

ANNEX 1: Second Round of Information Requests for the Goliath Gold Project Environmental Impact Statement (IR #2)

IR-2 #	TMI ID	IR-1 #	Project Effects Link to CEAA 2012	Reference to EIS guidelines	Reference to EIS (including appendices)	Context and Rationale	Specific Question/ Request for Information
IR-2 #: AA(2)-01	TMI ID: 25	IR-1 #: AA(1)-06	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(iii) Migratory Birds 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions 5(1)(c)(ii) Aboriginal Physical and Cultural Heritage 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes	Reference to EIS guidelines: Part 2, Section 8	Reference to EIS: Section 3.6.2; Section 4.3.4	Context and Rationale: - Section 4.3.4 of the revised EIS includes “Uncontrolled Cyanide Release”, as a potential accident and malfunction however does not discuss spillage from the carbon-in-leach (CIL) ore processing area. It is expected that such spills would likely contain cyanide. - Typically, ore processing would occur in a contained area. However, Section 3.6.2 of the revised EIS indicates that that an “event pond” will be used to contain any spills from the CIL area. This creates uncertainty as to whether a release of cyanide to the environment would be possible. The location of the event pond is not shown in provided figures. It is also not known if there is a discharge point from the event pond or if the water from the pond is to be pumped and treated elsewhere. - The location of the event pond and the quality of the water it contains may affect valued components such as wetlands, wildlife, migratory birds, and fish and fish habitat. For example, Section 6.4.1.13 of the EIS states: “As a result of being found in topographical depressions, wetlands may become the endpoint for contaminated runoff from mine operations. As waterfowl and wildlife (e.g., reptiles/amphibians) are attracted to wetlands for foraging and breeding, concentrations of contaminants could constitute an attractive nuisance to such species.” - This information is required to assess the effects of water quality in the event pond on wildlife including migratory birds, species at risk, and wildlife of use to Indigenous use, as well as the impact to current use of resources for traditional purposes.	Specific Question/ Request for Information: A. Include the worst-case scenario of a spill from the carbon-in-leach ore processing area in the Accidents and Malfunctions assessment of cyanide releases. Include the following: - Map of the event pond; - description of the worst-case event, including but not limited to water quality in the event pond; - potential environmental effects, and mitigation thereof; and - control measures and preventative procedures; - contingency and emergency response. B. Provide information on mitigation measures and follow-up program to be implemented to restrict wildlife and migratory birds’ access and use of the event pond. C. Review and revise significance determination for the potential risk to wildlife including migratory birds, species at risk, and wildlife of use to Indigenous use (including consumption of wildlife that could access the event pond).
IR-2 #: AC(2)-01	TMI ID: TMI 357 TMI 603 TMI 661	IR-1 #: AC(1)-31 AC(1)-276 AC(1)-334	Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions 5(1)(c)(ii) Aboriginal Physical and Cultural Heritage 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes 5(1)(c)(iv) any Structure, Site or Thing of Historical, Archaeological,	Reference to EIS guidelines: Part 2 Section 11.1	Reference to EIS: Section 6.21.5; Table 6.23-20	Context and Rationale: - Section 6.21.5 and table 6.23-20 outline mitigation measures for effects of changes to the environment on Aboriginal peoples’ health and socio-economic conditions, physical and cultural heritage, current use of lands and resources for traditional purposes and any structure site or thing that is of historical, archaeological or paleontological significance. However, the listed mitigation measures are relevant to the change to the biophysical environment rather than the effect or impact on Indigenous people. - One of the few mitigation measures specific to Aboriginal peoples is the following: “Treasury Metals will undertake a land and resources use baseline to establish a	Specific Question/ Request for Information: A. Provide specific, relevant mitigation measures for the following effects to Aboriginal peoples’: - restricted access to sites for current use of lands and resources (e.g. hunting, fishing, trapping and gathering) and physical and cultural heritage (e.g. campsites, teaching sites); and - decreased quality “on the land experience”, specifically air, noise and visual disturbances. B. Describe how these mitigation measures will counteract the possible effects and impacts to Aboriginal peoples. C. Characterize residual effects, if any, after the mitigation measures have been implemented. D. Update the follow-up program for potential effects of changes to the environmental on Aboriginal peoples, including objectives and any monitoring

			Paleontological or Architectural Significance			preconstruction baseline of the land and resource users. This will serve as the basis for future monitoring and management of land and resources uses effects throughout the life of the Project. [Mit_094].” However, it is not clear how this would counteract an effect to current use of lands and resources for traditional purposes.	measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.
IR-2 #: AC(2)-02	TMI ID: TMI 226 TMI 227 TMI 228 TMI 348 TMI 349 TMI 430 TMI 490 TMI 507	IR-1 #: HE(1)-33 HE(1)-34 HE(1)-35 AC(1)-22 AC(1)-23 AC(1)-105 AC(1)-164 AC(1)-181	Project Effects Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions	Reference to EIS guidelines: Part 2 Section 10.1.3	Reference to EIS: Section 5.13; Section 6. 17; Table 6.1.3.20-1	Context and Rationale: - Section 10.1.3 of the EIS Guidelines directs the proponent to describe the effects of changes to the environment on Aboriginal peoples, including socio-economic conditions. The effects expected to be assessed must be caused by a change to the environment. For example: changes to the availability of wild rice cause effects to the income made from the sale of wild rice. - Section 5.13, 6.17 and 6.18 of the revised EIS provide baseline information and effects assessments for effects that are not considered under CEAA (2012) such as employment, housing and demographics. However, Table 6.1.3.20-1 “Aboriginal People VCs, Indicators and Measures” outlines a number of socio-economic factors that the Agency do not consider in their assessment.	Specific Question/ Request for Information: A. Provide an assessment for socio-economic effects related to harvesting of foods or materials for subsistence consumption or commercial sale (e.g. wild rice, blueberries, animals, timber). Include the following: - use of site-specific baseline information; - specific and measurable mitigation measures; B. Characterize residual effects, if any, after the mitigation measures have been implemented. C. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale. D. Consider the effects of changes to the environment on socio-economic conditions as part of the cumulative effects assessment.
IR-2 #: AC(2)-03	TMI ID: TMI 1 TMI 407 TMI 485 TMI 496 TMI 558 TMI 561 TMI 564 TMI 578 TMI 581 TMI 660 TMI 674	IR-1 #: EA(1)-01 AC(1)-82 AC(1)-159 AC(1)-170 AC(1)-232 AC(1)-235 AC(1)-238 AC(1)252 AC(1)-255 AC(1)-333 AC(1)-346	Project Effects Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions 5(1)(c)(ii) Aboriginal Physical and Cultural Heritage 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes 5(1)(c)(iv) any Structure, Site or Thing of Historical, Archaeological, Paleontological or Architectural Significance	Reference to EIS guidelines: Sections 2.3, 3.4.2, 7.2.1, 7.2.2, 9.1.1, 10.2, 11.2	Reference to EIS: Section 6.1.6	Context and Rationale: - IR# EA(1)-03 requested that the proponent include baseline information about Indigenous Aboriginal groups’ uses and practices. Additionally, IR# AC(1)-159 requested that baseline information be disaggregated by Indigenous group. - The proponent’s responses to the IRs and the revised EIS do demonstrate inclusions of traditional knowledge and that more engagement has occurred. However Sections 6.1.6 and 6.21.1 and throughout the revised EIS there are references to the proponent taking a pan-Aboriginal approach to the collection of traditional knowledge, baseline information and effects assessment with little to no rationale for this approach. - In Section 5, some baseline information was aggregated by Indigenous groups, however while no similar reference is made, there are a number of instances where the baseline information presented in tables is identical for multiple groups (e.g. tables 5.13.3.1-1, 5.13.3.2-1, 5.13.3.3-1, 5.13.3.4-1 and 5.13.3.9-1). For example for fishing, there are 2 baitfish and minnow sites located outside the Project footprint but inside the Project Area referenced for Wabigoon Lake Ojibway Nation, Eagle Lake First Nation, Wabauskang First Nation, Lac Seul First Nation and Aboriginal People of Wabigoon. - Further, in neither section is there an explanation for the aggregation of baseline information or a pan-Aboriginal approach for assessment of effects.	Specific Question/ Request for Information: Provide a rationale for the use of a pan-Aboriginal/disaggregated approach for both the baseline and effects assessment for the effect of changes to the environment on Indigenous peoples’ health and socio-economic conditions, physical and cultural heritage, current use of lands and resources for traditional purposes and any structure site or thing that is of historical, archaeological or paleontological significance including a description of how the approach was undertaken.

IR-2 #: AC(2)-04	TMI ID: TMI 11 TMI 369 TMI 536 TMI554 TMI 607	IR-1 #: AC(1)-02 AC(1)-43 AC(1)-210 AC(1)-228 AC(1)-280	Project Effects Link to CEAA 2012: Choose an item.	Reference to EIS guidelines: Sections 12.2, 12.3	Reference to EIS: Section 8.9.3	Context and Rationale: - IR# AC(1)-02 requested the proponent to "Describe the potential adverse impacts on potential or established Aboriginal and treaty rights and related interests that have not been fully mitigated as part of the environmental assessment and associated engagement with Aboriginal groups." - The proponent's revised EIS does mention potential or established Aboriginal and treaty rights and related interests but does not state a conclusion as to whether the project has the potential to impact these potential or established Aboriginal and treaty rights based on the analysis done for effects of changes the environment on Aboriginal peoples.	Specific Question/ Request for Information: A. Provide an opinion as to whether the project will impact potential or established Aboriginal and Treaty rights including those that have not been fully mitigated.
IR-2 #: AM(2)-01	TMI ID: 243	IR-1 #: AM(1)-01	Project Effects Link to CEAA 2012: 19(1) Accidents and malfunctions	Reference to EIS guidelines: Part 2, Section 7.1.2	Reference to EIS: Section 4	Context and Rationale: - In the event of spills and releases on and off-site, the proponent has stated that rehabilitation of the environment would occur as necessary. However, the requirements for rehabilitation are unclear.	Specific Question/ Request for Information: A. Describe the conditions under which clean-up or rehabilitation would be considered necessary in the case of spills and releases on or off-site. Include relevant legislated requirements that may apply. B. Identify the extent to which the affected environment will need to be restored and any specific guidelines that would need to be followed.
IR-2 #: AM(2)-02	TMI ID: 245	IR-1 #: AM(1)-03	Project Effects Link to CEAA 2012: 19(1) Accidents and malfunctions	Reference to EIS guidelines: Part 2, Section 7.1.2	Reference to EIS: Section 4	Context and Rationale: - The response to IR# AM(1)-03 does not describe the potential environmental effects of a burst pipeline. Only the emergency response measures are described, which state that "any system failure will result in the shutdown of operations to ensure the safety of not only infrastructure but all applicable environmental criteria, inclusive of TKLU aspects." - However, environmental effects should be described without the application of the response system or mitigation measures in order to understand the worst case scenario.	Specific Question/ Request for Information: A. Describe the potential environmental effects from the failure of the tailings or effluent pipeline.
IR-2 #: AM(2)-03	TMI ID: 246	IR-1 #: AM(1)-04	Project Effects Link to CEAA 2012: 19(1) Accidents and malfunctions	Reference to EIS guidelines: Part 2, Section 7.1.2	Reference to EIS: Section 4	Context and Rationale: - The proponent's assessment of potential effects of a tailings storage facility (TSF) failure does not describe the effects and their duration if particulate materials remobilize with heavy rainfall or spring freshet in Blackwater Creek. - Further, there is no discussion of contingency measures to avoid or mitigate effects due to a TSF failure to fish and fish habitat, specifically the spawning habitat in Thunder Creek, the fish sanctuary near Christie's Island and the important fishing location in Bonny Bay (both in Wabigoon Lake).	Specific Question/ Request for Information: A. Describe the effects and their duration if particulate materials remobilize with every heavy rainfall or spring freshet in Blackwater Creek following a failure of the tailings storage facility; B. Describe any additional measures required to avoid or mitigate effects associated with the remobilization of particulate material, if necessary; C. Provide a discussion of the response procedures and contingency measures to avoid or mitigate effects due to a tailings storage facility failure to fish and fish habitat on Christie's Island, at Thunder Creek and in Bonny Bay.
IR-2 #: CE(2)-01	TMI ID: 252	IR-1 #: CE(1)-02	Project Effects Link to CEAA 2012: 19(1) Cumulative effects	Reference to EIS guidelines: Part 2, Section 12.1.2	Reference to EIS: Sections 7.2.2, 7.3.2; Figures 7.3.2-4, 7.3.2-9	Context and Rationale: - It is unclear if the proponent has considered all projects that could potentially interact with the valued components considered in the cumulative effects assessment. The list of projects originally identified by the Agency in CE(1)-02 has been considered in the	Specific Question/ Request for Information: A. Provide a comprehensive list of projects with the potential to interact with the valued components identified, including with ungulates and the current use of lands and resources for traditional purposes. Include clear screening criteria and how they were applied. B. Update the cumulative effects assessment as necessary to reflect the potential

