

Identifier	Topic	Reference to EIS/EA Report	Summary of Previous Comment	Proponent's Response to Previous Comment	Follow-up comment/ Request for Information	New Proponent Response	Subsequent Comment
			<i>Date: March 2014</i> MOE-GW 1	<i>Date: June 2015</i>	<i>Date: August 2015</i> Same comment as MOE-GW 2B		
MOE GW 1B	Ground water	Hydrogeology TSD	<p>The water balance approach has been applied to assess seepage impacts on Lizard Lake, which has been considered separately from the assessment of impacts to Marmion Reservoir. For Lizard Lake, it has been assumed that 10% of the seepage estimated from the water balance will bypass the seepage collection and will discharge to Lizard Lake. Based on this assumption, the proponent has determined that seepage from the TMF (Tailings Management Facility) will not adversely impact Lizard Lake. The 10% seepage bypass has no basis, and is as stated simply an estimate. Further to this, there is little or no hydrogeological data for this area; the effectiveness of the proposed seepage control measurements have not been assessed; and the topography indicates that the TMF is very likely to drain towards Lizard Lake. There is insufficient data provided to properly assess the potential impact to Lizard Lake, and it is therefore insufficient for the EA.</p>	<p>On April 28, 2014 Canadian Malartic 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."</p> <p>Measures to limit, prevent and collect seepage from the Tailings Management Facility (TMF), Waste Rock Management Facility (WRMF), 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 to fully define these measures at a detailed design level without appropriate funding and Project EIS/EA approval.</p> <p>The water quality of seepage has been predicted and assessed in the 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</p>	<p>The proponent has completed a 3D groundwater model for the western half of the TMF, which has provided an estimate of seepage discharging to Lizard Lake. These estimates have then been used to estimate contaminant loadings to Lizard Lake from the tailings discharging through groundwater seepage. The model also serves to provide an estimate of how much seepage will be intercepted by the proposed seepage collection system. As noted by the Environment Canada reviewer, there continues to be shortcomings with the model that should be addressed:</p> <ul style="list-style-type: none"> The model only covers the western half of the TMF, based on the proponent's assumption that Lizard Lake is the primary receptor for seepage from the TMF. Although this assumption is reasonable, a more expansive model is required to quantify the total seepage from the TMF, identify if there are receptors other than Lizard Lake, and quantify the seepage losses that may migrate directly to the Marmion reservoir. The assumption that the vertical hydraulic conductivity of the overburden is 10 times less than the horizontal conductivity is not supported by limited soil information (boreholes) available at the location. This requires both some further investigation, and determination of the model's sensitivity to this parameter. 	Acknowledged	N/A

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				<p>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.</p> <p>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 memorandum entitled 'Tailings Management Facility, 3D Groundwater Modelling' provided in Part D of the Addendum to the Version 3 EIS/EA. as a supplemental to the Final EIS/EA Report.</p> <p>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.</p> <p>It is the intent of Canadian Malartic 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</p>	<p>Despite these shortcomings, it is my opinion that the modelling that has been done is suitable for the purposes of the EA as the work done has quantified the risk to the surface water receiver and identified effective mitigation and contingency measures. As such, the outstanding concerns can be addressed in the MOECC's permitting, which should consider the seepage and loading rates reported in the EA as commitments that could be recognized as limits in an ECA. To address the outstanding concerns, the MOECC will require the proponent carry out further work to support permit applications, which will include (but not necessarily be limited to) additional boreholes and monitoring wells in the area of the TMF to provide a better understanding of the area hydrogeology and improve the model calibration; expansion of the model to encompass all of the TMF and thereby identify additional receptors and quantify seepage losses to all receptors, including Marmion Reservoir; detailed design of the proposed mitigation measures; updated modelling reflecting the final design of the mitigation measures; and calibration and sensitivity analysis of the model(s). Typically, the proponent should be consulting with MOECC staff to determine the additional information that will be required to support applications for approvals and permits.</p>		

Version 3 Hammond Reef Gold Project EIS/EA – Addendum (Part B)
 Responses to Provincial Information Requests

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				engineering design and needs of the agencies with respect to permitting requirements.			