

Table A - IR2: Information Requests Derived from the Canadian Malartic Corporation's Responses to Information Request #1 (IR1) on the Final Environmental Impact Statement /Environmental Assessment Report for the Federal Environmental Assessment of the Hammond Reef Gold Mine Project

Reference #	Link to IR1	Ecosystem Topic	Reference to EIS Guidelines	Reference to EIS	Summary of Comment/ Rationale	Information Request Response to Information Request
T(2)-02	T-12, T-16, T-17, MOE Air-2, EMRB-2	Air Quality Human Health and Ecological Risk Assessment	10.2.1, 10.9, 13.1.2	Atmospheric Environment Technical Support Document (AETSD) Report, Section 3.2.3 Environmental Impact Statement (EIS) Section 6 Human Health and Ecological Risk Assessment (HHERA) Technical Support Document (TSD)	<p>The air quality assessment was modified with the addition of all emission sources (including fugitive and mobile sources), background concentrations, cumulative and combined effects, PM₁₀ and PM_{2.5}, and isopleths. The modeling results show concentrations of some compounds are predicted to exceed applicable criteria, including some substances that were not carried forward in the HHERA (e.g. TSP, PM_{2.5}, and SO₂).</p> <p>The maximum concentrations identified in Tables 4-16 and 4-17 in the HHERA TSD are much lower than those presented in Tables MOE Air-2-1 and MOE Air-2-2. Given that the predicted TSP, PM₁₀, PM_{2.5} and SO₂ concentrations in Tables MOE Air-2-1 and MOE Air-2-2 exceed applicable guidelines in the local study area (LSA) and there are at least 12 human receptor locations in the LSA, the HHERA TSD is not based on the highest predicted air concentrations of these substances. It is unclear why the concentrations differ between the documents. Also, Tables MOE Air-2-1 and MOE Air-2-2 do not include the TSP background concentration.</p> <p>In addition, the approach to determining control factors for short term maximum dust concentrations is questionable. Watering and/or natural mitigation (e.g., rainfall or snow cover) is appropriate for annual average concentrations; however, short term (i.e. 24-hour) maximum dust concentrations typically occur on days without precipitation. As such, it is not reasonable to consider natural mitigation when predicting short term 24-hour concentrations.</p> <p>To facilitate the analysis of the potential effects, the following information should be included for the effects assessment and discussed in the documentation:</p> <ul style="list-style-type: none"> • TSP background concentration; • Information on cumulative effects (i.e. modeled plus background concentrations) at the known and possible sensitive receptor locations; • Reduction efficiencies of the mitigation measures, including confirmation that the efficiency values were used in the modeling; • Other mitigation measures to further reduce potential effects, given TSP and PM₁₀ are predicted to be approximately ten times greater than the criteria. 	<ol style="list-style-type: none"> 1. Clarify which air concentrations were used in which document and explain why the concentration values differ from document to document (e.g. why include only stationary sources, both stationary and mobile sources, etc.). 2. Update Tables MOE Air-2-1 and MOE Air-2-2 to include TSP background concentration and provide information on cumulative effects (modeled plus background concentrations) at the known and possible sensitive receptor locations. 3. Update Table MOE Air-2-3 to include the frequencies above criteria for all compounds that have the potential to exceed the applicable criteria, including TSP, SO₂, and PM₁₀. 4. On Figures T-12-1 through T-12-5, plot the locations of the maximum concentrations for all compounds in Table MOE Air-2-2 using single points (as opposed to a range) and include the locations of all known and possible sensitive receptors. 5. Provide figures of isopleths to depict the geographic extent of the frequencies above the applicable criteria for all compounds in the updated Table MOE Air-2-3 and the locations of these occurrences in relation to all known and possible sensitive receptor locations. 6. Revise the human health risk assessment (HHRA) using a reasonable worst-case exposure scenario and the appropriate concentrations of TSP, PM₁₀, PM_{2.5} and SO₂ that were predicted to occur in the LSA. As part of the HHRA evaluate: <ul style="list-style-type: none"> • all potentially relevant human receptors and do not eliminate any receptor without providing a health-science based rationale (see also T(2)-01); • inhalation exposure, dermal contact with surface soils, dust deposition on soil, plants, waterbodies, uptake by terrestrial and aquatic species, and subsequent consumption by humans. 7. Identify and describe other mitigation measures, which will be implemented to further reduce potential impacts. 8. Provide detailed information on the percentage reduction (control efficiency) used for all mitigation measures, particularly for compounds predicted to well exceed applicable criteria (i.e. TSP, PM₁₀, and PM_{2.5}). Include the technical reference and whether the reduction efficiencies were included in the modelling. If the efficiencies were not included in the modeling, explain the level of uncertainty/limitation imposed on the modeling results and the effects assessment by the exclusion.