						<p>assessment. However, this list was intended as a starting point and not an exhaustive list. There is no indication whether the proponent has undertaken its own screening of known or reasonably foreseeable future projects that could potentially interact with the valued components assessed.</p> <ul style="list-style-type: none"> - The Agency cannot find clear screening criteria for future projects considered in the cumulative effects assessment. Screening for projects should take into consideration the potential for interaction with all valued components, including that with the largest spatial boundary. - Further, It is unclear from the map in Figure 7.3.2-4 whether projects that could interact with the ungulates regional study area were considered, as the map does not show the full extent of the study area. 	effects that would result from the inclusion of any additional projects identified.												
IR-2 #: EA(2)-01	TMI ID: 6	IR-1 #: EA(1)-06	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(iii) Migratory Birds 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions 5(1)(c)(ii) Aboriginal Physical and Cultural Heritage 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes	Reference to EIS guidelines: Part 2, Section 11.4	Reference to EIS: Section 13	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - As per Section 11.4 of the EIS Guidelines, the Follow-up Program will describe in sufficient detail specific activities that will deliver the type, quantity and quality of information required to confirm both effects predictions and the effectiveness of mitigation measures. The elements of the Follow-up Program therefore must be linked to specific mitigation measures and/or to the effects they are mitigating. The Follow-up Program must also clearly describe how the proponent intends to implement those activities. - An Environmental Monitoring Program for the project must be developed, as described in Section 16 of the EIS Guidelines, with the goal "to ensure that proper measures and controls are in place in order to decrease the potential for environmental degradation during all phases of project development." - It is understood that the Environmental Monitoring Program as presented in the EIS will be preliminary, and will be detailed and finalized subsequent to the environmental assessment in consultation with federal and provincial authorities as well as Indigenous communities and public stakeholders. 	<p>Specific Question/ Request for Information:</p> <p>A. Create a Follow-up program that concentrates on areas of uncertainty, including but not limited to the following:</p> <ul style="list-style-type: none"> - Human health assessment; and - ARD predictions, including contribution to seepage quality and management. <p>B. Review all responses to IRs to inform the Follow-up Program. Pay particular attention to the following IRs: AA(2)-01; WL(2)-03; RG(2)-01; AE(2)-01 to 03; AE(2)-05; AE(2)-06; SW(2)-02; SW(2)-03; SW(2)-05; SW(2)-07; MW(2)-06; MW(2)-11.</p> <p>C. Develop a preliminary Environmental Monitoring Program (separate from the Follow-up Program) that conforms to the requirements of the EIS Guidelines. This program should provide the following information at a conceptual level:</p> <ul style="list-style-type: none"> - responsibilities; - sampling methodology; - measurement parameters; - general timelines and schedules; - intervention in case of non-compliance with regulatory requirements; and - reporting. 												
IR-2 #: WL(2)-01	TMI ID: 145 147 162	IR-1 #: WL(1)-02 WL(1)-04 WL(1)-19 AC(1)-216	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(iii) Migratory Birds 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes	Reference to EIS guidelines: Part 2, Section 9.1.2	Reference to EIS: Sections 5.9.2.1 - 5.9.2.4, Table 5.9.1; Appendix G; Section 9.1.2, Table 9.5, Figures 9.4 - 9.7; Appendix R Executive Summary, Section 2.2	<p>Context and Rationale:</p> <p>Ecosites</p> <ul style="list-style-type: none"> - The Agency requested a figure and summary table depicting the Project footprint components and ecosites. - However, the following issues were identified: <ul style="list-style-type: none"> - Figure 2a and 2b in TMI_145-WL(1)-02 includes white polygons which are not defined in the legend and appear to be used for both disturbed areas as well as undisturbed areas adjacent to Lola Lake. - Table 3 in TMI_145-WL(1)-02 does not include all wetland types identified in Appendix S. For 	<p>Specific Question/ Request for Information:</p> <p>A. Revise ecosite mapping to ensure it is complete within the local study area (LSA).</p> <p>B. Provide an updated ecosite summary table that includes the Project footprint, regional study area (RSA) and LSA. Provide both the ecosite codes and names, and summarize using broader habitat classes, such as:</p> <table border="1"> <thead> <tr> <th><u>Habitat Type</u></th> <th><u>Habitat Class</u></th> </tr> </thead> <tbody> <tr> <td>Upland</td> <td>-Coniferous</td> </tr> <tr> <td></td> <td>-Deciduous</td> </tr> <tr> <td></td> <td>-Mixedwood</td> </tr> <tr> <td></td> <td>-Shrubland</td> </tr> <tr> <td></td> <td>-Grassland</td> </tr> </tbody> </table>	<u>Habitat Type</u>	<u>Habitat Class</u>	Upland	-Coniferous		-Deciduous		-Mixedwood		-Shrubland		-Grassland
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						<p>example, WLD4, described as a wetland complex including swamp and marsh areas (Appendix S_Figure Vegetation Communities_Wetland – WLD4), will be overprinted by the Open Pit and Waste Rock Storage Area (as depicted in Figure 3.0-1A), however marsh wetlands were not in the table.</p> <ul style="list-style-type: none"> - The summary tables and figures present ecosite numbers, however the Agency requested that the ecosite summary tables and figures include ecosite names and codes. - The monochromatic colour scheme used in the figures does not allow the reader to determine which ecosites are impacted. <p>Habitat Classes The habitat classes provided in Table 1 of TMI_145-WL(1)-02 are too general to be applied to wildlife habitat used by migratory birds, species of interest to Indigenous groups or SAR. Specifically:</p> <ul style="list-style-type: none"> - Upland includes a range but not exhaustive list of upland ecosites. This is misleading and does not correspond with general wildlife habitat associations; - Deciduous includes mixedwood forests such as ES23. Implementing a mixedwood habitat category is recommended for better understanding of effects to SAR and migratory birds with mixedwood habits such as the Canada warbler; and - Wetland includes all wetland ecosites, however wildlife use of habitat is often restricted to select wetland types (e.g., the habitat for yellow rail, a SAR and migratory bird, is restricted to marshes). - Clearly defining the Project ecosites and habitat classes is necessary to understand the effect of the Project on habitat for species at risk (SAR), migratory birds and species of interest to Indigenous groups. This information is also required to validate whether the baseline wildlife survey effort is appropriate in determining project effects. 	<p>-Barren -Marsh -Swamp -Fen -Bog</p> <p>Open Water Disturbed</p> <p>C. Update IR#1 TMI_145-WL(1)-02_Table 3 to include ecosite codes and names, and all project components (including underground workings, disturbed “interstitial” areas, effluent discharge infrastructure and firebreaks). Include a summary table that presents the project components and habitat classes. D. Revise Figure 2b from IR#1 TMI_145-WL(1)-02 to include the Project footprint. Use the updated habitat classes instead of ecosites, and ensure the colour scheme is distinct. E. Revise Table 1 of TMI_147 WL(1)-05 to include the Project footprint, the ecosite codes and names, and subtotals to summarize the values using the suggested habitat classes. F. Present the baseline wildlife (including breeding birds) and vegetation survey information using the revised habitat classes. Amend the following tables: - Appendix R Tables 4.2 and 4.3; - Tables in response to IR#1, TMI_147 WL(1)-05; and - Response in IR#1, TMI_162 WL(1)-19 Tables 5 and 10 G. Using the information presented above, justify how the wildlife and vegetation survey efforts appropriately characterize the direct effects of the project within the Project footprint and the indirect effects of the project within the LSA, relative to the RSA. H. Update wildlife habitat and vegetation summaries where appropriate based on the updated habitat classes. I. Provide estimates of the total number of individuals of each migratory bird that will be affected by the project relative to the LSA and RSA. J. Update all VC effect assessment summaries based on the revised Project footprint and where appropriate on the updated ecosite mapping, habitat classes and number of individuals of each species of migratory bird that will be affected. K. Where appropriate, review and revise the proposed mitigation measures and follow-up program associated with the updated valued component effect assessment.</p>
IR-2 #: WL(2)-02	TMI ID: 88 105 146	IR-1 #: WL(1)-03 WL(1)-07 RG(1)-17 AC(1)-368 AC(1)-375	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(iii) Migratory Birds 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes	Reference to EIS guidelines: Part 2, Section 9.1.2	Reference to EIS: Sections 5.9.2.4, 5.9.3, 6.2.1.13, 6.4.1.13, 9.1.2, 9.2.2.3 Appendix R, Figure 3.1 Appendix S, Figure 2.1 Appendix G Appendix S Section 2.2	Context and Rationale: - Clearly defining the project study area (PSA), the Project Site and wetlands that may be impacted by Project activities is necessary to understand the effect of the Project footprint on the habitat for species at risk (SAR), migratory birds and species of interest to Indigenous groups. - The Agency previously requested baseline surveys for all wetlands within the local study area (LSA) as well as the Zone Of Influence (ZOI) for groundwater drawdown. Appendix S indicates that 11 wetlands were surveyed within the PSA, LSA and the regional study area (RSA), all	Specific Question/ Request for Information: A. Review and update wetland mapping within the Project Study Area (PSA), Local Study Area (LSA) and Zone of Influence (ZOI). Review satellite imagery in the Project footprint, LSA and ZOI to update desktop mapping for wetlands. B. Based on the results of the revised desktop wetland mapping, revise the field survey summaries to ensure all habitat within the PSA, LSA and RSA are adequately assessed. C. If the revised field survey habitat summaries identify gaps in coverage, additional baseline survey information may be needed to assess the effects of Project activities within the PSA, LSA and ZOI. Compare the location of the historic field surveys with the “new” wetland areas to determine areas where survey coverage is inadequate. Additional field surveys for the following valued

					<p>of which were considered fish habitat. However, Figure 6.15.4.1-1 indicates that at least 27 additional wetlands (three in the “development footprint” and 24 in the LSA) were not assessed or included in the potential effects assessment for wetlands.</p> <ul style="list-style-type: none"> - For example, boreal wetlands (potential Rusty Blackbird habitat) presented in Figure 3 of TMI_153-WL(1)-10 differs from wetland boundaries presented in Figures 3.0-1A, 5.9.3.2-1, 6.1.4.10-1, 6.15.4.1-1, 6.15.5.1-1, 6.15.4.2-1 of the revised EIs, Figure 1 of TMI_42_MW(1)-04, Figure 1 of TMI_146-WL(1)-03, and Figure 1 of FMI_125-FH(1)-04. - Furthermore, a review of the satellite imagery associated with a few of the assessed wetlands provided in Appendix S indicates that wetland delineations do not capture the entire wetland complex. For example, wetland boundaries depicted in the following figures did not capture wetland extents to the northwest: Wetland – WLD4 (PSA), Wetland – WLD6 (LSA), Wetland – WLD8 (LSA), and Wetland – WLD9 (PSA/LSA). - The proponent provided a summary of wetland ecosites in Table 1 of Treasury’s response to IR#1 TMI_146_WL(1)-03; however this table cannot be interpreted, as the parameters within it are not defined (e.g. Project footprint, Ecosite, %, wetlands). - Finally, EIS Section 6.15.4.2 states that “most wetlands within the LSA are underlain with clay and tills making them resistant to water table drawdown.” However, an assessment of effects to wetland habitat from alterations to surface water and indirect effects associated with alterations to groundwater hydrology (such as reduced surface water input) has not been provided. These alterations include: <ul style="list-style-type: none"> - the proposed diversion channel; - the loss of WLD5, the headwater of a Black Water Creek Tributary; - Thunder Lake and Wabigoon Lake water levels; - Thunder Lake Tributary 2 and Tributary 3 flow; and - Hoffstrom’s Bay Tributary flow. - For example, direct and indirect alterations to Blackwater Creek have the potential to affect WLD6, a wetland that supports a population of wild rice, a species of interest to Indigenous groups. As stated in EIS Section 5.12.1.3, wild rice is a sensitive plant and does not tolerate changes in water level or water quality during its growth cycle. - As discussed in EIS Sections 6.12, 6.14 and 6.15, wetlands are important habitat for many wildlife species including moose, beaver and wild rice (species of interest to Indigenous groups), birds (including migratory 	<p>components (VCs) may be necessary for:</p> <ul style="list-style-type: none"> - Fish and fish habitat; - Migratory birds (Breeding bird surveys should occur between May 28 and July 7); - Species of interest to Indigenous groups (flora and fauna); - Wetlands; and - Species at Risk. <p>D. Provide updated figures of (a) all wetlands within the LSA and (b) all wetlands within the PSA. Include the following information in each figure:</p> <ul style="list-style-type: none"> - PSA; - LSA (where appropriate); - Project footprint; - Wetland name; - Wetland boundary; - Impacted wetlands; and - Shading by wetland type (marsh, swamp, fen, bog). Ensure colour scheme is distinct and defined. <p>E. Provide an updated summary table for all wetlands (including wetlands that were not surveyed) within the LSA.</p> <p>F. Revise the effects assessment and the determination of significance of the residual effects on VCs impacted by the loss of wetland habitat caused by project activities, while taking into account:</p> <ul style="list-style-type: none"> - Revised wetland mapping; - Updated groundwater modelling (including effects on Lola Lake Provincial Nature Reserve and Aaron Provincial Park); - Proposed diversion channel; - Loss of WLD5; - Changes to Thunder Lake and Wabigoon Lake water levels; - Changes to Thunder Lake Tributary 2 and Tributary 3 flow; - Changes to Hoffstrom’s Bay Tributary flow; and - Updated modelled effluent concentrations. <p>Include a reassessment of the following effects:</p> <ul style="list-style-type: none"> - Direct wetland habitat loss due to site preparation, construction, operation and closure phases; - Functional loss of wetland habitat due to Project effects including: <ul style="list-style-type: none"> - groundwater drawdown within the Zone of Influence (ZOI); - surface water withdrawals (including wetlands up and downstream of withdrawal ponds); - surface water discharge (including wetlands downstream of discharge location); - alterations to hydrology and catchment areas due to Project Site (including wetland downstream of Project Site); and - alterations in wetland water quality due to Project activities including effluent discharge, removal of upstream wetlands and alterations to surface water and groundwater flow rates. <p>Updated VCs could include migratory birds, species at risk and species of interest to Indigenous groups with wetland habitat (e.g., rusty blackbird, yellowrail, waterfowl, little brown myotis, northern myotis, snapping turtle, moose, beaver and wild rice).</p> <p>G. As required, review and revise the proposed mitigation measures and follow-up programs associated with updates to the determination of significance.</p>
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						<p>birds), little brown myotis and northern myotis (SAR), amphibians and reptiles (snapping turtle [SAR]), and fish. They may also provide key hydrological functions such as groundwater recharge and water quality improvement.</p> <ul style="list-style-type: none"> - This information is required to validate the number and area of wetlands within and adjacent to the Project which may have resulted in an underestimation of the effect of the Project on the wildlife that use these wetlands. Furthermore, the underestimation of wetland habitat may influence the design of wildlife surveys thereby having a direct impact on the predicted effects on wildlife. 	
<p>IR-2 #: WL(2)-03</p>	<p>TMI ID: 148</p>	<p>IR-1 #: WL(1)-05 AC(1)-124</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(iii) Migratory Birds 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes</p>	<p>Reference to EIS guidelines: Part 2, Section 9.1.2</p>	<p>Reference to EIS: Sections 3.7, 6.12, 6.13, 6.21, 6.23, 10.0, 13.0</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - In WL(1)-05, The Agency requested an assessment of the potential risk to wildlife that may have access the tailings storage facility (TSF) and clarification regarding mitigation to exclude wildlife from the TSF. - Response TMI_148_WL(1)05 states that with the use of fencing will exclude wildlife receptors likely to access the TSF, with the exception of migratory birds, flying species at risk (birds and bats), and waterfowl of interest by Indigenous groups . However, the potential effect from contact or ingestion of water from the TSF is not discussed in Section 6.0 (Effects Assessment) for migratory birds, waterfowl of interest to Indigenous groups or flying species at risk. - In the IR response, the proponent indicated that “the potential risk to wildlife as a result of exposure to water in the TSF is intrinsically low” due to the “the revised design features [...] (i.e. fencing, cyanide treatment, TSF cover at closure)” and the short term risk of birds ingesting TSF supernatant water. - However, the Agency noticed discrepancies in the proposed TSF water quality within the revised EIS and IR responses. In the response to WL(1)-05, the proposed concentration range for cyanide in the TSF is 10-50 mg/L (ppm), whereas the response to AC(1)-124 states that “recovery and destruction of cyanide will reduce the concentration to less than 1 mg/L.” In addition, the response to AC(1)-409 states “effluent entering the TSF will effectively meet the MMER requirements for releases to the environment.” - In the response to WL(1)-05, it was assumed that concentrations of 10-50 mg/L would not pose a risk to birds because they would not ingest all of their drinking water from the TSF. However, reports show that there may be effects on birds at cyanide concentrations below 50 mg/L (Eisler and Wiemeyer, 2004; Dzombak et al., 2005). In addition, while the response to WL(1)-05 focuses on cyanide other contaminants including heavy 	<p>Specific Question/ Request for Information:</p> <p>A. Clarify the anticipated water quality concentrations for the TSF.</p> <p>B. Review and revise the potential effects to wildlife including migratory birds, flying species at risk (birds and bats), species of interest to Indigenous groups, and consumption of wildlife by Indigenous communities that could access the TSF taking into consideration the response to Question A and the information in the context.</p> <p>C. Describe additional mitigation measures to prevent adverse effects from water in the TSF on wildlife including migratory birds, flying species at risk (birds and bats), and species of interest to Indigenous groups taking the response from Question B into consideration.</p> <p>D. In the follow-up program, include a specific monitoring activity to identify if migratory birds are accessing the TSF. If monitoring identifies use by migratory birds, contingency measures including additional deterrents such as visual and noise disturbances should be implemented. Include this monitoring activity in the response to EA(2)-01.</p>

