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June 13, 2018

Mr. Ian Martin
Project Manager, Ontario Region
Canadian Environmental Assessment Agency
Room 907, 55 St. Clair Avenue East
Toronto ON M4T 1M2

RE: Responses to Second Round of Information Requirements for the Magino Gold Project Environmental Impact Statement (IR-2) Rev 2

Dear Mr. Martin,

Responses to Information Requirement #2 for the Magino Gold Project Environmental Impact Statement are now available via a dedicated FTP site. The revised responses are again organized within a report style document as agreed and includes a Table of Contents for ease of navigation both within the document and linking to related supporting materials. Responses have incorporated additional technical information as well as pertinent information from the EIS documentation in certain areas to assist reviewers further.

We trust the assessment team will find these responses satisfactory to move the EA process forward and I look forward to further communications in this regard.

Sincerely,
<Original signed by>

Kyle Stanfield
Director, Environment & Community Relations
Prodigy Gold, a subsidiary of Argonaut Gold
807-621-6152

Magino Gold Project

MAGINO GOLD PROJECT

Finan Township, Algoma District, Ontario

RESPONSES TO INFORMATION REQUIREMENT #2 FOR THE MAGINO GOLD PROJECT ENVIRONMENTAL IMPACT STATEMENT (Revision 2)

Submitted to:

Canadian Environmental Assessment Agency
Ontario Region
55 St. Clair Avenue East, Room 907
Toronto, Ontario M4T 1M2
Telephone: 416-952-1576

CEAA Reference Number: 80044

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1.0 CEAA-FD1 / IE(2)-01: EXCLUSION OF A RECEPTOR

Reference to EIS:

- Chapter 7, Section 7.7.5.2.1.1;
- Chapter 4.

1.1 CEAA Context and Information Required for a Complete Response

Chapter 4 of the EIS and Appendix 1: Traditional Uses in the PSA, LSA and RSA & Concordance Tables from Prodigy's IE(1)-07 response shows current or historical land use in the PSA, LSA, and RSA. For example, with regards to land use in the PSA, Appendix 1 summarizes: "MCFN has reported one large animal kill site"; MNO has "non-site specific hunting (upland gamebird, large game, and small game harvesting) identified in the Project area (PSA, LSA, RSA), and; MNO has non site-specific non-commercial fishing identified generally in the PSA and beyond. Appendix 1 also summarizes resource values, such as the Northern Pike and Walleye identified by MCFN in the PSA. Identification of resource values could indicate other land uses in the area.

Despite these and other examples found in Chapter 4 and Appendix 1, the response to IE(1)-01 states "There are no known receptors related to current uses/ activities related to Aboriginal Socio-Economic Conditions, Aboriginal Traditional Use of Lands and Resources, or Aboriginal Cultural Activities and Special Places in the vicinity of the Project (PSA or LSA)." This conflicts with the baseline information in Chapter 4 and summarized in Appendix 1. It also conflicts with Chapter 7, Section 7.7.5.2.1.1 of the EIS, which states "in summary, several groups reported that the PSA and LSA are used / were likely used currently or historically for hunting activities (MFN, MCFN, MNO, and BFN), or that the PSA and LSA include areas of wildlife habitat. The TKS/TLUS and other reports in most cases did not distinguish between historical or current uses."

The Agency relates receptors to "current" and potential "future" use of lands and resources. If historical use is identified, that would indicate potential future use. The receptors identified in Chapter 4 of the EIS and summarized in Appendix 1: Traditional Uses in the PSA, LSA and RSA should therefore be incorporated into the assessment of effects on current use of lands and resources for traditional purposes and Aboriginal physical and cultural heritage.

If there is uncertainty regarding historical or current uses, or if land and resource use is not site or species-specific, clarification should be sought through engagement. If an assumption is made where there is uncertainty about the presence of a receptor, rationale should be provided for that assumption.

