attachment 3 of the final EIS/EA Addendum.

In light of the results of the newly undertaken groundwater modelling, it is considered that the assumed seepage capture efficiency is realistically achievable based on the conceptual design. During the detailed design stage additional information collected will be used to develop a more robust modelling evaluation to refine and optimize the design of the seepage collection system.

It is the intent of Canadian Malartic Corporation to work with the design engineers and the applicable regulatory agencies to ensure that future data collection and the development of predictive models will meet both the requirements of engineering design and needs of the agencies with respect to permitting requirements.