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T(2)-02 (Continued)						<p>9. Summarize in a table the mitigation measures considered with control efficiencies used, particularly for compounds that are predicted to well exceed the criteria (i.e. TSP, PM₁₀, and PM_{2.5}). Include in the table measures for follow-up monitoring to evaluate the effectiveness of the mitigation and contingency measures.</p> <p>Response:</p> <ol style="list-style-type: none"> 1. Table T(2)-02-1 (attached) summarizes the different air quality assessments that were completed and lists the sources that were included in each. 2. See response for MOE AIR-2 3. Table MOE-AIR-2-3 has been updated as requested (see attached). It should be noted that the compound SO₂ does not have any maximum ambient air concentrations provided in Table MOE-Air2-2 that were predicted to be above the applicable criteria and therefore an Frequency above Applicable Criteria Analysis has not been completed for SO₂ and this compound does not appear in the updated version of Table MOE-Air-2-3. 4. Figures T-12-1 to through T-12-5 have been updated to include the locations of maximum concentrations in Table MOE Air-2-2. Sensitive receptors in the study area are also indicated on these figures. Additional Figures, T-12-6 through T-12-8 have also been created which indicate the locations of maximum concentrations of TSP, SO₂ and CO, respectively. These Figures are attached. 5. As indicated in the response to comment MOE-Air-2, at this time, Figures have been provided which indicate the maximum POI concentration locations of the receptors at which Frequency above Applicable Criteria Analyses have been completed for each compound, study area and averaging time. The Figures also show the locations of sensitive receptors. It is important to recognize that the original Air Quality Assessment was completed with the intent to assess O.Reg.419/05 compliance and compare against the health based PM_{2.5} CAAQS. As described in Section 3.1.4 of the Atmospheric Environment TSD, the assessment focused on a conservative “worst case” operating scenario resulting in conservative emission rates and dispersion modelling. These results were passed on to other technical disciplines for assessment (e.g., terrestrial ecology, human health). Since the results of these assessments, did not predict any adverse effects, no refinement of the operating scenario or emission rates were completed even though refinements may reduce the modelled concentrations significantly and further reduce the following Frequency above Applicable Criteria Analyses. 6. Tables 4-16 and 4-17 in the HHERA are based on the worst case concentration of the specific receptor locations. At the time of the HHERA, background concentrations were not provided therefore these screenings were based on the concentrations as a result of the project alone. However

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						<p>should the background concentrations have been included in the screening or subsequent assessments, the conclusions would have remained consistent with what was presented in the HHERA. The HHERA did evaluate all potentially relevant human receptors. Rationale for the receptors that were eliminated is provided in the response for T(2)-01.</p> <p>7. As outlined in the Atmospheric Environment Technical Support Document (TSD), CMC considers the assessment to be conservative and that the actual emission from the operating facility will be much lower than the estimated values. The TSD also outlines the proponent's commitment to various in-design mitigation measures, the preparation and implementation of a Fugitive Dust Best Management Practices Plan, and have an ambient air quality monitoring to confirm the effectiveness of mitigation measures. The proponent feels that the mitigation measures that it has committed to in the TSD are the best that can reasonably be expected at this time.</p> <p>8. Table T(2)-02-2 (attached) outlines all control efficiencies used in emissions estimates to account for mitigation measures of TSP, PM10 and PM2.5, including technical references and an indication of whether the control factor was included in modelling. The project would not proceed without such measures as included in the modelling, therefore there would be no project effects should the measures not be implemented.</p> <p>9. Table T(2)-02-2 (attached) indicates mitigation measures considered with control efficiencies used for TSP, PM10 and PM2.5. It also indicates measures for follow-up monitoring to evaluate the effectiveness of the mitigation measures</p> <p>Relevant Attachments: Table MOE-AIR-2-3 Table T(2)-02-1 Table T(2)-02-2 Figures T-12-1 through T-12-8</p>