Specific Question/ Request for Information:

A. Include the receptors identified in the PSA and LSA for current use of lands and resources for traditional purposes in your effects assessments. These should include receptors for land use identified as "current", and areas where potential future use has been identified;

B. If excluding any receptors, provide a rationale for their exclusion;

C. Incorporate your response into IE(02)-03.

1.2 Prodigy Response

1.2.1 Response to CEAA Comment Part A

The term 'receptors' has a specific meaning in the EIS. The uses cited by CEAA in the 'context and rationale' are not consistent with the definition of 'receptor' used in the Human Health Risk Assessment. 'Receptor' has been defined as follows in TSD 14 Human Health (summarized – key points are bolded):

> *Predicted changes to chemical concentrations in the environment are typically assessed at specific areas associated with past, present, or future human activity (e.g. a community, a cottage, a recreational area). These areas are termed receptor locations and are used to represent places where people are most likely to spend an extended period of time engaged in a particular activity (or several activities).* ***Receptor locations that are closer to the proposed Project site are used as surrogates for similar locations that are further away given that changes to chemical concentrations will be greater if they are closer to the source****.* (TSD 14 Human Health, Appendix A, p. 5, January 2017)
>
> *In addition to the specific receptor locations identified above, a Maximum Point of Impingement (MPOI) location was also assessed.* ***The MPOI represents the highest potential Project-related changes in environmental quality that may occur along the Project boundary or "fenceline"… The MPOI can also be used to conservatively represent other off-site locations given that it is uncertain that all receptor locations where people are likely to use the area have been identified****.* (TSD 14 Human Health, Appendix A, p. 6, January 2017)

The uses identified cited by CEAA in the 'context and rationale' for IE(2)-01 are not "places where people are most likely to spend an extended period of time engaged in a particular activity", and therefore are not defined as 'receptors' in the EIS, as clarified below.

MNO Hunting

CEAA Context and Rationale (from Appendix 1 table): "MNO has "non-site specific hunting (upland gamebird, large game, and small game harvesting) identified in the Project area (PSA, LSA, RSA)", "MNO has non site-specific non-commercial fishing identified generally in the PSA and beyond." Some of the uses reported by Aboriginal Groups including MNO were non-site specific /not stationary (e.g. part of a large geographic area). Further explanation was provided in the responses to several IRs, as summarized in IE(1)-B07 Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area, which summarizes hunting activity for the MNO and MCFN:

> "Additional detail on MCFN and MNO hunting activities are provided in the responses to IE(1)-B12 (waterfowl), IE(1)-B-14 (mammals), and TW(1)-05 (moose)."

Conclusion re MNO Hunting: The large MNO hunting areas or non-site specific activities do not equate with the definition of a receptor; however, the potential effects of the Project on MNO hunting were carried forward to both E(1)-03 Part A Clarification and Further Information on Discrepancies and IE(1)-06 Assessment of Impact on Aboriginal and Treaty Rights.

MNO Fishing

From IE(1)-B11 Value/Use for Indigenous Fishing at Webb, Goudreau & Lovell Lakes:

The Métis Nation of Ontario (MNO) TK&LU study identified non-commercial fishing areas that include the Magino Project site and surrounding area (SVS, 2014; Figure 19). The non-commercial fishing areas extended from north of Dubreuilville, east to the Horgon and Cradle lakes area, south to Porphyry Lake and west toward the Magpie River. The only specifically identified fishing areas were in the RSA (Mountain and Dreany lakes); MNO did not identify fishing uses in the PSA (e.g., Webb or Lovell lakes) or in Goudreau Lake.

Conclusion re MNO Fishing: This large MNO fishing area does not equate with the definition of a receptor; however, the potential effects of the Project on MNO fishing are described in IE(1)-B10 Indigenous Fishing at Dreany/Mountain Lakes and B11 Value/Use for Indigenous Fishing at Webb, Goudreau & Lovell Lakes, and carried forward to both E(1)-03 Part A Clarification and Further Information on Discrepancies and IE(1)-06 Assessment of Impact on Aboriginal and Treaty Rights.

MCFN Hunting and Fishing in the PSA

CEAA Context and Rationale (from Appendix 1 table): "MCFN has reported one large animal kill site" in the PSA. Prodigy notes that the TEK report identifies these as "site(s) where a Missanabie Cree member has killed and received from the Creator large animals in his or her lifetime". As stated in the response to TW(1)-05 Moose: "One large game hunting site for the Missanabie Cree First Nation (MCFN), presumably used for moose, was identified "on the south-eastern boundary of the Magino site". All other identified MCFN sites are farther east of the site, in the RSA and beyond (EIS 4.6,5.2.1)".