						<p>metals may be accessible for uptake by wildlife and result in lethal or sublethal effects.</p> <p>References</p> <ul style="list-style-type: none"> - Eisler, R., and S.N. Wiemeyer. 2004. Cyanide Hazards to Plants and Animals from Gold Mining and Related Water Issues. Rev. Environ. Contam. Toxicol. 183:21-54. - Dzombak, D.A., Ghosh, R.S., and G.M. Wong-Chong. Cyanide in Water: Chemistry, Risk, and Management. Taylor & Francis Group. 2005. 	
<p>IR-2 #: WL(2)-04</p>	<p>TMI ID: 152</p>	<p>IR-1 #: WL(1)-09</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(iii) Migratory Birds 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes</p>	<p>Reference to EIS guidelines: Part 2, Section 9.1.2</p>	<p>Reference to EIS: Section 10</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - The proposed effluent discharge location appears to be located within wetland WLD3, a swamp/marsh complex. It is upstream of WLD6, a marsh where wild rice, a species of interest to Indigenous groups has been identified. These wetland types are considered habitat for migratory birds and species at risk (SAR), including Canada Warbler (SAR and migratory bird), least bittern (SAR, and migratory bird), rusty blackbird (SAR, and migratory bird), yellow rail (SAR, and migratory bird) and snapping turtle (SAR), as well as species of interest to Indigenous groups including moose, wild rice and waterfowl. - Section 10 of the revised EIS includes the following mitigation measures associated with effluent discharge in the revised EIS: <ul style="list-style-type: none"> - Mitigation 057 states that <i>“On-site storage facilities will allow for the effective management of water, reducing the need for discharges, especially during periods when conditions are not suitable. Onsite storage facilities will allow for the effective management of water, reducing the amount for water taken from adjacent watercourses. [Mit_057].”</i> - Mitigation 035 states <i>“All final effluent discharge points will have control structures to immediately cease discharge if and when necessary [Cmt_035]”</i> - The Agency notes as well, that Table 13.22-1 in Section 13 of the revised EIS states that wetland water level and flora monitoring will occur within the drawdown zone. - Wetlands are sensitive to changes in surface and groundwater hydrology and alterations to the soil and vegetation within their catchment area in addition to changes in surface water quality. Additional information on the mitigation measures to protect the wetlands surrounding the effluent release point is required to understand the potential effect of effluent discharge on wetlands and possible resulting impacts to wild rice, as 	<p>Specific Question/ Request for Information:</p> <p>A. Provide details on the monitoring programs that will be used to assess the effectiveness of the mitigation measures in reducing the effects of effluent discharge on wetlands, and conditions that would trigger the reduction or termination of effluent discharge.</p> <p>Include:</p> <ul style="list-style-type: none"> - wetland water level and flora composition monitoring locations; - monitoring conditions that would trigger the reduction or termination of effluent discharge release. <p>B. Consider additional wetlands that may be identified as a result of revised wetland mapping [WL(2)-03] that may be affected by alterations to the flow of Blackwater Creek.</p>

						well as to wildlife such as migratory birds, SAR, and species of interest to Indigenous groups.	
IR-2 #: WL(2)-05	TMI ID: 153	IR-1 #: WL(1)-10	Project Effects Link to CEAA 2012: Section 19	Reference to EIS guidelines: Part 2, Sections 7.1.1, 9.1.2	Reference to EIS: Section 6.1.3.11	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - In IR# WL(1)-10, the Agency requested the proponent revise the assessment of potential effects of the Project on species at risk, including snapping turtle (listed as special concern under Schedule 1 of the <i>Species at Risk Act</i> and by COSEWIC). In response TMI_153, the proponent indicated that snapping turtles “are not expected to occur in the Project area” and they were not observed during field surveys. - However, the Ontario Ministry of Natural Resources and Forestry (MNRF) states that the Ontario Reptile and Amphibian Atlas indicates that there are records of recent snapping turtle nesting sites in the Town of Wabigoon and Aaron Park (https://ontarionature.org/oraa/maps/). - Figure 5.11.2-4: Potential Snapping Turtle Habitat Within the LSA [local study area] does not clearly identify potential habitat for the snapping turtle. 	<p>Specific Question/ Request for Information:</p> <ul style="list-style-type: none"> A. Provide a figure illustrating potential habitat for snapping turtle and potential habitat loss data summary. B. Provide an effects assessment for snapping turtle. Provide the indicators used to assess potential project effects. Use an impact matrix to describe the potential effects, including species at risk (SAR) habitats, for each project phase. C. Describe the mitigation measures to address the potential effects to snapping turtle, ensuring that the measures are consistent with applicable recovery strategies and management plans. D. Describe the residual effects on snapping turtle and their habitat and the significance of those residual effects, based on the Agency’s methodology for assessing significance (including the criteria of magnitude, geographic extent, timing, duration, frequency, reversibility, and ecological and social context). E. Describe the monitoring program for snapping turtle, including objectives and any monitoring measures that will be implemented, to verify presence of snapping turtles, effectiveness of mitigation measures.
IR-2 #: WL(2)-06	TMI ID: 134	IR-1 #: FH(1)-13	Project Effects Link to CEAA 2012: 5(1)(a)(iii) Migratory Birds	Reference to EIS guidelines: Part 2, Section 9.1.2	Reference to EIS: Section 6.3	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - Section 6.3.3 states: <ul style="list-style-type: none"> - “The pit lake will be monitored as it is filling to determine whether batch treatment will be required to ensure the water meets PWQO, or background if background levels exceed the PWQO, prior to the discharge from the pit lake to a tributary of Blackwater Creek [Mit_024].” - “Once the pit lake is fully flooded, it is expected that the monitoring of the water quality in the pit lake will continue for a period of time to determine whether additional batch treatment may be required to ensure the water released from the pit lake meets effluent release limits. [Mit_124].” - The Agency understands that at closure, mitigation measures to address water quality issues in the pit lake will be implemented if required. However, should it be determined that water quality does not meet the PWQO, it is unclear what measures will be in place to ensure pit lake water quality does not cause adverse effects to wildlife, including migratory birds, species at risk and species of use to Indigenous groups (e.g., waterfowl, moose). 	<p>Specific Question/ Request for Information:</p> <ul style="list-style-type: none"> A. Describe the measures that will be put in place at closure to restrict access for wildlife, in the event that monitoring data indicates that surface water quality in the pit lake exceeds the PWQO or background conditions if background levels exceed the PWQO. B. In the event that no such measures are put in place, describe the potential adverse effects of exposure to contaminated pit lake water to wildlife, including migratory birds, species at risk and species of use to Indigenous groups (e.g., waterfowl, moose).
IR-2 #: RG(2)-01	TMI ID: 8	IR-1 #: EA(1)-08	Project Effects Link to CEAA 2012: 5(2) Linked to Regulatory Permits/Authorizations	Reference to EIS guidelines: Part 2, Sections 10.1.2, 10.1.3	Reference to EIS: Section 14; Appendix II	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - The response to IR# TMI_008 provides some information that can help to determine effects under subsection 5(2) of CEAA 2012. Section 14 of the revised EIS provides some additional information on “federal considerations”, 	<p>Specific Question/ Request for Information:</p> <ul style="list-style-type: none"> A. Drawing from the accounting conducted in response to FFH(2)-02, provide a map that clearly indicates the watercourses that would be overprinted or reduced through a federal authorization, distinguishing those alterations that would be authorized under Section 35 of the <i>Fisheries Act</i>, or through a

			(specify which legislation)			<p>however, it does not link strongly to Appendix II, the conceptual fish habitat offsetting plan from which many fundamental details needed to understand effects under subsection 5(2) can be drawn.</p> <ul style="list-style-type: none"> - The Agency requires a further understanding of the federal authorizations that will be required, and the conceptual fish habitat offsetting measures that are being considered. IR# FFH(2)-02 relates to the conceptual offset habitat plans; the accounting of fish habitat loss and offset habitat created, provided in response to IR# FFH(2)-02, will serve as a starting point in responding to this IR. The Agency recommends that IR# FFH(2)-02 be completed before preparing the response to this IR, and that this IR be considered step-by-step. - The Agency requires information on the project activities that will be undertaken to overprint or alter the watercourses that are authorized by federal decisions, along with the project activities that will be undertaken to create new habitat as authorized by these same federal decisions, in order to understand the potential changes to the environment, including ecosystem habitats, in those areas. If TMI has not selected a preferred conceptual offset plan, then information for any feasible offset habitat options will need to be provided. - The Agency notes that no federal decisions are required for this project under the <i>Migratory Birds Convention Act</i>, 1994 or the <i>Species at Risk Act</i>, and therefore, these legislations need not be considered in determining effects under subsection 5(2) of <i>CEAA 2012</i>. The Agency also notes that any changes to the environment that are directly linked or necessarily incidental to the federal authorization under the <i>Explosives Act</i>, related to facilities for the manufacture and storage of explosives, will likely be minor; therefore, no questions related to that federal decision will be posed in this IR. 	<p>Schedule 2 amendment under the <i>Metal Mining Effluent Regulations</i>. In the same map, clearly indicate any new habitat that would be created under these authorizations. If TMI has not selected a preferred conceptual offset plan, offsetting measures proposed under any feasible offset habitat option must be shown in this map.</p> <p>B. Provide a table that describes any activities required to overprint or reduce the watercourses shown in the map provided for Question A, and that describes any activities required to construct and maintain each offsetting measure shown in the same map. For example, identify activities necessary for the creation of a new watercourse, such as the removal of vegetation or a wetland in an area, or the building of a trench.</p> <p>C. Identify changes to the environment that may be caused by each of the activities identified in Question B, other than the ones captured under paragraphs 5(1)(a) and 5(1)(b) of <i>CEAA 2012</i>. For example, identify changes to the environment arising from the creation of a new watercourse, which may include changes to water quality and quantity, changes to air quality from emission of particulate matter, loss of terrestrial habitat for particular flora and fauna such as beaver ponds, or loss of riparian areas and wetlands.</p> <p>D. Identify potential effects related to the changes to the environment identified in Question C, including effects to health and socio-economic conditions (including navigation), physical and cultural heritage, and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance, other than the ones captured under paragraph 5(1)(c) of <i>CEAA 2012</i>.</p> <p>E. Identify valued components from the list in Table 6.1.3.21-1 of the revised EIS, other than those already assessed under subsection 5(1) of <i>CEAA 2012</i>, which may be affected by those changes identified in Questions C and D. Examples of valued components to retain may include wetlands, amphibians and reptiles. It is possible that new valued components that are not included in Table 6.1.3.21-1 may need to be considered to capture all effects under subsection 5(2) of <i>CEAA 2012</i>.</p> <p>F. Given the changes to the environment and potential impacts identified in Questions C and D, describe the potential adverse effects, including effects associated with changes to the environment, to each valued component identified in Question E that are directly linked or necessarily incidental to each federal decision, including those that may not have already been identified in the revised EIS.</p> <p>G. Identify the mitigation measures to avoid, reduce or compensate potential adverse effects identified in Question F.</p> <p>H. Characterize the residual adverse effects identified in Question F after applying mitigation measures identified in Question G.</p> <p>I. Describe a follow-up program, including objectives and any monitoring measures, which will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures in Question G, if required. Include the follow-up measures in the overall Follow-Up Program to be prepared in response to IR# EA(2)-01.</p>
IR-2 #: AE(2)-01	TMI ID: 167	IR-1 #: AE(1)-05	Project Effects Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions	Reference to EIS guidelines: Part 2, Sections 10.1.3, 11.1	Reference to EIS: Section 6.6.4; Appendix J	Context and Rationale: - Appendix J-2, Section 4.4, Table 2 identifies the federal and provincial air quality criteria considered for the environmental assessment. The Canadian Council of Ministers of the Environment (CCME) established new Canadian Ambient Air Quality Standards (CAAQS) for SO ₂	Specific Question/ Request for Information: A. Include annual concentrations for NO ₂ in the air quality assessment, by providing the baseline concentrations in Appendix J-2, Table 1, and the maximum predicted concentrations in Section 6.6.4, Tables 6.6.4.1-2, 6.6.4.2-2 and 6.6.4.3-2 of the revised EIS. B. Describe additional mitigation measures that can be applied to reduce NO ₂ and

						<p>in 2016 (https://www.ccme.ca/en/resources/air/air/sulphur-dioxide.html) and for NO₂ in 2017 (http://www.ccme.ca/en/current_priorities/air/caaqs.html).</p> <ul style="list-style-type: none"> - The new CAAQS for NO₂ and SO₂, are more stringent than the criteria used in the revised EIS, and need to be incorporated into the environmental assessment. In particular, the maximum predicted concentrations of NO₂, provided in Section 6.6.4, Tables 6.6.4.1-2 and 6.6.4.2-2 of the revised EIS, would be above the new CAAQS - the maximum NO₂ 1-hour average concentration of 148 µg/m³ in the construction phase and 171 µg/m³ in the operations phase, would both exceed the CAAQ 2020 standard of 115 µg/m³ (60 ppb) and 2025 standard of 80 µg/m³ (42 ppb). - The air quality assessment does not consider NO₂ annual concentrations. These should be included in order to understand potential effects due to long-term exposure, with comparisons to the new CAAQS thresholds, and incorporated into the human health risk assessment (HHRA). 	<p>SO₂ concentrations to the new CAAQS levels, in keeping with CAAQS principles of Keeping Clean Areas Clean and Continuous Improvement.</p> <p>C. Update the HHRA to account for the annual concentrations of NO₂ predicted through Question A, the new CAAQS thresholds for NO₂ and SO₂, and the additional mitigation measures identified in Question B.</p> <p>D. Characterize effects to human health from the updated HHRA in Question C.</p> <p>E. If necessary, update the follow-up program for effects to human health, including objectives and any additional monitoring measures that will be implemented to verify the predictions of concentrations of NO₂ and SO₂. Add these new measures to the overall Follow-Up Program to be prepared in response to IR# EA(2)-01.</p>
<p>IR-2 #: AE(2)-02</p>	<p>TMI ID: 168</p>	<p>IR-1 #: AE(1)-06</p>	<p>Project Effects Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions</p>	<p>Reference to EIS guidelines: Part 2, Section 10.1.3.</p>	<p>Reference to EIS: Appendix J-5</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - Appendix J-5, Tables 8, 9 and 10 do not consider diesel particulate matter (DPM) as independent from particulate matter. DPM is typically fine to ultra-fine in particle size, and is therefore considered a highly respirable toxic air contaminant associated with cancer and adverse health problems such as respiratory illnesses and increased risk of heart disease. In 2013, the International Agency for Research on Cancer (IARC) concluded that exposure to outdoor air pollution and to PM in outdoor air, which includes DPM, is carcinogenic to humans (IARC, Group 1). - International Agency on Cancer Research. 2013. IARC: Outdoor air pollution a leading environmental cause of cancer deaths. Press Release No. 221, dated October 17. http://www.iarc.fr/en/media-centre/pr/2013/pdfs/pr221_E.pdf 	<p>Specific Question/ Request for Information:</p> <p>A. Indicate the sources and predicted concentrations of diesel particulate matter (DPM) in air as a result of project activities.</p> <p>B. Update the human health risk assessment by providing a quantitative assessment of incremental cancer risk from DPM using the unit risk and inhalation slope factor available from the California Office of Health Hazard Assessment, CalEPA (2015). https://www.arb.ca.gov/toxics/dieseltac/de-fnds.htm</p> <p>C. Propose and describe additional mitigation measures to reduce incremental cancer risk from emissions of DPM.</p> <p>D. Characterize effects to human health from quantitative assessment developed in Question A.</p> <p>E. If necessary, update the follow-up program for effects to human health, including objectives and any additional monitoring measures that will be implemented to verify the predictions of concentrations of DPM. Add these new measures to the overall Follow-Up Program to be prepared in response to IR# EA(2)-01.</p>
<p>IR-2 #: AE(2)-03</p>	<p>TMI ID: 169</p>	<p>IR-1 #: AE(1)-07</p>	<p>Project Effects Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions</p>	<p>Reference to EIS guidelines: Part 2, Section 10.1.3</p>	<p>Reference to EIS: Section 6.19.1; Section 6.21.4; Appendix J-5</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - The response to IR# TMI_169C indicates that “for safety and security reasons, access to the operations area would be restricted throughout the active life of the Project.” The same response indicates that “no traditional uses of the lands within the project site would be allowed until after the closure and reclamation activities are complete.” While the operations area is presented in Figure 6.21.4-1 of the revised EIS, it is unclear what is meant by the “active life of the Project”. Section 6.19.1 of the revised EIS indicates that “access to the site during 	<p>Specific Question/ Request for Information:</p> <p>A. Based on the project schedule provided in Section 3.2 of the revised EIS, identify the time periods when access to the operations area would be restricted during each phase. Describe the physical means that TMI would use to restrict access to the operations area during each phase. If access to the operations area is allowed during any phase of the Project for traditional use by Indigenous people, respond to questions B-F below.</p> <p>B. Identify and list any new receptor locations in the operations area, where traditional use will be allowed during any phase of the Project.</p> <p>C. Update the air quality assessment to include any locations identified in question B. Where any contaminants are found to exceed federal or provincial</p>

						<p>operations would be restricted for safety and security reasons”, but it doesn’t mention if restrictions to access would occur during construction activities.</p> <ul style="list-style-type: none"> - The potential health effects due to traditional use of the operations area during the construction phase are unclear. According to Appendix J-5, Table 11, 24-hour total suspended particulate (TSP) concentrations and annual dustfall are expected to exceed the criteria, and 24-hour PM₁₀ concentration is close to the criteria at the fence line. Health impacts should be assessed at locations where site access is not restricted, to fully understand the potential effects to human health from using the land within the operations area while project activities are occurring. 	<p>criteria, including the new CAAQS for NO₂ and SO₂, incorporate this into the frequency analysis (in days or in percentage) found in IR# AE(2)-04 Question B.</p> <p>D. Provide and describe additional mitigation measures to reduce concentrations of contaminants at receptor locations identified in question B.</p> <p>E. Update the human health risk assessment to include any new receptors identified in Question B.</p> <p>F. If necessary, update the follow-up program for effects to human health, including objectives and any additional monitoring measures that will be implemented to verify the predictions of concentrations in locations identified in question B. Add these new measures to the overall Follow-Up Program to be prepared in response to IR# EA(2)-01.</p>
<p>IR-2 #: AE(2)-04</p>	<p>TMI ID: 168, 169</p>	<p>IR-1 #: AE(1)-06, AE(1)-07</p>	<p>Project Effects Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions</p>	<p>Reference to EIS guidelines: Part 2, Section 10.1.3</p>	<p>Reference to EIS: Section 6.6.4; Appendix J-5</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - The response to IR# TMI_169B provides maximum predicted concentrations for various contaminants and averaging periods in the construction, operations and “decommissioning/restoration” phases, which are also found in Section 6.6.4 of the revised EIS, Tables 6.6.4.1-2, 6.6.4.2-2, and 6.6.4.3-2. Several contaminants have maximum predicted concentrations that exceed applicable federal and provincial criteria, including 24-hour total suspended particulate (TSP) and 1-hour NO₂ (based on new CAAQS) for construction, operation and decommissioning phases, and 24-hour PM₁₀ and PM_{2.5} during the operations phase. However, there is no analysis of the frequency of exceedances, in terms of days or percentage of days when exceedances may occur, along with meteorological conditions and seasons when exceedances would be more likely, in Appendix J or in Section 6 of the revised EIS. - In Appendix J-5, Table 9, the total of operation phase maximum hourly emissions for all of the contaminants is smaller than some individual sources. It is unclear whether the individual source emission rates or the total maximum hourly emission rates are incorrect. It is also unclear whether the dispersion modelling used the correct source emission rates. 	<p>Specific Question/ Request for Information:</p> <p>A. Review total maximum hourly emission rates for the operations phase (Appendix J-5, Table 9) to provide the correct individual sources and the correct total maximum hourly emission rates. If necessary, redo the dispersion modelling based on the correct emission rates.</p> <p>B. Provide a frequency analysis (in days or in percentage) for any pollutants that are predicted to exceed the standards based on cumulative concentrations shown in Appendix J-5, Tables 11, 12 and 13. Describe how meteorological conditions and the season of the year would affect the likelihood of an exceedance. Ensure that this frequency analysis uses new CAAQS standards for NO₂ and SO₂, as discussed in IR# AE(2)-01.</p> <p>C. Update the human health risk assessment to reflect any changes to the air quality assessment from the responses to Questions A to D.</p> <p>D. If necessary, update the follow-up program for effects to human health, including objectives and any additional monitoring measures that will be implemented to verify the predictions of concentrations in locations within the operations area where access will be allowed during any phase of the Project. Add these new measures to the overall Follow-Up Program to be prepared in response to IR# EA(2)-01.</p>
<p>IR-2 #: AE(2)-05</p>	<p>TMI ID: 163, 164</p>	<p>IR-1 #: AE(1)-01, AE(1)-02</p>	<p>Project Effects Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions</p>	<p>Reference to EIS guidelines: Part 2, Section 16</p>	<p>Reference to EIS: Section 13.6.3</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - In Section 13.6.3 of the revised EIS, the proponent has committed to monitoring ambient air quality during construction, operation and until “heavy equipment operations cease in the closure phase”. Further clarification is needed to understand the program that is being committed by the proponent. It is unclear whether the monitoring plan will be developed to meet provincial regulatory requirements, or whether it will form part of a follow-up program to validate predictions made in the EA in the air quality assessment. - It is noted that the proponent has not developed an 	<p>Specific Question/ Request for Information:</p> <p>A. Clarify whether the “continuous air monitoring station” will include real-time monitoring for PM₁₀, PM_{2.5} and NO₂, and describe how it will be used to ensure timely mitigation measures are implemented in case of exceedances.</p> <p>B. Discuss whether airborne metals, specifically the ones shown in Table 1 of the response to IR# TMI_163B (arsenic, chromium, manganese, lead), would be collected and analyzed as a portion of total suspended particulates (TSP) collected at the continuous air monitoring station, or provide a clear rationale for not doing so.</p> <p>C. Provide the locations of the dust fall jars mentioned in Section 13.6.3, and specify whether the metals shown in Table 1 of the response to IR# TMI_163B (arsenic, chromium, manganese, lead) would be analyzed within these samples.</p>

						<p>ambient air quality follow-up monitoring program in consultation with relevant regulatory agencies that clearly outlines thresholds that trigger the need to consider additional mitigation. The plan should include the details about the monitoring parameters, methods, sampling locations, applicable standards, duration, and frequencies for information to be submitted for review prior to commencing work for the construction phase. Also, the program should encompass measures to address public concerns, where appropriate.</p> <ul style="list-style-type: none"> - Section 13.6.3 of the revised EIS also indicates that "particulate matter will be collected passively over a 30-day period using dust fall jars. These collected samples will be submitted for analysis of total dustfall, as well as for the metals content within the collected particulates." It is not clear where the dust samples will be collected or what parameters will be included. - The response to IR# TMI_168 states that "greater [air quality] controls are possible but we would suggest that applying additional controls is not necessary for compliance since the CCME guidelines apply at the residences and the MOECC guidelines do not include roadway emissions. Additional controls will be contingent on monitoring results." As part of the follow-up plan that is proposed for air quality in Section 13.6, it is important for the Agency to understand the additional measures that would be taken if it is found, that predictions in the EA are not met even if they are under the thresholds for compliance. 	<p>D. Provide details of additional mitigation measures that could be applied in case that the predictions in the EA are found to not be met. E. Include the information requested in Questions A to D in the overall Follow-Up Program and Environmental Monitoring Program to be prepared in response to IR# EA(2)-01.</p>
<p>IR-2 #: AE(2)-06</p>	<p>TMI ID: 184</p>	<p>IR-1 #: AE(1)-22</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat</p>	<p>Reference to EIS guidelines: Part 2, Section 10.1.2</p>	<p>Reference to EIS: Section 6.4</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - The response to IR# TMI_184C indicates that "the effects of potential noise and vibration impacts on fisheries, specifically spawning shoals has been evaluated as part of Section 6.4 of the revised EIS." However, Section 6.4 of the revised EIS does not describe effects of blasting-related vibration on fish and fish habitat. The vibration sensitive points of reception, listed in Section 6.4.4.1, Table 6.4.4.1-4, do not include locations within fish-bearing waterbodies such as Blackwater Creek. There is no discussion in the IR response, in Section 6 of the revised EIS, or in Appendices H or Q, about Fisheries and Oceans Canada guidelines for blasting. http://www.dfo-mpo.gc.ca/Library/232046.pdf - Section 6.4.5 of the revised EIS indicates, as a mitigation measure, that "where potential effects of vibration to spawning shoals is identified, blasting practices will be adjusted to mitigate the effects." The Agency needs to understand where these potential effects could occur, how blasting practices could be adjusted, any other mitigation measures that could be applied to avoid or reduce effects to fish habitat (including timing 	<p>Specific Question/ Request for Information:</p> <p>A. Identify fish-bearing waterbodies adjacent to the open pit or any other locations expected to have blasting activities. B. Include, in the noise and vibration assessment, sensitive points of reception in any waterbody within 500 metres of blasting activities where fish may be located and fish spawning would be expected to occur. C. Update the noise and vibration assessment to include the locations identified in Question A and B, and compare against Fisheries and Oceans Canada Guidelines for blasting (including peak particle velocity and overpressure). D. Clarify how blasting practices could be adjusted if peak particle velocity and overpressure levels identified in Question C are found to exceed Fisheries and Oceans Canada guidelines. E. Provide an assessment of effects on fish and fish habitat as a result of blasting during the Project. F. Describe mitigation measures that would be used to avoid effects on fish and fish habitat from blasting. G. Characterize residual effects on fish and fish habitat that would occur due to vibration from blasting activities. H. Update the follow-up program designed in response to IR# EA(2)-01 to include blasting noise and vibration for receptors related to fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation</p>

						considerations), and any follow-up that would be undertaken to ensure that fish and fish habitat are not affected by blasting.	measures. Identify any monitoring that would be required by Fisheries and Oceans Canada. If follow-up is not required, provide a rationale.
IR-2 #: AE(2)-07	TMI ID: 185, 193	IR-1 #: AE(1)-23, AE(1)-31	Project Effects Link to CEAA 2012: 5(1)(c)(i) Aboriginal Peoples Health/ socio-economic conditions	Reference to EIS guidelines: Part 2, Sections 11.1.2, 11.4	Reference to EIS: Section 13.4; Appendix H-2, Section 3.2	Context and Rationale: - The response to IR# TMI_185B indicates that, in order to reduce noise levels on the event that they are unacceptable to nearby sensitive receptors, "mitigation measures will be developed as necessary based on field data collected as part of the complaint response process". The response to TMI_185C further states that a process for complaint resolution will be developed as part of a noise management plan "as part of the environmental compliance approval process". The Agency requires an understanding of likely mitigation measures that would be applied. - It is noted in Section 13.4.3.1 of the revised EIS that ambient noise monitoring is expected to be conducted in accordance with Provincial approvals, but otherwise every three years during operations. As it appears, from Figure 6.4.6-1 that noise effects will occur in areas where access will not be restricted during the operations phase, a more stringent follow-up program is recommended to ensure that predictions of noise levels are met, along with proposed mitigation measures in case the noise levels are higher than predicted. This information is needed to ensure that effects on human health and effects to current use due to wildlife being affected by noise will remain as predicted in the EA.	Specific Question/ Request for Information: A. At the nearest receptor around the project footprint, discuss potential mitigation measures to reduce annoyance or increase the quality of experience, and what metrics would be used to determine the application of these measures. B. Describe how Indigenous groups would be involved in the development of the noise management plan, and discuss how complaints from Indigenous people related to noise would be managed.
IR-2 #: SW(2)-01	TMI ID: TMI_108 TMI_115 TMI_117	IR-1 #: SW(1)-22 SW(1)-29 SW(1)-31	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2, 10	Reference to EIS: Sections 5.8.1 and 5.8.1.3; Appendix JJ, Section 6.3	Context and Rationale: - In Section 5.8.1 of the revised environmental impact statement (EIS), the proponent states that "more than two years of surface water quality samples have been collected in or near the Project area beginning November 2010 (KCB 2012) and again in 2012/2013. [...] Nine locations were added and three locations were discontinued during the 2012/2013 sampling program". Table 5.8.1.3-1 provides a summary of baseline surface water quality results. However, these results appear to be only from the data collected during the 2012/2013 monitoring program completed by DST Consulting Engineers (Section 5.8.1.3). - The raw data and a summary of baseline water quality results is not provided for the data collected during the 2010/2011 sampling program in Section 5, or the appendices of the revised EIS. - As less than 2 years of data was used to characterize the baseline conditions for water quality, the raw data and a summary of baseline water quality results, similar to the tables provided for 2012/2013 sampling program, are required in order to assess the range and seasonal variation present in the baseline water quality.	Specific Question/ Request for Information: A. Explain how surface water quality results from the 2010/2011 water quality sampling program were incorporated into the baseline surface water quality assessment. B. Provide an assessment of seasonal variation using the data collected in both the 2010/2011 and 2012/2013 sampling programs; C. Update the water quality assessment, if necessary, taking responses from Questions A and B into consideration. D. Revise the effects on fish and fish habitat, if necessary, based on the response from Question C. E. Describe any additional mitigation measures to prevent adverse effects to fish and fish habitat described in the response to Question D, if necessary. F. Characterize residual effects, if any, after the mitigation measures described in the response to Question E have been implemented. G. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.

						<ul style="list-style-type: none"> - Seasonal variations and ranges in baseline conditions are important for the Agency to understand and verify the baseline water quality and quantity, and changes from baseline conditions that can result in effects on fish and fish habitat. 	
IR-2 #: SW(2)-02	TMI ID: TMI_093	IR-1 #: SW(1)-07	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Section 9.1.2	Reference to EIS: Section 3.8.2; Section 13.8.3, Table 13.8.3-1.	Context and Rationale: <ul style="list-style-type: none"> - It is stated in Section 3.8.2 of the revised EIS that “mine water will contain suspended solids due to mining and earthmoving activities. Mine water may also contain residual ammonia and/or hydrocarbon from blasting operations with approximately 5% to 10% of the originally present ammonia remaining as residual post blast”. - The response to IR# SW(1)-07 implies that mine water containing residual hydrocarbons would be treated in the effluent treatment system. However, the revised EIS and the response to IR#SW(1)-07 do not identify residual hydrocarbons as being predicted to occur in effluent. Hydrocarbons are also not included in the proposed monitoring program for surface water quality (Section 13, Table 13.8.3-1). - According to Environment and Climate Change Canada, elevated concentrations of hydrocarbons in the contact water could potentially foul the membrane of a reverse osmosis system, and cause a decrease in its treatment efficiency. This could result in adverse changes to water quality of the receiving waterbody and affect fish and fish habitat. 	Specific Question/ Request for Information: <ol style="list-style-type: none"> Provide the predicted residual hydrocarbon concentration in the effluent. Provide the threshold concentration for treatment of effluent with residual hydrocarbons, and describe how this will be monitored to determine when to implement treatment. . Describe how the effectiveness of the treatment will be monitored, and describe contingency measures to be implemented should the treatment method be found to be ineffective (for example due to fouling of the reverse osmosis membrane). Where treatment is not implemented or determined to be ineffective, update the water quality assessment, if needed, based on the response from Questions A and B. Describe the effects on fish and fish habitat, if necessary, based on the response from Question D. Describe mitigation measures to prevent adverse effects to fish and fish habitat described in the response to Question E, if necessary. Characterize residual effects, if any, after the mitigation measures described in the response to Question F have been implemented. Update the follow-up program for potential effects to fish and fish habitat, including a monitoring plan for hydrocarbons in the effluent stream, to verify the predictions of effects and evaluate the effectiveness of the proposed reverse osmosis system for treatment of effluent.
IR-2 #: SW(2)-03	TMI ID: TMI_88	IR-1 #: SW(1)-02	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Section 9.1.2	Reference to EIS: Section 3.8	Context and Rationale: <ul style="list-style-type: none"> - In Section 4.3.2.2 of the original EIS, it is stated that “The ditches will be lined to ensure that seepage is contained within the ditch and that erosion damage does not occur”. In SW(1)-02 of IR#1, the Agency requested for additional information on these liners. The response to SW(1)-02 identified Section 3.8 of the revised EIS for details about the lining of the runoff and seepage collection ditches. However, the requested information was not found in Section 3.8. - Notes for Figure 3.7.3-1 of the revised EIS indicate that “liner cover material to consist of finer graded granular material (i.e. sand) and will be dependent on the liner supplier recommendations”. Additional details are required about these liners to verify that the seepage from these ditches would be captured prior to infiltrating the groundwater system. The Agency is unable to validate whether all runoff and seepage collection ditches on the Project site would be lined. - This information is important for the Agency to understand as seepage from these ditches could contain contaminants that could become mobile in groundwater and impact surface water in downstream fish-bearing 	Specific Question/ Request for Information: <ol style="list-style-type: none"> Clarify erosion control and seepage containment measures within the seepage and collection ditches. Provide a description of how the runoff and seepage collection ditches would be lined. Confirm whether all of the runoff and seepage collection ditches would be lined. If not, which collection ditches are not lined, and provide a rationale. Identify a follow-up program to verify the effectiveness of the liners. Provide contingency measures to be implemented in case the monitoring indicates failure of the lining.

						waterbodies.	
IR-2 #: SW(2)-04	TMI ID: TMI_105	IR-1 #: SW(1)-19	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Section 9.1.2	Reference to EIS: Section 3.8.8, Table 3.8.8-1; Section 3.8.9, Table 3.8.9-1; Section 6.4.1.8	Context and Rationale: <ul style="list-style-type: none"> - The Agency has uncertainties with the predictions made in the revised EIS regarding the effluent discharge and the changes it may cause on the quality of water in Blackwater Creek. - Section 3.8.9 of the revised EIS references Table 3.8.9-1 which provides “a listing of the final effluent discharge quality”. However, the predicted effluent concentrations provided in this table are not based on modeling. Rather, these numbers appear to be taken from the Provincial Water Quality Objectives (PWQO), Canadian Water Quality Guidelines (CWQG) and Metal Mining Effluent Regulation (MMER) limits. - The Agency understands that excess water in the tailings storage facility (TSF) and minewater pond would be treated and discharged, if needed. Section 3.8.8, Table 3.8.8-1 of the revised EIS provides the “tailings solution chemistry [...] coming from the detoxification circuit”. However, the parameters listed in Table 3.8.8-1 do not match with the parameters listed for final effluent discharge quality in Table 3.8.9-1. - Section 3.8.8 further states that the tailings solution chemistry provided in Table 3.8.8-1 “was modelled using the PHREEQCI model, using results presented in literature (Devuyst et al., 1988; Devuyst et al., 1989) for comparable free milling gold circuits”. It is unclear why the data from geochemical testing, particularly the data obtained from the tailings sample and from the quality of the process water derived during that test was not used as the basis for the assumed tailings porewater quality, rather than basing it upon modelling and literature. - It is also unclear whether the concentrations of parameters provided in Table 3.8.8-1 are used as estimates for seepage water quality. If so, there is uncertainty in whether the concentrations of parameters provided in this table incorporated the changes in seepage water quality that can be expected due to acid rock drainage (ARD) (See IR# MW(2)-01 to MW(2)-03, and MW(2)-06). ARD can cause considerable changes in the quality of the tailings porewater and TSF pond water, which can later be released as contaminated seepage into surface water features. - Additionally, it is stated in Section 6.1.2.3 of Appendix JJ of the revised EIS that “All of the free water present in the TSF will be withdrawn, treated and used to fill the open pit, together with general site runoff”. It is unclear what the open pit influent water quality would be, as this information could not be found in the revised EIS or in response to IR#1. 	Specific Question/ Request for Information: <ul style="list-style-type: none"> A. Provide modelled predicted final effluent concentrations for the point of discharge to Blackwater Creek for all parameters found in Table 3.8.8-1 and compare these against the applicable water quality criteria. B. Clarify whether the water quality parameters of the process effluent discharge presented in Table 3.8.8-1 are used to estimate the water quality of seepage from the TSF. Confirm whether the seepage water quality estimate incorporates the potential for acid rock drainage (See IR# MW(2)-01 to MW(2)-03, and MW(2)-06). C. Provide the modelled predicted influent water quality of the open pit from the TSF during decommissioning and abandonment and provide a comparison of modelled concentrations of parameters against the applicable water quality criteria. D. For Questions A and C, describe the effects on fish and fish habitat for modelled water quality parameters that may exceed the applicable water quality criteria. E. Describe mitigation measures, if necessary, to prevent adverse effects on fish and fish habitat identified in the response to Question D. F. Characterize residual effects, if any, after the mitigation measures identified in the response to Question E have been implemented. G. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.