Conclusion re MCFN Hunting in the PSA: The location of a one-time kill site/transient activity (occurring a single time, or relatively infrequently) does not equate with the definition of a receptor. Furthermore, this site is in the PSA, and will be displaced, and would therefore not be considered as a receptor location in the EIS.

Conclusion re MCFN Fishing in the PSA: CEAA Context and Rationale: "Appendix 1 also summarizes resource values, such as the Northern Pike and Walleye identified by MCFN in the PSA" Notwithstanding the above in terms of non-site-specific or infrequent/transient nature of uses in the LSA, any values or locations identified in the PSA will be displaced, and are therefore not considered as receptors in the EIS. This was addressed in Section 7.7.2.5.2 of the EIS, and further clarified in the response to IE(1)-B10 Value/Use for Indigenous Fishing at Webb, Goudreau & Lovell Lakes and in IE(1)-03 Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance.

Assessment of Effects Not Limited to Receptors

Although the uses included in Appendix 1: Traditional Uses in the PSA, LSA, and RSA and Concordance Tables were not specifically identified as 'receptors' in the HHRA or other studies for the reasons cited above, potential effects on these uses were assessed in the EIS (Section 7.7.2.5.2), and further clarified in subsequent responses to IR-1 (including in particular those in Appendix C 'Compilation of Aboriginal Interest IR Responses (IE(1)-02 to 06; IE(1)-09 to 11; IE(1)-B01 to B14)'. These were summarized in IE(1)-03, Part A 'Updated Assessment of Current Use of Lands/Resources for Traditional Purposes by Aboriginal Peoples', and described in more detail in the other IR responses that are rolled up in IE(1)-03). These were also carried forward to IE(1)-06 Assessment of Impact on Aboriginal and Treaty Rights.

Note that 'receptors' are not defined in TSD 9 (Air Quality) as concentrations of contaminants of potential concern (COPCs) were predicted within the study areas (Local Study Area (LSA), Regional Study Area (RSA), beyond RSA) and compared to ambient air quality criteria, rather than at specific receptor locations.

However, concentrations of COPCs in air were provided to the Human Health discipline by the Air Quality discipline at human health receptor locations as defined in TSD 14 Human Health.

As presented in TSD 11 Noise, the noise assessment focuses on specific locations referred to as Points of Reception (PORs). These PORs, in keeping with TSD 14 Human Health, represent places where people are most likely to spend significant periods of time as defined below:

> *Typically, a POR would be considered as permanent or seasonal residences, hotels/motels, nursing/retirement homes, rental residences, hospitals, camp grounds and buildings such as schools. A community, a cemetery, two cottages, and a trapper cabin that could potentially be affected by the Project activities were assessed based on the presence of human activity in the LSA.*

In addition, noise predictions were provided to the Human Health discipline by the Noise discipline at human health receptor locations as defined in TSD 14 Human Health.

1.2.2 Response to CEAA Comment Part B

The uses cited by CEAA in the 'context and rationale' are not consistent with the definition of 'receptor' used in the Human Health Risk Assessment. That is, they are not places where people are most likely to spend an extended period of time engaged in a particular activity. Similarly, there are no uses identified in the LSA in Appendix 1 'Traditional Uses in the PSA, LSA and RSA & Concordance Tables' that qualify as 'receptors' or that are not assessed in the EIS or further clarified in subsequent responses to IR-1 (including in particular those in Appendix C 'Compilation of Aboriginal Interest IR Responses (IE(1)-02 to 06; IE(1)-09 to 11; IE(1)-B01 to B14)', as summarized in IE(1)-03, Part A 'Updated Assessment of Current Use of Lands/Resources for Traditional Purposes by Aboriginal Peoples', and described in more detail in the other IR responses that are rolled up in IE(1)-03).

Furthermore, the approach to assessment of effects on Traditional Use of Lands and Resources' and 'Cultural Activities and Special Places' in the EIS, and as subsequently clarified in the response to IE(1)-03, Parts A and B (and in more detail in several of the responses to IE(1)-B01 through B14), utilizes the receptors and MPOI assessments as 'surrogates' to conservatively represent other off-site locations.

1.2.3 Response to CEAA Comment Part C

As no new receptors have been identified, there is no corresponding information to incorporate into IE(2)-03.