						<ul style="list-style-type: none"> - This is important for the Agency to understand the water quality predictions, the efficacy of treatment methodology, and the effects on fish and fish habitat in Blackwater Creek. 	
IR-2 #: SW(2)-05	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2, 10	Reference to EIS: Sections 3.7.5, 3.8.5 and 3.6.6.4.	Context and Rationale: <ul style="list-style-type: none"> - The Agency has uncertainties with the manner in which a water cover will be placed over the tailings to prevent exposure to the atmosphere which could induce acid rock drainage (ARD) and metal leaching. - Section 3.7.5 of the revised EIS states: "Tailings will be managed to ensure that any exposed tailings beach areas will not be exposed long enough to allow for oxidation of the tailings or the development of acid drainage conditions. Additionally, the tailings will be maintained in a manner that keeps them saturated so as to prevent the onset of acidification". - In Section 3.8.5 of the revised EIS, it is stated that: "Treasury Metals has committed to maintaining a water cover over the majority of the TSF, and has proposed an average water cover depth of 1.2 m." - It is further stated in Section 3.6.6.4 of the revised EIS that "In previous iterations of the Project design it was assumed that exposure of beached tailings material could occur. However, it is the intention of Treasury Metals with the current iteration of the Project design to manage the placement of tailings materials and water levels within the TSF to ensure that beached tailings materials are not exposed to the atmosphere and that a water cover will be maintained at all times during operations to limit environmental effects such as dust and ARD." - These differing statements in Section 3 of the revised EIS make it unclear whether a wet cover will be placed over the entire amount of tailings in the TSF, prior to TSF decommissioning and abandonment. If there will be an exposure to some of the tailings in the TSF to the atmosphere, it is important to assess what the changes in groundwater would be due to that exposure. - This is important for the Agency to understand because exposure of tailings can induce acid rock drainage in seepage and contaminate the fish-bearing surface waterbodies in the surroundings. 	Specific Question/ Request for Information: <p>A. Clarify what portion of the tailings will be kept under water during the operations phase.</p> <p>B: If some exposure of tailings to the atmosphere is anticipated, describe the changes in water quality from ARD, dust, and metal leaching.</p> <p>C. Describe the effects on fish and fish habitat taking responses from Questions A and B into consideration.</p> <p>D. Describe mitigation measures to prevent adverse effects to fish and fish habitat identified in the response to Question C.</p> <p>E. Characterize residual effects, if any, after the mitigation measures described in the response to Question D have been implemented.</p> <p>F. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures within the TSF that will be implemented to verify that water cover is maintained and ARD is not occurring, and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p>
IR-2 #: SW(2)-06	TMI ID: TMI_134 TMI_108	IR-1 #: FH(1)-13 SW(1)-22	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes	Reference to EIS guidelines: Part 2, Sections 9.1.2, 10	Reference to EIS: Section 3.8.6, Figure 3.0-1A	Context and Rationale: <ul style="list-style-type: none"> - The Agency notes in Appendix JJ, Section 5.3.4 of the revised EIS that water in the open pit during abandonment could contain sulphate, primarily due to the presence of in-pit waste rock in the open pit and seepage and surface runoff from initially uncovered waste rock storage areas (WRSA). Table 6.3.4.1-1 of Section 6.3.4.1 also shows elevated levels of sulphate concentrations in seepage for both wet cover and dry 	Specific Question/ Request for Information: <p>A. Assess the potential for methylmercury production in the wetlands around Blackwater Creek due to elevated sulphate levels in the pit lake water during abandonment, when the pit lake is connected with Blackwater Creek.</p> <p>B. Assess the potential for methylmercury production in the wetlands around the Blackwater Creek due to elevated sulphate levels in seepage from the TSF and/or WRSA during all phases of the Project.</p> <p>C. Update the water quality in Blackwater Creek taking the responses from Questions A and B into account.</p>

						<p>cover options for the tailings storage facility (TSF).</p> <ul style="list-style-type: none"> - Section 3.8.6 of the revised EIS mentions that once the open pit is flooded, "water from the open pit will be released into Blackwater Creek Tributary 1 through an engineered spillway". Figure 3.0-1A of Section 3.1 shows wetlands on either side of Blackwater Creek Tributary 1. - The presence of sulphate in the water released from the open pit flowing through a channel surrounded by wetlands creates a possibility for the production of methylmercury in Blackwater Creek, which could adversely affect fish and fish habitat, current use of resources by Indigenous peoples, and the health of Indigenous peoples. 	<p>D. Revise the effects on fish and fish habitat taking responses from Questions A to C into consideration.</p> <p>E. Describe mitigation measures to prevent adverse effects to fish and fish habitat, if necessary.</p> <p>F. Characterize residual effects, if any, after the mitigation measures have been implemented.</p> <p>G. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p>
<p>IR-2 #: SW(2)-07</p>	<p>TMI ID: 103</p>	<p>IR-1 #: SW(1)-17</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat 5(1)(a)(iii) Migratory Birds 5(1)(c)(iii) Current Use of Lands and Resources for traditional purposes</p>	<p>Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10</p>	<p>Reference to EIS: Sections 6.8.5, 6.15.4.2, 6.15.4.4, 13.3.2, 13.3.4; Appendix JJ, Table 5-9.</p>	<p>Context and Rationale:</p> <p>Section 6.8.5 states that "Once the pit lake is fully flooded, it is expected that the monitoring of the water quality in the pit lake will continue <i>for a period of time</i> to determine whether additional batch treatment may be required to ensure the water released from the pit lake meets effluent release limits".</p> <p>The Agency understands that the water quality from the pit lake will be monitored against "PWQO, or background if background levels exceed the PWQO", prior to discharge of water from the pit lake to a tributary of Blackwater Creek (Section 13.3.4). However, the frequency, timing, and duration of pit lake water quality monitoring has not been described in Section 6 or Section 13 of the revised EIS or in the responses to IR#1.</p> <p>Table 5-9 of Appendix JJ identifies some metal concentrations (e.g. iron, lead, zinc) in the open pit water for the Long Term Post-Closure phase, which exceed the Canadian Water Quality Guidelines, Provincial Water Quality Objectives (PWQO) or Metal Mining Effluent Regulations (MMER) limits. The Agency is unclear whether water from the open pit would continue to be treated during abandonment should concentrations of metals or other parameters exceed the water quality criteria.</p> <p>In addition, the note at the bottom of Table 5-9 of Appendix JJ states that "Concentrations for chloride, mercury and phosphorus not included due to incomplete source term data". It is unclear what is meant by "incomplete source term data".</p> <p>In Section 13.3.2, the parameters for pit lake and pit lake discharge monitoring are provided. The Agency notes that total and dissolved metals would be analyzed for the pit lake discharge samples but only dissolved metals would be</p>	<p>Specific Question/ Request for Information:</p> <p>A. Provide the frequency, timing and duration of monitoring planned for the open pit when it is filled after the operation phase;</p> <p>B. Once the pit lake is fully flooded, should the results of the monitoring show elevated concentrations of metals or other parameters compared to applicable water quality criteria, confirm whether pit lake water will continue to be treated until the concentrations of parameters meet PWQO or background concentrations if background levels are higher than PWQO;</p> <p>C. Clarify what is meant by "incomplete source of data" in Table 5-9 "Estimated Open Pit Water Quality", and include the concentrations of chloride, mercury and phosphorus in the modeled long-term post-closure open pit water quality;</p> <p>D. Update the monitoring program to include an assessment of both total and dissolved metals in pit lake water quality sampling or provide a rationale;</p> <p>E. Provide information on mitigation measures and follow-up program to be implemented to restrict wildlife access and use of the open pit lake if water quality parameters are exceeded.</p> <p>F. Review and revise assessment and significance determination for the potential adverse effects to wildlife including migratory birds, species at risk, and wildlife of use to Indigenous peoples (for the purpose of consumption) that may access the open pit lake.</p>

						<p>analyzed for the pit lake samples. Total metals should also be analyzed for pit lake samples so that the results can be compared to the water quality criteria to assess the pit lake water quality for potential effects.</p> <p>An understanding of the water quality in the open pit is necessary to assess the effects of the Project on fish and fish habitat, as the pit lake would be connected with Blackwater Creek at the abandonment phase. The water quality of the pit lake and its connection to Blackwater Creek is also important to assess effects on wildlife, including migratory birds, species at risk and species of use to Indigenous groups. As stated in Section 6.15.4.2, "waterfowl and wildlife are attracted to wetlands for foraging and breeding, concentrations of contaminants could constitute an attractive nuisance to such species." The proponent has proposed in Section 6.15.4.4, "new wetlands will be generated around the pit lake." The Agency assumes the pit lake and rehabilitated wetland areas will be accessed by wildlife during the post-closure phase.</p>	
IR-2 #: SW(2)-08	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10	Reference to EIS: Appendix JJ, Section 5.3.2	<p>Context and Rationale:</p> <p>The Agency notes in Section 5.3.1 of Appendix JJ that the water in the pit lake was assumed to be "completely mixed". According to Ministry of Natural Resources and Forestry (MNR), there is a possibility that the pit lake will become meromictic, stratifying permanently with higher concentrations of dissolved metals in the bottom layer of the lake. The assumption that the pit lake would be fully mixed may overestimate the concentrations of dissolved metals in overflow surface water, but underestimate concentrations in the bottom layer of the pit lake. This may have implications for the seepage predictions from the pit lake, after it is filled. An estimate of the seepage from the pit lake during abandonment, if the pit lake becomes meromictic, is not provided in the revised EIS.</p> <p>This is important for the Agency to understand as seepage from the pit lake after abandonment phase can leak to the surrounding surface water bodies (e.g. Thunder Lake) and affect fish and fish habitat.</p>	<p>Specific Question/ Request for Information:</p> <p>A. Discuss the potential for the pit lake to become meromictic and permanently stratify.</p> <p>B. In the event that the pit lake becomes meromictic, provide a revised estimate of the water quality of the seepage that is expected to enter the surrounding waterbodies from the pit lake.</p> <p>C. Describe the changes in water quality of the waterbodies surrounding the pit lake at abandonment, taking the responses from Questions A and B into consideration.</p> <p>D. Revise the effects on fish and fish habitat taking the responses from Questions A to C into consideration.</p> <p>E. Describe additional mitigation measures to prevent adverse effects to fish and fish habitat, if necessary, taking the response to Question D into consideration.</p> <p>F. Characterize residual effects, if any, after the mitigation measures described in the response to Question E have been implemented.</p> <p>G. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p>
IR-2 #: FFH(2)-01	TMI ID: TMI_014 TMI_132	IR-1 #: PD(1)-01 FH(1)-11	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish	Reference to EIS guidelines: Part 2, Sections	Reference to EIS: Sections 6.14 and 6.15 Appendix Q, S, II	<p>Context and Rationale:</p> <p>- The Agency has uncertainty with the presence of fish and fish habitat in the wetlands within the Project Study Area</p>	<p>Specific Question/ Request for Information:</p> <p>A. Taking responses from SG-WL_2 into consideration, provide an estimate of the loss of fish habitat (in m²) for each fish-bearing wetland that will be affected by</p>

			Habitat 5(1)(a)(iii) Migratory Birds 5(2) Linked to Regulatory Permits/Authorizations (specify which legislation)	9.1.2 and 10	TMI_132-FH(1)-11_Table _1	(PSA), Local Study Area (LSA) and Zone of Influence (ZOI). In another information requirement (SG-WL_2), the Agency requested a review and update of wetland mapping, and a reassessment of habitat within the PSA, LSA and RSA. Response to this information requirement should incorporate findings from SG-WL_2. - According to Section 3.3.4 in Appendix S, all 11 wetlands that were surveyed were identified as having some fish habitat, including nursery and staging/migration habitat. - A map provided in Section 1.1 of Appendix S indicates that several of the surveyed wetlands are located in close proximity to Wabigoon Lake and Thunder Lake. As such, large-bodied fish species may utilize these areas. Characterizing the fish and fish habitat in these wetlands is important to adequately estimate project effects that will need to be offset by the proposed Fish Habitat Offsetting Plan. - In the response to IR# FH(1)-11, the Proponent provided fish and fish habitat information for the surveyed wetlands (TMI_132-FH(1)-11_Table _1). However, it was unclear if the loss of the affected fish-bearing wetland areas were included in the overall fish habitat loss accounting conducted for the proposed Conceptual Fish Habitat Offsetting Plan.	the Project. B. Provide updated accounting for fish habitat loss taking into consideration the response to Question A for the proposed Conceptual Fish Offsetting Plan.
IR-2 #: FFH(2)-02	TMI ID: TMI_127	IR-1 #: FH(1)-06	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat 5(2) Linked to Regulatory Permits/Authorizations (specify which legislation)	Reference to EIS guidelines: Part 2, Sections 9.1.2, 10	Reference to EIS: Appendix II, Sections 4.2 and 4.3; Table 4.1-1; Section 6.0	Context and Rationale: - The proposed offsetting options for fish and fish habitat for the Project are conceptually presented in Appendix II of the revised EIS. However, details of the conceptual offsetting options including fish habitat accounting was not provided, and therefore it not possible to determine if the options would be effective, beneficial, and feasible. - According to Section 4.3 in Appendix II, “3,597 m of watercourse” and “[...] 3.942 ha of beaver ponds” will be permanently lost, with “717 m of watercourse” temporarily lost during all phases of the Project. However, an estimate of the fish habitat impacted by the Project (in m ²) for each watercourse or waterbody was not provided in Appendix II or elsewhere in the revised EIS. - Section 6.0 of Appendix II states that the “[...] the conceptual offsetting plan includes three primary offsetting measures. They are: - Shoreline stabilization of Wabigoon Lake; - Creation of fish habitat, after mine closure, in ponds adjacent and connected to Blackwater Creek; and - Removal of the dam on Thunder Lake Tributary 2, to allow upstream fish passage. It is further stated in the same section that “each of these concepts is deemed to be worthy of consideration as offsetting for the project”. However, there were no fish habitat accounting presented in the revised EIS to	Specific Question/ Request for Information: A. Provide an accounting of the amount of fish habitat impacted by the Project (in m ²) for each watercourse/waterbody, and explain how it was calculated. Include in this assessment, the fish habitat loss accounting conducted for fish-bearing wetlands as requested in FFH(2)-01. B. To offset the amount of habitat identified in response to Question A, provide an estimate of the amount of fish habitat for each offsetting option (in m ²), and explain how it was calculated, using appropriate figures and rationale. Clarify whether a single or multiple offsetting options would be chosen for the Fish Habitat Offsetting Plan. . C. For Questions A and B, distinguish between what would be considered under section 35 of the <i>Fisheries Act</i> or Schedule 2 of the <i>Metal Mining Effluent Regulations</i> under the <i>Fisheries Act</i> .