2.0 CEAA-FD3 / IE(2)-03: CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

Reference to EIS:

- Chapter 7, Section 7.7.2

2.1 CEAA Context and Information Required for a Complete Response

Chapter 7, Section 7.7.2.4.1 of the EIS states that "In some cases, the TKS/TLUS and other reports provided by Aboriginal groups to Prodigy did not specify whether various uses in the PSA, LSA or RSA were historic and/or current, or the relative importance of the activity at a specific location; this results in the assessment of potential effects being more conservative, in that if the actual use is not "current", there would likely be no potential effect from the Project." This approach to effects assessment is too narrow. A lack of clarity about whether or not use is current, or the importance of a certain activity, does not preclude an assessment of potential effects. Furthermore, the Agency's Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes states that "current use" includes "…uses that are likely to occur in a reasonably foreseeable future," and that "uses that may have ceased due to external factors should also be considered if they can reasonably be expected to resume once conditions change."

The response to this IR in Appendix C also states that "The LSA is already affected by historic and current mining activities. There are alternative locations, in the LSA, RSA and beyond that are used by Aboriginal groups…that can provide an alternative to traditional uses." It goes on to say that "…the project area has been industrialized for almost 100 years; for this reason, the TK/TLUS indicate that uses are now focused on other lands.' Part 2, Section 6.2.6 of the EIS Guidelines require that indirect effects such as avoidance of the area by Aboriginal peoples due to increased disturbance be considered. The statement that TK/TLUS indicate uses are now focused on other lands also does not preclude an assessment of potential effects, as land use was still indicated in the PSA, LSA, and RSA by several groups.

With regards to mitigation measures, the proponent quotes the EIS in its response (Appendix C): **"**Taking into consideration the design of the Project, the results of the effects analysis, and the mitigation measures that will be implemented for the Atmospheric Environment, Physical Environment, Biological Environment, Human Health Risk Assessment disciplines, the only specific mitigation measure identified with respect to Traditional Use of Lands and Resources is the formation of an Environmental Monitoring Committee." The same statement is repeated for Aboriginal Cultural Activities and Special Places. If mitigation related to Atmospheric Environment, Physical Environment, Biological Environment, Human Health Risk Assessment disciplines also applies to Section 5(1)(c) of *CEAA 2012*, they need to be individually specified instead of generally referring the reader to those sections. The Agency notes that mitigation of a biophysical effect does not necessarily mitigate an effect on the human environment. Furthermore, in contemplating mitigation of impacts to Indigenous peoples, keep in mind the quality of resources of interest to an Indigenous group, the accessibility of those resources as well as any changes that the Indigenous group may experience when accessing those resources due to the Project.

As current use of lands and resources for traditional purposes has been identified in the EIS Chapter 4, Section 4.6.5, and Appendix 1 of the IE(01)-07 response, the mitigation measures identified thus far need to be updated. Mitigation measures should address land and resource use that is current, and can reasonably be expected to occur in the future (given historical use). If the only mitigation measure specific to effects on traditional use of lands and resources is the formation of an Environmental Monitoring Committee, the Agency is unclear how specific effects would be mitigated. Furthermore, if potential impacts

are to be accommodated through Community Benefits Agreements, details are needed about what specific effects those agreements are mitigating, and how. Indigenous groups must be given the opportunity to understand the specific mitigation measures that address each potential effect, and their feedback considered in the design of those mitigation measures.

In a letter dated August 22, 2017, RSMIN stated that they informed Prodigy about a "Citizen gathering site" in the LSA that they are working with Prodigy to mitigate effects on. Information is needed on the mitigation measure(s) being developed.

Specific Question/ Request for Information:

A. Update the assessment of the potential project-related effects on each of the receptors identified in Chapter 4 of the EIS and Appendix 1 of the IR(1)-07 response (including receptors identified in IE(02)-01). This assessment should consider potential effects on human health, socio-economic conditions, physical and cultural heritage, current use of land and resources for traditional purposes, and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance for Aboriginal peoples. Include consideration of the potential effects on quality of experience, prior to arriving at a conclusion;

B. Clearly identify each mitigation measure that applies to each potential effect. Bring forward and identify relevant mitigation measures from other disciplines that may also apply. If a potential effect has no mitigation, provide rationale. If the potential effect is accommodated through an agreement, identify the aspect of the agreement that addresses the specific effect;