						<p>validate this statement. It is also unclear whether a single offsetting option, or multiple options, would be considered for the final offsetting plan.</p> <ul style="list-style-type: none"> - Furthermore, there is uncertainty in whether the identified impacts to fish and fish habitat would be associated with an authorization under Section 35 of the <i>Fisheries Act</i> or an amendment to Schedule 2 of <i>Metal Mining Effluent Regulations</i> of the <i>Fisheries Act</i>. - In addition, the impacts to other valued components from the <i>Fisheries Act</i> instruments was not presented the revised EIS and IR #1 responses, This information is required to conduct an effects assessment under subsection 5(2) of CEAA 2012 (See IR# RG(2)-01), and includes the identification of changes to the environment (i.e. loss or change to riparian and terrestrial habitat) that are specifically linked to federal decisions, not already captured in section 5(1)(c) of CEAA 2012. - The fish habitat accounting for the predicted fish habitat losses due to the Project and the offsetting options presented in the revised EIS, along with the identification of the applicable regulatory instrument, is required for the Agency and Fisheries and Oceans Canada (DFO) to determine if the proposed Fish Habitat Offsetting Plan would be sufficient to mitigate the effects to fish and fish habitat from the Project. 	
IR-2 #: FFH(2)-03	TMI ID: TMI_128	IR-1 #: FH(1)-07	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2, 10	Reference to EIS: Section 6.14.4.1, 6.14.5; Section 10, Table 10.0-2	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - It is stated in Section 6.14.4.1 of the revised EIS that “Construction of the tailings storage facility (TSF) and minewater pond will overprint sections of Blackwater Creek Tributary 2” and “[...] The areas of the Blackwater Creek Tributary 2 catchment that is upstream from the TSF will be connected to Blackwater Creek via a new watercourse that will be constructed, east of the TSF”. Executive summary of Appendix JJ further states “The new watercourse will be approximately 1260 m long and will be constructed using natural channel design principles to emulate, to the extent possible, the existing Blackwater Creek Tributary 2 - Reach 2”. - It is unclear whether this new watercourse or diversion channel, identified as “Tributary 2 diversion” in Appendix II, Table 4.1-1 and described as a possible habitat gain in Section 4.2, is considered among the offset habitat that would be required under Section 35 of the <i>Fisheries Act</i>, or under the <i>Metal Mining Effluent Regulations</i>. This watercourse is not mentioned among the three primary offsetting measures in Section 6.0 of Appendix II. - Figure 4.2-1 of Appendix JJ shows the conceptual design of the Blackwater Creek Tributary 2 diversion. The Agency notes that this diversion channel is in close proximity to the TSF and the contact water collection ditches. This can be the cause of the following: 	<p>Specific Question/ Request for Information:</p> <p>A. Describe whether Blackwater Creek Tributary 2 diversion is considered among the offset habitat that would be required under Section 35 of the <i>Fisheries Act</i>, or under the <i>Metal Mining Effluent Regulations</i>. Update the response to IR# FFH(2)-02 accordingly.</p> <p>B. Provide an assessment of changes in water quality of the Blackwater Creek Tributary 2 diversion channel, considering its proximity to the TSF and any runoff and seepage from the TSF that may bypass the contact water collection ditches and enter the diversion channel.</p> <p>C. Explain how flooding or overflowing from contact water collection ditches may affect the water quality of Blackwater Creek Tributary 2 diversion and areas downstream of it.</p> <p>D. Provide an assessment of potential effects to the structural integrity of the TSF from establishing a diversion channel in its vicinity.</p> <p>E. Describe the effects on fish and fish habitat taking responses from Questions B and D into consideration.</p> <p>F. Describe mitigation measures to prevent adverse effects to fish and fish habitat taking into consideration the response to Question E, if necessary.</p> <p>F. Characterize residual effects, if any, after the mitigation measures described in the response to Question F have been implemented.</p> <p>G. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p>

						<ul style="list-style-type: none"> - Runoff and seepage that bypasses the contact water collection ditches can enter the diversion channel. - During extreme weather events, possible flooding of the contact water collection ditches could spread the contaminated water to the diversion channel. - Diversion channel's proximity to the boundary of the TSF can affect the structural integrity of the TSF. - The Agency requires this information to understand the effects on fish and fish habitat from the creation of Blackwater Creek Tributary 2 diversion channel. 	
IR-2 #: FFH(2)-04	TMI ID: TMI_135	IR-1 #: FH(1)-14	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2, 10	Reference to EIS: Section 6.14.1; Appendix Q; Appendix II	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - It is stated in Appendix II of the EIS, Section 3.1.2 that "The riparian vegetation is dense" along most of Blackwater Creek Tributary 2. A portion of Blackwater Creek Tributary 2 would be diverted; however it is unclear if riparian plantings would be included in the design of the new diversion channel to provide shade and cover, which are important components of fish habitat. Further, there would likely be a time lag until the riparian vegetation planting were sufficiently developed to serve their intended function. This time lag may have an effect on water temperatures in Blackwater Creek Tributary 2 and the mainstream Blackwater Creek, which may further effect fish and fish habitat within these watercourses. 	<p>Specific Question/ Request for Information:</p> <p>A. Describe how changes in water temperature due to lack of well-developed riparian vegetation on the new Blackwater Creek Tributary 2 diversion would be mitigated.</p> <p>B. Describe the magnitude and temporal extent of the effect of changes in water temperature on fish and fish habitat in Blackwater Creek Tributary 2 and downstream.</p> <p>C. Describe any additional mitigation measures to prevent adverse effects to fish and fish habitat identified in the response to Question B, if necessary.</p> <p>D. Characterize residual effects, if any, after the mitigation measures identified in the response to Question C have been implemented.</p> <p>E. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p>
IR-2 #: FFH(2)-05	TMI ID: TMI_130	IR-1 #: FH(1)-07	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10	Reference to EIS: Sections 6.14.4.1 - 6.14.4.4	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - Section 6.14 of the revised EIS provides an assessment of direct and indirect effects on fish and fish habitat associated with the waterbodies affected by the Project. However, an assessment of effects on fish and fish habitat downstream of the affected watercourses is not provided. Of particular interest, effects to large-bodied fish species at the mouth of Blackwater Creek and Keplyn's Bay, and downstream of Little Creek and Hoffstrom's Bay Tributary as a result of reductions in flow are not discussed in the revised EIS. - According to Appendix Q, Section 4.2.1.1, habitat located where Blackwater Creek flows into Keplyn's Bay "is likely to provide good spawning and nursery habitat for a number of fish species that are present in Wabigoon Lake including Northern Pike and possibly Muskellunge". According to Section 6.14 in the revised EIS, Blackwater Creek will have reduced flows during the site preparation and construction phase, and during the operations phase, with an increase in flow downstream of Blackwater Tributary 1 during the post-closure (abandonment) phase. This section also states that reduction in flows may affect the ability of Blackwater Creek to support stream-resident fish. As such, it is possible that reductions in flows and stream-resident fish throughout all project phases may affect large-bodied 	<p>Specific Question/ Request for Information:</p> <p>A. Provide a prediction of the anticipated loss of fish habitat (in m²) in Blackwater Creek, Little Creek, and Hoffstrom's Bay as a result of flow reductions and/or changes in water levels;</p> <p>B. Assess whether reductions in flow and/or changes to water levels would affect the ability of Blackwater Creek, Little Creek, and Hoffstrom's Bay to support stream-resident and small-bodied fish species, and large-bodied species downstream.</p> <p>C. Assess whether the anticipated reductions in stream-resident and small-bodied fish populations in Blackwater Creek, Little Creek, and Hoffstrom's Bay Tributary will result in impacts to large-bodied species downstream.</p> <p>D. Describe mitigation measures to prevent adverse effects to fish and fish habitat taking responses from Questions A to C into consideration;</p> <p>E. Characterize residual effects, if any, after the mitigation measures have been implemented.</p> <p>F. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p>

						<p>species downstream.</p> <ul style="list-style-type: none"> - The Executive Summary of Appendix Q indicates that only small-bodied species were caught in Little Creek and Hoffstrom's Bay Tributary, but also states that the mouths of these watercourses may provide suitable spawning habitat for northern pike. Section 6.14 indicates that Little Creek and Hoffstrom's Bay Tributary will experience decreased flows beyond the life of the project. As such, it is possible that reductions in flows may affect the ability of these watercourses to support small-bodied fish species, which may in turn affect large-bodied species downstream. - This Agency requires this information to understand both direct and indirect effects on fish and fish habitat downstream of the waterbodies and watercourses affected by the Project. 	
IR-2 #: MW(2)-01	TMI ID: TMI_053	IR-1 #: MW(1)-15	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10.	Reference to EIS: Appendix JJ, Sections 1.2.3, 2.0, 5.2; Appendix KK, Sections 1.4.2, 3.4 and 4.2.	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - The revised EIS proposes two cover options for the closure of tailings storage facility (TSF). Appendix JJ, Section 1.2.3 mentions that for both options, the tailings will be physically isolated by applying a layer of granular material. For the wet cover option, "the tailings will then be isolated from oxygen by adding a cover of non-process water", while for the dry cover option, the tailings will be isolated from oxygen by the application of "a low permeability dry cover" (Appendix JJ, Section 2.0). - In order to implement either cover option, during the decommissioning phase water will need to be deliberately drained from the tailings to allow for tailings consolidation, before any heavy machinery can operate to emplace the granular material. The time required to consolidate the tailings and then emplace the covers could conceivably require several years. During that time, acid rock drainage (ARD) could occur and this possibility has not been assessed, nor has there been an assessment of the effect this scenario would have on seepage quality. - This is important for the Agency to understand the changes in surface water quality due to seepage and the corresponding effects on fish and fish habitat during decommissioning and abandonment phases. 	<p>Specific Question/ Request for Information:</p> <p>A. For both dry and wet TSF cover options, provide an estimate of the length of time required to consolidate the tailings and implement the cover. Include experiences at other mine sites with similar features and characteristics to support the time estimates.</p> <p>B. Assess the potential for acid rock drainage for the time it would take to consolidate the tailings and emplace the cover on the TSF, as requested in Question A.</p> <p>C. Describe the changes in surface water quality due to seepage from the TSF taking the responses from Questions A and B into consideration;</p> <p>D. Describe the effects on fish and fish habitat taking the responses from Questions A to C into consideration;</p> <p>E. Describe mitigation measures to prevent adverse effects to fish and fish habitat, if necessary;</p> <p>F. Characterize residual effects, if any, after the mitigation measures have been implemented;</p> <p>G. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p> <p>H. Incorporate the findings of this IR, if applicable, into the revision of seepage water quality assessment requested in IR# MW(2)-06, and revision of groundwater model requested in IR# GW(2)-01.</p>
IR-2 #: MW(2)-02	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10.	Reference to EIS: Section 3.5.3; Section 5.1.4; Appendix JJ; Appendix JJ-1	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - The assessment of changes in water quality from tailings storage facility (TSF) seepage is predicated upon complete success in preventing acid rock drainage (ARD) from occurring in the tailings in perpetuity. However, the long-term viability of maintaining the wet cover option, without human intervention, has not been adequately demonstrated. Appendix JJ-1 of the revised EIS provides a "Water Cover Analysis on the Tailings Storage Facility at Closure", which appears to be conducted over one year and does not demonstrate long-term viability. The ARD 	<p>Specific Question/ Request for Information:</p> <p>A. Indicate whether the intent of the wet cover on the TSF is to completely prevent any ARD, or to reduce the rate of ARD formation.</p> <p>B. Provide a multi-year water cover modelling analysis to substantiate the viability of the wet cover on the TSF using appropriate climate data. All water inputs (e.g. direct precipitation into the TSF) and outputs (e.g. evaporation, snow sublimation, transpiration, seepage) should be clearly identified, quantified and appropriately modelled;</p> <p>C. Assess the potential effects of climate change on long-term viability of the wet cover on the TSF and factor that into the response to Question B;</p> <p>D. Provide a sensitivity analysis that examines the robustness of the system to</p>

						<p>potential of the tailings does not diminish through time, and will continue to pose the same risk to the environment at any point in time should failure of the wet cover occur. Considering that the water cover needs to be maintained in perpetuity, a water cover model needs to be run for a period longer than one year to support the viability of the cover and substantiate the conclusions made in the revised EIS regarding changes in surface water quality.</p> <ul style="list-style-type: none"> - In addition, it is stated in Section 5.1.4 that “There are various climate change assessments that have been developed for northern Ontario, most of which generally predict that the temperatures will increase in the future, while precipitation will remain stable, or increase. The assessments also theorize that precipitation will become more episodic [...]”. These changes in climate can have important implications for the long-term viability of maintaining a wet cover over the tailings. The potential effects of climate change upon the long-term viability of maintaining a water cover need to be assessed and incorporated into the water cover modelling. - A sensitivity analysis to test the robustness of the system to maintain a wet cover on the TSF was not conducted or reported in the revised EIS. Hence, it is unclear whether certain conditions or combination of conditions could cause a wet cover over TSF to fail. - This information is important for the Agency to understand the changes in water quality caused by seepage from the TSF, which could adversely affect fish and fish habitat. 	<p>maintain the water cover in perpetuity. The sensitivity analysis should also examine what conditions, or combination of conditions, will cause the wet cover to fail;</p> <ul style="list-style-type: none"> E. Update the water quality assessment, if needed, taking the responses from Questions A to D into consideration; F. Describe the effects on fish and fish habitat, if any, taking the response from Question E into consideration; G. Describe additional mitigation measures, including contingency measures that would be in place to mitigate any effects on fish and fish habitat if the wet cover on the TSF is unsuccessful; H. Characterize residual effects, if any, after the mitigation measures have been implemented; I. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale. J. Incorporate the findings of this IR, if applicable, into the revision of seepage water quality assessment requested in IR# MW(2)-06, and revision of groundwater model requested in IR# GW(2)-01.
IR-2 #: MW(2)-03	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10.	Reference to EIS: Appendix JJ, Section 3.4.2	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - Similar to the assessment conducted for a wet cover on top of the tailings storage facility (TSF) discussed in MW(2)-02, the revised EIS does not demonstrate the ability and long-term viability of dry cover over the TSF to prevent acid rock drainage (ARD). - The ARD potential of the tailings does not diminish through time, and will pose the same risk to the environment at any point in time should failure of the dry cover occur. Additional information is needed to support the viability of the dry cover, such as composition and design of the cover and the availability of cover materials at the Project site. - Further, it is unclear whether the intent of the dry cover is to completely prevent any ARD, or to reduce the rate of ARD. It is also unclear whether factors such as erosion, tree root penetration, settling, slumping and frost heaves were considered as potential challenges for the dry cover option. In case the dry cover on the TSF is unsuccessful, there are no contingency measures in place to protect the seepage from leading into the surrounding 	<p>Specific Question/ Request for Information:</p> <ul style="list-style-type: none"> A. Indicate whether the intent of the dry cover on the TSF is to completely prevent any ARD, or to reduce the rate of ARD formation. B: Provide additional details about the design of the dry cover and its potential for long-term success in preventing ARD, including the composition and thickness of the various layers that would be emplaced over the TSF and whether appropriate cover materials are readily available at the Project site. C. Examine all possible causes that may contribute to the failure of the dry cover over the TSF, including erosion, tree root penetration, settling, slumping, frost heave. Discuss the robustness of the dry cover design to those failure modes. D. Update the water quality assessment, if needed, taking the responses from Questions A to C into consideration; E. Describe the effects on fish and fish habitat, if any, taking the response from Question D into consideration; F. Describe additional mitigation measures, including contingency measures that would be in place to mitigate any effects on fish and fish habitat if the dry cover on the TSF is unsuccessful; G. Characterize residual effects, if any, after the mitigation measures have been implemented; H. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to