C. Validate the effectiveness and/or acceptability of the mitigation measures with Indigenous groups. In your response, document how they were provided the opportunity to understand the nature of the effects and how the mitigation measures would address them. Include comments from Indigenous groups in your response;

D. Incorporate results of this updated assessment into the human health risk assessment, where applicable;

E. Link your response to IE(02)-B14.

2.2 Prodigy Response

2.2.1 Response to CEAA Comment Part A

No New Receptors

The response to IE(2)-01 explains that the traditional uses cited by CEAA in the 'context and rationale' for IE(2)-01 (including hunting by MNO, MCFN and other groups) are not "places where people are most likely to spend an extended period of time engaged in a particular activity", and therefore are not defined as 'receptors' in the EIS, as clarified in that response. However, the potential effects of the Project on hunting by Aboriginal groups were carried forward to both Part A Clarification and Further Information on Discrepancies of IE(1)-03 (Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance) and IE(1)-06 Assessment of Impact on Aboriginal and Treaty Rights. As no new receptors have been identified in the response to IE(2)-01 (Receptors - Assessment of the Potential Project-Related Effects (Current Use of Lands and Resources for Traditional Purposes)), there is no corresponding updated assessment in IE(2)-03. The updated assessment provided in IE(1)-03 remains unchanged.

Potential Effects on Health

The conclusion that there are no new receptors identified in the response to IE(2)-01 (Receptors - Assessment of the Potential Project-Related Effects (Current Use of Lands and Resources for Traditional Purposes) is reflected in the separate responses to health-related IRs (i.e., HE(2)-18, HE(2)-19, HE(2)-21, HE(2)-24, HE(2)-25).

Consideration of Response to TW(2)-05 Moose Populations/Habitat and Hunting

As concluded in the response to TW(2)-05, the changes in moose populations and habitat from the project will not have significant adverse effects on hunting of moose by Aboriginal groups. The response to IE(2)-01 explains that the traditional uses cited by CEAA in the 'context and rationale' for IE(2)-01 (including hunting by MNO, MCFN and other groups) are not "places where people are most likely to spend an extended period of time engaged in a particular activity", and therefore are not defined as 'receptors' in the EIS, as clarified in that response. However, the potential effects of the Project on hunting by Aboriginal groups were carried forward to both E(1)-03 Part A Clarification and Further Information on Discrepancies and IE(1)-06 Assessment of Impact on Aboriginal and Treaty Rights.

The conclusion in Part A of TW(2)-05, will not result in an updated assessment as part of the response to IE(2)-03 (Updated Assessment of the Potential Project-Related Effects & Applicable Mitigation Measures).

RSMIN 'Citizen Gathering Site'

Finally, although not specifically referenced in CEAA's 'Specific Question/Request for Information', the CEAA comment in 'Context and Rationale' "In a letter dated August 22, 2017, RSMIN stated that they informed Prodigy about a "Citizen gathering site" in the LSA that they are working with Prodigy to mitigate effects on. Information is needed on the mitigation measure(s) being developed." is addressed below:

In the response to IE(1)-04, Prodigy provided an updated assessment of effects of changes to the environment on the current use of lands and resources for traditional purposes for Red Sky Métis Independent Nation (RSMIN). This assessment included information provided to Prodigy by RSMIN (i.e., the August 2017 map labelled "RSMIN Harvesting Areas") and reflects subsequent engagement held with RSMIN in August and September 2017 to review and discuss RSMIN traditional land use information in relation to the proposed Magino Project.

Page 3 of the response to IE(1)-04 discusses a berry harvesting area identified by RSMIN (at the western edge of Area 6 on the "RSMIN Harvesting Areas" map), and indicates that this area is largely, if not entirely, beyond the eastern boundary of the RSA. The response to IE(1)-04 concludes that there are no predicted effects from the Project on gathering in this area.

There is no RSMIN citizen gathering site identified in the LSA. A footnote on page 4 of the response to IE(1)-04 provides further clarification on this, referencing the letter RSMIN submitted to Prodigy on September 7, 2017 (Prodigy understands the Agency received this same (undated) letter on August 22, 2017):

> *Prodigy has confirmed with RSMIN that the gathering site identified in their September, 2017 submission to CEAA (page 3, final paragraph) is in fact associated with Area 6 noted above, and is not located in the LSA.*

RSMIN has signed an Agreement with Prodigy Gold that has mitigated RSMIN's environmental and socio-economic concerns, and recognized and protected RSMIN's Aboriginal and treaty rights. In their

February 1, 2018 letter regarding the Prodigy Gold Magino Project Information Requirement # 1, RSMIN's Chief reported to CEAA the establishment of a mutual working relationship with Prodigy to resolve the concerns identified by the RSMIN community. The letter concluded "RSMIN does not have any outstanding concerns at this time".