						<p>waterbodies.</p> <ul style="list-style-type: none"> - Additionally, the revised EIS does not provide real-life examples of dry covers used elsewhere in high potential acid generating situations, particularly in Canada, that have climate and geographic conditions that are similar to the Project site. - This information is important for the Agency to understand the changes in water quality caused by seepage from the TSF, which can adversely affect the fish and fish habitat. 	<p>verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p> <p>I. Incorporate the findings of this IR, if applicable, into the revision of seepage water quality assessment requested in IR# MW(2)-06, and revision of groundwater model requested in IR# GW(2)-01.</p>
<p>IR-2 #: MW(2)-04</p>	<p>TMI ID: n/a</p>	<p>IR-1 #: n/a</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat</p>	<p>Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10</p>	<p>Reference to EIS: Sections 3.16.5 and 3.7.2.</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - It is stated in Section 3.16.5 of the revised EIS that “the floor of the tailings storage facility (TSF) will be low permeability” and clay will be used from “[...] open pit stripping and from beneath the WRSA. [...] if the volume of clay is insufficient, a synthetic liner will be used to ensure a low-permeability floor for the TSF”. It is further stated in Section 3.7.2.1 that “Although it was initially hoped that there was a sufficiently thick low-permeability horizon beneath the TSF to contain the tailings, Treasury Metals are now planning to line the TSF”. It is unclear whether the option of a clay layer underneath the TSF is still being considered, despite the TSF liner. There is also uncertainty in whether there is enough suitable clay available near the Project site to be able to meet project demands as the use of clay has been identified for various components of the Project. For example, section 3.7.2 mentions the use of clay for construction of TSF embankments. - The Agency is unclear about how clay would be determined to be suitable for use in constructing a clay layer. The ability of the clay to reduce seepage needs to be substantiated based on the condition of the clay and the manner in which the clay will be emplaced, noting that: <ul style="list-style-type: none"> - Clay will likely be in a disturbed state; - There is a high probability of silts and sands being mixed into clay during open pit stripping and placement into the overburden stockpile; - It is not mentioned whether clay will be emplaced in lifts and compacted; and - Factors such as hydraulic conductivity and thickness are not provided. - These factors are important in determining the suitability of a clay layer underneath the TSF, and are important for the Agency to understand as they have implications on seepage calculations and hydrogeological modelling. - The Agency requires this information to verify that seepage from the TSF would not cause adverse effects to the surrounding fish-bearing water bodies. 	<p>Specific Question/ Request for Information:</p> <p>A. Clarify whether clay would be used underneath the TSF despite the application of a HDPE liner.</p> <p>B. If a clay layer would be used underneath the TSF, indicate how the suitability of the clay to be used for construction of the base of TSF and other project components would be determined. Include details on considerations such as disturbance of the clay, mixing with sands and silts, compaction of the clay, thickness of the clay layer and target hydraulic conductivity to support the analysis.</p> <p>C. If a clay layer would not be used underneath the TSF, describe the efficacy of the HDPE liner in preventing seepage from the TSF leading into the surrounding waterbodies. Assess the potential for degradation of the liner over time, as requested in MW(2)-05, and the implications on seepage should it occur.</p> <p>D. Update the water quality assessment, if needed, taking the responses from Questions A to C into consideration.</p> <p>E. Revise the effects on fish and fish habitat, if needed, taking the response from Question D into consideration.</p> <p>F. Describe additional mitigation measures to prevent adverse effects to fish and fish habitat, if necessary;</p> <p>G. Characterize residual effects, if any, after the mitigation measures have been implemented;</p> <p>H. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p> <p>I. Incorporate the findings of this IR, if applicable, into the revision of seepage water quality assessment requested in IR# MW(2)-06, and revision of groundwater model requested in IR# GW(2)-01.</p>

<p>IR-2 #: MW(2)-05</p>	<p>TMI ID: n/a</p>	<p>IR-1 #: n/a</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat</p>	<p>Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10</p>	<p>Reference to EIS: Sections 3.5.3, 3.16.5 and 4.0; Appendix M; Appendix M-2</p>	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - The Agency has uncertainties with the liner proposed for the tailings storage facility (TSF). Appendix JJ, Section 3.5.3 states that “For the 60 hectare TSF area, typical leakage with an HDPE basal liner installed is considered to be less than 5 m3/d”. Section 4.0 of Appendix JJ further states that “Seepage through the base of the TSF was estimated to be 2.4 m3/d, assuming that the basin has been lined with a synthetic liner”. - This seepage estimate is unsubstantiated in the revised EIS, as it unclear if this was tailored to the design of the TSF for this project, or based on the most conservative assumptions associated with the range of options that were considered. For example, the volumes of seepage that will emanate from the TSF will be directly affected by the base of the TMF and the liner that is ultimately installed (MW(2)-04). - The effects assessment needs to reflect the range of seepage that is possible based on the choice of liner used at the TSF. As such, more conservative assumptions about the long-term performance of these liners is needed. For example, synthetic liners can degrade over time, causing larger amounts of seepage to flow into the surrounding waterbodies. - The Agency requires this information to verify that seepage from the TSF would not cause adverse effects to the surrounding fish-bearing water bodies. 	<p>Specific Question/ Request for Information:</p> <p>A. Reassess the rate of seepage emanating from the TSF based on the design of the TSF for this project, or based on most conservative assumptions (i.e. highest seepage rates). Include in this assessment, a consideration of:</p> <ul style="list-style-type: none"> - Progressive degradation of the TSF liner; - Base of the TSF; and - Wet or dry cover for the TSF. <p>B. Re-run the models, including the groundwater model and the multi-year water cover model (MW(2)-02), based on the assumptions revised in the response to Question A;</p> <p>C. Update the water quality assessment, if needed, taking the responses from Questions A and B into consideration.</p> <p>D. Provide the effects on fish and fish habitat, if any, taking the response from Question C into consideration.</p> <p>E. Describe mitigation measures to prevent adverse effects to fish and fish habitat, if necessary;</p> <p>F. Characterize residual effects, if any, after the mitigation measures have been implemented;</p> <p>G. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p> <p>I. Incorporate the findings of this IR, if applicable, into the revision of seepage water quality assessment requested in IR# MW(2)-06, and revision of groundwater model requested in IR# GW(2)-01.</p>
<p>IR-2 #: MW(2)-06</p>	<p>TMI ID: 53 54</p>	<p>IR-1 #: MW(1)-15 MW(1)-16</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat</p>	<p>Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10.</p>	<p>Reference to EIS: Appendix K; Appendix M; Appendix JJ, Section 5</p>	<p>Context and Rationale:</p> <p>There are a number of uncertainties with the kinetic and static testing conducted to characterize the geochemistry of mine rock and ore on site. Due to these uncertainties, the Agency has identified a number of concerns related to management of mine rock and tailings on site, including the assumptions made in the revised EIS.</p> <p>The Agency notes that these concerns are also tied with the groundwater modelling (See IR# GW(2)-01, GW(2)- 03 and GW(2)- 04), the TSF base and liner (See IR# MW(2)-04 and MW(2)-05) and cover options for the TSF and the WRSA (See IR# MW(2)-01 to 03 and GW(2)-02).</p> <p>A summary of these uncertainties is presented below and a detailed account of each is presented in the subsequent IRs.</p> <p>1) Waste rock and ore sampling: It is unclear if the mine rock used for geochemistry tests included parameters required for testing of onset of acidic drainage. Also, there appears to be no ore analysis. Therefore the information provided in the revised EIS is</p>	<p>Specific Question/ Request for Information:</p> <p>A. Update the geochemical characterizations of mine rock and tailings based on the responses to IRs MW(2)-07 to MW(2)-10 and the four areas of uncertainty raised in the “Context and Rationale” column. As these concerns are addressed, consider how they interplay with other IRs related to groundwater modelling (IR# GW(2)-01, GW(2)- 03 and GW(2)- 04), TSF base and liner (IR# MW(2)-04 and MW(2)-05) and cover options for the TSF and WRSA (IR# MW(2)-01 to 03 and GW(2)-02).</p> <p>B. Provide a reassessment of acid rock drainage, and its onset time, based on the revisions requested in Question A. Any assumptions made in the revised assessments should be conservative and tailored to the characteristics of the Project site conditions. Where uncertainties and assumptions are unavoidable, use worst- case scenario for seepage and runoff.</p> <p>C. Describe the changes in water quality from runoff and seepage from the TSF and WRSA that may include acidic water, taking the responses from Questions A and B into consideration.</p> <p>D. Revise the effects on fish and fish habitat taking the response from Question C into consideration;</p> <p>E. Describe additional mitigation measures to prevent adverse effects to fish and</p>

						<p>insufficient to determine whether the tailings sample used for modelling is representative of tailings that will be produced during the Project (See IR# MW(2)-07).</p> <p>2) Humidity Cell Tests: The revised EIS indicates that the onset time of acid drainage in tailings in the Humidity Cell Tests (HCTs) was about 60 weeks. However, HCTs were discontinued earlier and prior to the cells reaching equilibrium. Yet the onset time for ARD was assumed to be two years for the water quality assessment. It is unclear how this assumption was drawn (See IR# MW(2)-08).</p> <p>3) Sulphur Block Model: The sulphur block model was not provided in the revised EIS and it is unclear how it was used to determine mine rock cut-off criteria and to assess the potential for acid rock drainage (See IR# MW(2)-09).</p> <p>4) Acid base accounting: It is unclear how the high sulphide zones identified in the acid-base accounting (ABA) analysis were considered in the calculation for ARD onset time (See IR# MW(2)-10).</p> <p>Given the concerns raised above, it was also noted that there is no evidence to suggest that a geochemical characterization program would be used throughout the life of the Project. The purpose of such a program would be to detect changes in geochemical behavior through time in advance, while the mine is still operating, which would allow adjustments to be made in the management of mine rock and tailings, including planning for decommissioning and abandonment.</p> <p>The information requested above is important for the Agency to understand the quality of seepage that will be produced from the mine rock and tailings generated as part of the Project, and understand how they can cause changes to water quality of the surrounding waterbodies, and affect fish and fish habitat.</p>	<p>fish habitat, if necessary, taking the response to Question D into consideration.</p> <p>F. Characterize residual effects, if any, after the mitigation measures described in Question E have been implemented;</p> <p>H. Update the follow-up program for potential effects to fish and fish habitat, including conceptual details for any further geochemistry testing programs that are planned throughout the life of the Project to address uncertainties, verify previous results and refine options for management of waste rock and tailings. Also provide any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p> <p>I. Provide contingency plans for prevention and treatment of runoff and seepage using worst case scenarios, particularly as it relates to acid rock drainage.</p>
IR-2 #: MW(2)-07	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10.	Reference to EIS: Appendix K, Section 2.2; Table 2.1.	<p>Context and Rationale: Section 2.2 of Appendix K states that "Various rock types in the geological complex include: Biotite Muscovite Schist (BMS), Biotite Schist (BS), Muscovite Sericite Schist (MSS), and Meta-Sediment (MSED). The composition, expected amount in the mine rock, and relative percentage of the total anticipated mine rock for each rock type is summarized in Table 2.1."</p> <p>Table 2.1 of Appendix K of the revised EIS is incomplete as</p>	<p>Specific Question/ Request for Information:</p> <p>A. Provide the missing information in Table 2.1 of Appendix K. Include in the table, spatial distribution and timing of excavation of different rock types and distribution of sulphides and carbonates that may affect proportional exposure in waste rock fines.</p> <p>B. Explain how the geochemical testing was used to characterize ore in order to understand the composition and variability in the tailings, and determine if the tailings samples are representative of the site conditions.</p>

						<p>the columns for estimated amount and percent of mine rock for each of the different rock types state “value req.”</p> <p>It is further stated in Appendix K, Section 2.2 that “The selection of additional samples was based on the estimated distribution of major rock units and included a total of 112 samples analyzed, of which 52 were BMS, 16 were BS, 35 were MSS and 9 were MSED. The samples were selected to represent potential mine rock only and no ore containing samples were included.” It is unclear why ore containing samples were not included in this assessment as ore characterization is required in order to evaluate the potential composition and variability in composition of the tailings.</p> <p>This information is required by the Agency to understand and validate the geochemical testing conducted for the Project and to evaluate the efficacy of the proposed management options for ore, mine rock and tailings that can potentially affect the water quality of fish-bearing waterbodies.</p>	<p>C. Incorporate the findings from Questions A and B into the revision of seepage water quality assessment requested in IR# MW(2)-06.</p>
<p>IR-2 #: MW(2)-08</p>	<p>TMI ID: 53</p>	<p>IR-1 #: MW(1)-15</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat</p>	<p>Reference to EIS guidelines: Sections 9.1.2 and 10.</p>	<p>Reference to EIS: Appendix K, Sections 2.4.1 and 2.4.3.</p>	<p>Context and Rationale:</p> <p>It is stated in response to MW(1)-15 and Section 6.3.2.3 of the revised EIS that “The time to acid on-set for waste rock and pit walls in the model was conservatively assumed to be only two years.” It is unclear how the onset time of two years can be considered conservative considering that mine rock used for the Humidity Cell Tests (HCTs) “reached acidic conditions (pH values less than 5.5) after approximately 60 weeks” (Appendix K, Section 4.2).</p> <p>Considering that acid rock drainage (ARD) onset took a shorter time in the HCTs than the assumed two years in the revised EIS, the length of time required to implement the cover options, as described in MW(2)-01, becomes a point of consideration.</p> <p>Furthermore, according to Natural Resources Canada (NRCan), the HCTs were not designed in a manner appropriate to evaluate the Carbonate-Neutralization Potential (CO₃-NP) and Carbonate-Neutralization Potential Ratio (CO₃-NPR). These values are of importance with regards to their effect on acid rock drainage onset time.”</p> <p>According to NRCan, the humidity cells were often not at equilibrium when discontinued and approximate time to CO₃-NP depletion was also not calculated. The rationale for discontinuation of humidity cells prior to reaching equilibrium was not provided in Appendix K.</p>	<p>Specific Question/ Request for Information:</p> <p>A. Revise the assumption made in the revised EIS for the ARD onset time to match the data collected in kinetic testing;</p> <p>B. Provide a rationale for discontinuation of humidity cell tests prior to equilibrium being reached in the cells;</p> <p>C. Incorporate the findings from Questions A and B into the revision of seepage water quality assessment requested in IR# MW(2)-06, and groundwater model requested in IR# GW(2)-01.</p>

						This information is important for the Agency to validate the predictions made for ARD and ARD onset time, and the management options for mine rock and tailings to prevent adverse changes in water quality of fish-bearing waterbodies.	
IR-2 #: MW(2)-09	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10.	Reference to EIS: Appendix K, Section 2.4.4	<p>Context and Rationale: Section 2.4.4 of Appendix K of the revised EIS mentions that a Sulphur Block Model was developed “in order to develop an understanding of the distribution of sulphur within the deposit. All available data from exploration drilling between 2008 and 2014 were used in the sulphur block model” to evaluate the “[...] rock volumes with various sulphur contents for use in assessment of mine rock cut-off criteria and water quality assessment, and to refine mine rock management options”.</p> <p>However, the details of this model are not provided in Appendix K of the revised EIS. It is also unclear how this model was used in the assessment of mine rock cut-off criteria, water quality assessment and mine rock management options.</p> <p>This information is important for the Agency to gain confidence in the geochemical studies conducted for the Project, and validate the management options considered for mine rock in order to prevent adverse effects on fish-bearing waterbodies.</p>	<p>Specific Question/ Request for Information:</p> <p>A. Provide the Sulphur Block Model, and describe how it was used in the revised EIS to determine mine rock cut-off criteria and management plans.</p> <p>B. Incorporate the findings from this IR into the revision of seepage water quality assessment requested in IR# MW(2)-06.</p>
IR-2 #: MW(2)-10	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10.	Reference to EIS: Appendix K, section 1.4.2	<p>Context and Rationale: Section 1.4.2 of Appendix K of the revised EIS states that “The Main Zone is composed of well-defined pyritic quartz-sericite schist (MSS) separated by less-altered biotite-feldspar schist (BMS). Sulphide mineralisation and local visible gold occurs mainly within the leucocratic bands but occasionally it is localized in the melanocratic bands enriched with biotite and chlorite. The sulphide (mineral) content of the mineralised zone is generally 3 to 5 % but locally is up to 15 % (by volume)”. According to Natural Resources Canada (NRCAN), high sulphide zones within the deposit that would be processed and subsequently deposited as tailings could lead to rapid unpredicted onset of acidic weathering conditions, reducing the predicted time of onset of acid drainage. It is unclear whether or how this was factored into the assessment of Acid rock drainage (ARD) onset time.</p> <p>This information is important for the Agency to gain confidence in the geochemical studies conducted for the Project, and validate the management options considered for mine rock in order to prevent adverse effects on fish-bearing waterbodies.</p>	<p>Specific Question/ Request for Information:</p> <p>A. Describe how the high sulphide zones identified in the acid-base accounting (ABA) analysis were considered in the calculation of ARD onset time.</p> <p>B. Incorporate the findings from this IR into the revision of seepage water quality assessment requested in IR# MW(2)-06.</p>

IR-2 #: MW(2)-11	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Section 9.1.2 and 10.	Reference to EIS: Appendix JJ, Section 3.5.3, Tables 6-5 to 6-14.	Context and Rationale: <ul style="list-style-type: none"> - The Agency is unclear on the proponent’s approach to managing runoff and seepage in collection ditches during decommissioning and abandonment. - Appendix JJ, Section 3.5.3 mentions that approximately 90 m³/day of seepage from the TSF with a wet cover, 50 m³/day of seepage from the TSF with a dry cover, and 30 m³/day of seepage from the capped WRSA “will bypass collection ditches and report to various waterbodies during the post-closure”. Tables 6-5 to 6-14 of Appendix JJ provides the concentrations of parameters in receiving waterbodies, including the seepage that will bypass the runoff and seepage collection ditches during abandonment. - The Agency understands that runoff and seepage from the TSF and WRSA would continue to be collected in the collection ditches during abandonment, and directed to the open pit (upon treatment) to accelerate the filling of the pit lake. However, once the pit lake is full, it is unclear where the collected runoff and seepage would be directed to. - Additionally, if there is a plan for eventual decommissioning of runoff and seepage collection ditches, the Agency needs to understand the conditions (i.e. water quality) that are expected to be achieved in the collection ditches before they can be decommissioned. - It is important for the Agency to understand how contact water collected in runoff and seepage collection ditches would be managed during decommissioning and abandonment such that surface water quality of fish-bearing waterbodies is not affected. 	Specific Question/ Request for Information: <ul style="list-style-type: none"> A. Confirm that the runoff and seepage collection ditches would remain in place during decommissioning and abandonment. If runoff and seepage collection ditches would continue to exist after filling of the open pit, describe where the water collected in these ditches would report to. B. Describe the water quality criteria in the runoff and seepage collection ditches that are expected to be achieved before the ditches are decommissioned. C. Update the changes in water quality expected from runoff and seepage from the TSF and WRSA during decommissioning and abandonment, if necessary, taking the responses from Questions A and B into account. D. Revise the effects on fish and fish habitat taking responses from Questions A to C into consideration. E. Describe additional mitigation measures to prevent adverse effects to fish and fish habitat, if necessary. F. Characterize residual effects, if any, after the mitigation measures have been implemented. G. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions for water quality during decommissioning and abandonment. In addition, evaluate the effectiveness of the proposed mitigation measures and provide contingency measures, if necessary. If follow-up is not required, provide a rationale.
IR-2 #: GW(2)-01	TMI ID: 72 74 75 83 115	IR-1 #: GW(1)-09 GW(1)-11 GW(1)-12 GW(1)-20 SW(1)-29	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.1 and 9.1.2	Reference to EIS:	Context and Rationale: <p>The groundwater model has a number of deficiencies, listed below, which raise uncertainties with the modelling exercise, the outputs of the model, and the effects assessments that incorporate those model outputs. These concerns are also tied with concerns raised in other IRs related to characterization of geochemistry on the site (see IR# MW(2)-06 to MW(2)-10), cover options for TSF and WRSAs (see IR# MW(2)-01 to MW(2)-03 and GW(2)-02), and TSF base and liner (see IR# MW(2)-04 and -05).</p> <p>1) Recharge for overburden layers Recharge was based on very limited field observations which were conducted during unusually dry years (Appendix M of the revised EIS, Section 3.2 and Figure 9). Recharge rates have important implications for modelling the quantity of seepage.</p>	Specific Question/ Request for Information: <ul style="list-style-type: none"> A. Provide an updated groundwater model that addresses all seven of the concerns raised in the “Context and Rationale” for this IR. Incorporate the findings from the IRs # MW(2)-08 and GW(2)-02 to GW(2)-04 in the revision of the model. B. Provide the potential range in seepage volumes (e.g. based on sensitivity analyses) from the TSF and WRSA. Also provide travel times for this seepage to various receptor locations. Include in this assessment, an explanation of how seepage volumes would be expected to flow through various geologic layers. C. Determine the capture efficiency of the seepage collection system, and assess the efficiency based on different ditch depths, and whether efficiency can be improved through the use of additional mitigation measures such as pump-back wells. D. Reassess the changes in water quality from seepage emanating from the TSF and WRSA and an updated groundwater model, taking the responses from

					<p>2) Recharge for waste rock storage area (WRSA) As discussed in IR# GW(2)-02, low values were used for infiltration through the WRSA. Using these low values for infiltration will cause the groundwater model to output a lower amount of seepage.</p> <p>3) Hydraulic conductivity measurements The hydraulic conductivity measurements as described in Section 5.6.2.2 of the revised EIS do not allow for proper characterization of the overburden layers or the bedrock. In addition, the number of measurements, particularly in key geologic units such as weathered bedrock and the different types of overburden appear to be limited.</p> <p>Furthermore, the data in Table 5.6.2.2-1 of the same section, presenting the hydraulic conductivity values (K) of the overburden layers, indicates either an error in testing or misinterpretation of units</p> <p>4) Thickness of the overburden It is stated in Appendix M, Section 5.1.1 of the revised EIS that "Model layer 3 corresponds to the weathered Shallow Bedrock unit. This zone was assumed to have a uniform thickness of 7 m". A rationale for this assumption was not provided in the revised EIS.</p> <p>The thickness of the model layers, particularly the upper layers, will have an effect on seepage flow estimates. These layers are also likely to have the greatest potential for interaction with surface water bodies.</p> <p>5) Porosity estimates There is uncertainty with the assumed porosity of 1% for shallow bedrock in the groundwater model (See IR# GW(2)-03)</p> <p>6) Particle tracking A particle tracking for the open pit zone of influence was not provided in the EIS and it is unclear how the clay layers that may exist between the tailings storage facility (TSF) and the pit lake may influence the rate of capture of seepage (See IR# GW(2)-04)</p> <p>7) Sensitivity analyses A sensitivity analysis for the recharge and infiltration from WRSA is not provided in the revised EIS. A sensitivity analysis for the hydraulic conductivity of key geologic units such as the overburden and weathered bedrock also needs to be factored into the groundwater model.</p>	<p>Questions A to C into consideration.</p> <p>E. Revise the effects to fish and fish habitat taking the response from Question D into consideration.</p> <p>F. Describe additional mitigation measures to prevent adverse effects to fish and fish habitat, if necessary, taking into consideration the response to Question E.</p> <p>G. Characterize residual effects, if any, after the mitigation measures described in Question F have been implemented.</p> <p>H. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p> <p>I. Incorporate the findings from this IR into the revision of seepage water quality assessment requested in IR# MW(2)-06.</p>
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						<p>Due to the above deficiencies with the groundwater model, the Agency has uncertainty with the seepage assessment conducted for the Project. The seepage calculations should be based on an updated groundwater model that factors the design of the cover for the TSF and WRSA, TSF base and liner, and concerns raised in other IRs regarding characterization of geochemistry of mine rock and ore.</p> <p>This is important for the Agency to understand as seepage from the Project can lead to contamination of surrounding waterbodies and affect the fish and fish habitat.</p>	
<p>IR-2 #: GW(2)-02</p>	<p>TMI ID: n/a</p>	<p>IR-1 #: n/a</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat</p>	<p>Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10</p>	<p>Reference to EIS: Section 2.5.3.2 Table 3.15-1 Appendix M</p>	<p>Context and Rationale: Insufficient information is provided to substantiate the effects from the uncapped and capped waste rock storage area (WRSA) options provided in the revised EIS.</p> <p><u>1. Uncapped WRSA</u></p> <ul style="list-style-type: none"> - Appendix M, Section 5.3.5 mentions that only 100-200 mm/yr of infiltration was assumed for the uncapped WRSA scenario. Considering the high porosity of mine rock (See IR# GW(2)-03) that is uncapped, infiltration rates should be much higher than the assumed rate of 100-200 mm/yr, since most precipitation is capable of infiltration. Seepage will be proportional to infiltration once the waste rock mass is sufficiently saturated to induce flow. <p><u>2. Capped WRSA</u></p> <ul style="list-style-type: none"> - There is insufficient information to evaluate the degree of acid rock drainage (ARD) that can be generated after capping the WRSA, and the resulting effects upon surface water quality. Assumptions about ARD generation need to be carefully substantiated. In addition to geochemical factors, the ability of the cap to reduce infiltration needs to be substantiated based on the design and materials that will be used for construction (See IR# MW(2)-04). - An infiltration rate of 30 mm/yr was assumed for the capped WRSA scenario, based on an assumed hydraulic conductivity of 1x10-9 m/s for the cap. This value of 1x10-9 m/s is unlikely for disturbed clays that are likely to be mixed with silts and sands and that are not proposed to be compacted (See IR# MW(2)-04). - Calculations of the length of time for waste rock to become saturated to induce flow are important as they will inform the timing of effects, and inform the design of Follow-Up Monitoring Programs to verify predictions associated with the WRSA. - Table 3.15-1 of the revised EIS states "Further technical information received from EcoMetrix has identified that a greater percentage of the waste rock may be PAG". It is unclear whether this has been incorporated into the 	<p>Specific Question/ Request for Information:</p> <p>A. Reassess the rate of infiltration assumed for uncapped WRSA scenario with consideration of high porosity of mine rock.</p> <p>B. Substantiate the ability of the cap on WRSA to reduce ARD by providing an analysis of the conceptual design and materials that will be used for construction (see IR# MW(2)-04)</p> <p>C. Provide detailed assumptions and calculations, with supporting data and rationale, regarding the rate of ARD generation, infiltration rates, and the amount of time for the WRSA to become sufficiently saturated such that seepage can begin to flow. Use data and information from similar caps that have been implemented in Canada in areas with similar climate and geography to support the assumptions and conclusions about the performance of the cap.</p> <p>D. Describe how the assessment conducted for ARD has taken into consideration that a greater percentage of the mine rock may be PAG. Provide an updated assessment, if necessary.</p> <p>E. Update the water quality assessment taking the responses from Questions A to D into consideration.</p> <p>F. Describe the effects on fish and fish habitat, if any, taking the response from Question E into consideration.</p> <p>G. Describe mitigation measures to prevent adverse effects to fish and fish habitat, if necessary;</p> <p>H. Characterize residual effects, if any, after the mitigation measures have been implemented;</p> <p>I. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p> <p>J. Incorporate the findings of this IR, if applicable, into the revision of seepage water quality assessment requested in IR# MW(2)-06, and revision of groundwater model requested in IR# GW(2)-01.</p>

						<p>water quality assessment, as this information can have important implications for the WRSA and the ARD calculations.</p> <p>- It is important for the Agency to understand this issue as acidic water from the mine rock can enter the surface water bodies through seepage and affect fish and fish habitat.</p>	
<p>IR-2 #: GW(2)-03</p>	<p>TMI ID: n/a</p>	<p>IR-1 #: n/a</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat</p>	<p>Reference to EIS guidelines: Part 2, Sections 9.1.2 and 10.</p>	<p>Reference to EIS: Appendix M; Appendix M-3.</p>	<p>Context and Rationale:</p> <p>It is stated in Appendix M-2 of Appendix M of the revised EIS that “The average linear velocity of groundwater in the shallow bedrock may be of the order of 2E-06 m/s (~ 0.2 m/d) assuming a hydraulic conductivity of the shallow bedrock of 1E-06 m/s (Table 8, Appendix M), and a <i>kinematic porosity</i> of 0.01. Travel times from the waste rock storage area (WRSA) to Thunder Lake may be expected to be of the order of fifteen years given a flowpath length of about 1 km.”</p> <p>There is uncertainty with the assumed porosity, as 1% porosity cannot be deemed a conservative assumption considering that seepage will flow through weathered upper bedrock and the overburden.</p> <p>Section 5.3 of Appendix M mentions that the runoff and seepage collection ditches are “assumed to be 1m wide and 1m deep” surrounding the tailings storage facility (TSF). In Figure 5a of Appendix M, Cross-section A-A’ identifies deep overburden to the southwest of the TSF. This deep overburden will likely make the interception of seepage challenging for the seepage collection ditches; it is unclear whether uncertainties with factors like the kinematic porosity, and weathered upper bedrock and overburden have been considered in the design of the seepage collection system.</p> <p>This is important for the Agency to understand as it has implications for seepage quality, flow and travel times, which can ultimately affect the fish and fish habitat in surrounding surface water features.</p>	<p>Specific Question/ Request for Information:</p> <p>A. Consider a reasonable range of porosity estimates for bedrock and provide an assessment of seepage behavior and travel time for seepage that travels through shallow bedrock and overburden;</p> <p>B. Assess the efficacy of the proposed 1 m deep and wide runoff and seepage collection ditches in areas of deep overburden around the TSF. Also identify other areas that may pose a challenge for seepage collection and propose additional mitigation measures in these areas to capture seepage;</p> <p>C. Incorporate the findings from Questions A and B into the revision of seepage water quality assessment requested in IR# MW(2)-06, and revision of groundwater model requested in IR# GW(2)-01.</p>
<p>IR-2 #: GW(2)-04</p>	<p>TMI ID: n/a</p>	<p>IR-1 #: n/a</p>	<p>Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat</p>	<p>Reference to EIS guidelines: Part 2, Sections 9.1.1, 9.1.2, 10</p>	<p>Reference to EIS:</p>	<p>Context and Rationale:</p> <p>It is stated in Section 3.3.2 of the revised EIS that “The zone of influence (water table drawdown) will prevent any seepage from the Operations Area to the surrounding environment”. The Agency understands that the zone of influence is expected to capture any seepage that may bypass the seepage collection ditches due to the drawdown induced by open pit dewatering.</p> <p>However, Figure 5.5.2-3 shows clay layers that may exist at</p>	<p>Specific Question/ Request for Information:</p> <p>A. Provide a particle tracking figure for the dewatered pit scenario, and reconsider the conclusion that all of the seepage bypass during the operation phase would be captured by the open pit drawdown force.</p> <p>B. Incorporate the findings of this IR into the revision of seepage water quality assessment requested in IR# MW(2)-06, and revision of groundwater model requested in IR# GW(2)-01.</p>

						<p>depth between the TSF and the pit lake. The presence of this clay aquitard across much of the property can limit the influence of the drawdown on layers above the clay aquitard.</p> <p>Additionally, locally high heads at the tailings storage area (TSF) and waste rock storage area (WRSA) will induce a radial outward flow of seepage from the TSF which may intersect topographic lows and discharge locally, regardless of the drawdown, and draw towards the pit lake.</p> <p>Particle tracking figures were not provided for the dewatered pit scenario, which would have supported the claim that uncaptured seepage will be captured by the open pit drawdown.</p> <p>The Agency requires the particle tracking figures for the dewatered pit scenario to substantiate the claim that uncaptured seepage would be captured by the open pit zone of influence, and not result in effects to fish and fish habitat.</p>	
IR-2 #: GW(2)-05	TMI ID: n/a	IR-1 #: n/a	Project Effects Link to CEAA 2012: 5(1)(a)(i) Fish and Fish Habitat	Reference to EIS guidelines: Part 2, Sections 9.1.2, 10	Reference to EIS: Section 3.16.5	<p>Context and Rationale:</p> <ul style="list-style-type: none"> - It is stated in Section 3.16.5 of the revised EIS that “A finger drain will be constructed in the existing creek channel that bisects the TSF.” - This is a new addition to the description of the TSF, as compared to the original EIS. It is unclear what the purpose of this drain is, as it could increase the seepage from the TSF, affecting not only the water quality of the surrounding fish-bearing waterbodies, but also the ability of the wet cover over the TSF to be maintained in perpetuity. 	<p>Specific Question/ Request for Information:</p> <p>A. Describe the purpose of the finger drain that is proposed to be constructed in the existing creek channel that bisects the TSF.</p> <p>B. Provide an assessment of whether the finger drain has the potential to increase seepage from the TSF. If seepage is expected to increase, update the groundwater model and the corresponding surface water quality assessment.</p> <p>C. Describe the effects on fish and fish habitat taking the responses from Questions A and B into consideration.</p> <p>D. Describe mitigation measures to prevent adverse effects to fish and fish habitat, if necessary.</p> <p>E. Characterize residual effects, if any, after the mitigation measures identified in the response to Question D have been implemented.</p> <p>F. Update the follow-up program for potential effects to fish and fish habitat, including objectives and any monitoring measures that will be implemented to verify the predictions of effects and evaluate the effectiveness of the proposed mitigation measures. If follow-up is not required, provide a rationale.</p>