2.2.2 Response to CEAA Comment Part B

Prodigy notes that additional detail regarding the mitigation measures intended to address potential effects on traditional uses/practices and impacts on Aboriginal and Treaty rights for each Aboriginal group is provided in the response to IE(2)-06 ''Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group' Please refer to that response for further detail.

With respect to bilateral agreements with Aboriginal groups, agreements have been signed between Prodigy Gold and MCFN, MNO and RSMIN. Additionally, agreements are either under negotiation or contemplated with the other Aboriginal groups associated with the project. A variety of accommodation and/or compensation mechanisms has been provided through the entire suite of terms and conditions of the agreements. Very limited uses within the PSA were identified by Aboriginal groups to Prodigy, and are listed in the response to IE(02)-06 ''Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group'. Where a use that will be directly impacted by the project development could not be avoided, Prodigy has or will be compensating Aboriginal groups according to the terms and conditions of agreements with groups. Prodigy has completed agreements that have adequately mitigated or accommodated potential effects on the respective Aboriginal groups' traditional uses, cultural activities or special places and potential impacts on Aboriginal and/or Treaty rights. The specific details of these agreements remain confidential.

2.2.3 Response to CEAA Comment Part C

Aboriginal groups instructed Prodigy Gold on how they wanted to be engaged and involved in the EA process, and specifically the EIS review. As a result, Prodigy developed and entered into separate agreements with Aboriginal groups that outlined the respective groups' process with regards to EA participation, Aboriginal engagement, the EIS technical review, and the development and completion of Traditional Knowledge Studies/Traditional Land Use Studies (TKS/TLUS) reports. Based upon the agreements, Prodigy Gold started working with Aboriginal groups as early as the summer of 2013 to ensure adequate understanding of the project, its potential effects, and proposed mitigation measures.

Since that time, mitigation measures have been discussed with Aboriginal groups during meetings, presentations, open houses, on-site tours, a third-party technical review, MNO's independent review of the EIS, the negotiation of agreements, and additional meetings at the request of Aboriginal groups and their respective technical advisors to discuss specific technical issues and mitigation measures. The January 2018 IR-1 responses, specifically Part 5 'Input from Indigenous Groups on Methodology, Mitigation, Follow-Up and Conclusions' in IE(1)-03 Part A "Updated Assessment of Current Use of Lands/Resources for Traditional Purposes by Aboriginal Peoples', and 'Appendix D: Consolidation of Updated Aboriginal Engagement IR Responses (IE(1)-07 & IE(1)-08)', summarizes engagement activity and how Aboriginal groups and Prodigy discussed mitigation measures.

Through this engagement, key themes and aspects of mitigation were identified by Aboriginal groups. For example, with respect to the mitigation of effects through design and operations features, the mine footprint was reduced in size, the water discharge design was reduced from 4 to 1 discharge points. The location of the tailings management facility was also influenced by input from Aboriginal groups. Aboriginal groups also emphasized as a priority the need for monitoring of project effects and the effectiveness of mitigation. As a

result, the Environmental Monitoring Committee (EMC), comprised of representatives of all Aboriginal groups participating in the project, has been developed. The EMC will address follow-up of the accuracy of effects prediction and effectiveness of mitigation and will include communication and reporting back to the Aboriginal groups. Lastly, agreements to compensate any unmitigated effects were identified. As noted above in Part B, Prodigy has completed agreements with three Aboriginal groups, and currently is negotiating additional agreements.

Soon after the release of the EIS in January of 2017 Prodigy Gold proactively supported independent third-party reviews of the EIS. A third-party technical review process was undertaken by four Aboriginal groups (MFN, MCFN, BFN and GRFN), and included their retaining technical subject matter experts to review the EIS on the groups' behalf. Prodigy also supported a bilateral technical review of the EIS through meetings with the Métis Nation of Ontario (MNO) and their technical advisors. Prodigy also held bilateral meetings with First Nations (MFN, BFN, GRFN) and their advisors to respond to all technical EIS review comments and questions submitted to CEAA.

Mitigation measures proposed in the EIS were validated with Aboriginal groups via the independent third-party EIS review processes during the second half of 2017 and early 2018. In mid-2017, each Aboriginal group identified specific Community Consultation teams that formed the conduits for participating in the mitigation review and validation process. Prodigy continues to work directly with the identified Community Consultation teams, which include technical experts hired by each group. The independent review process led to an open dialogue between third-party technical reviewers and Prodigy technical consultants to share information and respond to requests for additional information.

It is through direct discussions with Aboriginal groups and their technical advisors that the effectiveness and acceptability of mitigation measures were reviewed and considered, and in some cases collectively identified and/or developed. For example, the MNO conveyed to CEAA (January 22, 2018) that they engaged in a bilateral process with Prodigy to address the outstanding concerns with respect to the Project and that the MNO was hopeful that this process would result in all of the MNO's concerns being addressed. Prodigy and the MNO concluded and signed an Agreement in April 2018, resolved issues and agreed to an ongoing process of engagement. As noted in the MNO's May 30, 2018 letter to CEAA:

> *This agreement is designed to address the concerns that the MNO had raised in relation to the Project and to ensure that the MNO and its rights-bearing communities are effectively engaged and consulted throughout the life of the Project… The MNO is of the opinion that all land uses and associated potential effects of the Project identified in our Traditional Knowledge and Land Use Study ("TKLUS") for the Project and consequently the concerns raised by way of the Agency's Information Requirements (IE(1)-03 and IE(1)-06) have been adequately considered and appropriately addressed by Prodigy.*

BFN has raised concerns about the use of native species for reclamation. Prodigy responded with the commitment that native species will be used in the seed mix revegetation and seeding trials would begin in June 2018. As a result of the third-party technical review processes with First Nations and MNO, Prodigy has agreed to the creation of a Fisheries Working Group. Aboriginal groups are participating in closure planning, as described above. The MFN raised issues with the ground water quality and how it affects the water quality as it moves through the mine site and into lakes and streams. Prodigy identified a series of ground water mitigation measures in the EIS and further supplemented those with commitments that MFN would be involved in the development of surface and ground water quality monitoring programs.

As an outcome of the ongoing engagement and review processes, Prodigy and Aboriginal groups have further developed mitigation measures as reflected in the Commitments Table submitted to CEAA in January 2018 as part of the response to IR-1 (Appendix A – Commitments Table). The key additional mitigation identified as a result of the third-party technical review processes with First Nations and MNO relates to participation in Closure Planning, Traditional Use of Lands and Resources, Follow-up & Monitoring, and Environmental Management Plans. For example, some key areas to support Aboriginal groups' participation in closure planning, follow-up and monitoring, and environmental management plans are listed below:

- Closure planning workshops will be held in participating Indigenous communities in the late spring/early summer of 2018 to help detail a Draft Closure Plan that will be prepared for further community consultation in late 2018. The final closure plan will be informed by the EA commitments as well as consultation input. This will be undertaken prior to filing the Closure Plan with the Ontario Ministry of Northern Development and Mines in early 2019.
- Revegetation seeding trials are being initiated in June 2018 with the participation of Aboriginal groups to help understand what species of plants groups would like to see established during both progressive reclamation as well as the closure processes.
- A follow-up program to ensure that any potential changes in traditional use patterns and traditional knowledge will be incorporated into the construction used in the design and operation phases of the project.
- Ground and surface water monitoring programs will be developed with Aboriginal participation and input on the sampling methods to inform the description of each waterbody.
- The Environmental Monitoring Committee will have responsibilities related to how traditional use and traditional knowledge information is conveyed, updated and used in the design and operation of the project; review of the EEM program and regulatory permit applications; review of monitoring programs; review of environmental management plans; development of the fish habitat Offsetting/Compensation Plan.

2.2.4 Response to CEAA Comment Part D

There are no results of this updated assessment that are applicable to the human health risk assessment. As stated above, the conclusion that there are no new receptors identified in the response to IE(2)-01 (Receptors - Assessment of the Potential Project-Related Effects (Current Use of Lands and Resources for Traditional Purposes) is reflected in the separate responses to health-related IRs (i.e., HE(2)-18, HE(2)-19, HE(2)-21, HE(2)-24, HE(2)-25).

2.2.5 Response to CEAA Comment Part E

There are no elements of this response to IE(2)-03 that have any bearing on the response to IE(2)-B14 (Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting).

3.0 CEAA-FD4 / IE(2)-04: CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

Reference to EIS:

- N/A

3.1 Context and Information Required for a Complete Response

In light of a letter received by Garden River First Nation (GRFN) in April 2018 (see IE(02)-04), baseline information for GRFN needs to be corrected/updated.

Appendix 1 of the IR response states "GRFN [Garden River First Nation] has not identified any hunting, trapping, fishing, or gathering activities in the PSA, LSA or RSA." This is also reflected in Appendix C. As the proponent has had very limited discussions with GRFN, it is unclear if GRFN is in agreement with the boundaries of the PSA, LSA, or RSA, or if Prodigy fully understands GRFN's traditional land use. This is substantiated by a letter received by the Agency from GRFN in April 2018, where GRFN disagrees with the claim in the IE(01)-07 response that "…GRFN [has] no current traditional activities within the Project's PSA, LSA or RSA." The proponent also seems to rely on GRFN's May 2017 'Prodigy Gold Impact Report' submitted to the Agency, and GRFN's September 2017 comments to the Agency on the EIS as the basis for its analysis. The Agency notes that the proponent met in October 2017 with GRFN on its May 2017 submission. However, given the discrepancy described by GRFN in their April 2018 letter, the conclusions reached by the proponent with regards to GRFN cannot be accepted as accurate until the proponent addresses the discrepancy.

Specific Question/ Request for Information:

A. Update the baseline conditions for GRFN. If any baseline conditions do not change, provide information to support your assertion, and which addresses GRFN's assertion that there are traditional land uses in the PSA, LSA, or RSA;

B. Conduct an assessment of effects of changes to the environment on the current use of lands and resources for traditional purposes, physical and cultural heritage and any structure, site or thing that is of historical, archaeological, paleontological or architectural significance by Aboriginal peoples for Garden River First Nation;

C. Clearly identify each mitigation measure that applies to each potential effect. Bring forward and identify relevant mitigation measures from other disciplines that may also apply. If a potential effect has no mitigation, provide rationale;

D. Validate the effectiveness and/or acceptability of the mitigation measures with GRFN. In your response, document how GRFN was provided the opportunity to understand the nature of the effects and how the mitigation measures would address them. Include comments from GRFN in your response;

E. Incorporate results of this updated assessment into the human health risk assessment, where applicable.

3.2 Prodigy Response

Due to the nature of the information available from GRFN at this point in time, and as per discussions with CEAA at a meeting held with them on May 29, the response below is not organized following the structure

of the specific questions A to E above. The response does provide additional information supporting the current state of Prodigy's interactions with GRFN and activities related to additional information gathering at this point in time.

Engagement 2014 – January 2018 with GRFN

Prodigy Gold has been in contact with GRFN since December 2014; details of this engagement up to January 26, 2018 are included in Appendix D '*Consolidation of Updated Aboriginal Engagement IR Responses (IE(1)-07 & IE(1)-08)'* of the IR#1 submission. Please refer to Appendix D for further detail. In summary, between 2014 and 2017, Prodigy's contact with GRFN largely entailed Project updates on the EIS and EA process, more generally, including Closure Planning. Prodigy was notified June 27, 2017 by CEAA that GRFN was scoped into the EA process. On the same date CEAA forwarded Prodigy the GRFN traditional knowledge information and map submitted to CEAA in May 2017. Prodigy subsequently requested to meet with GRFN on June 28, 2017 to discuss potential project impacts on GRFN current use of lands and resources in the Project area. Since that time, Prodigy has met with the GRFN to provide project information and responses to concerns raised. Prodigy met with GRFN on October 5th, 2017; the company presented information on the proposed project, the federal government's environmental assessment process and timelines, and also responded to the GRFN's May 2017 submission to CEAA. On December 18, 2017, Prodigy sent GRFN the October 5 presentation and '*Prodigy Gold's Response to the Garden River First Nation's "Prodigy Gold Impact Report (May 2017)*"' presented to GRFN in response to their May 2017 submission to CEAA.

Prodigy's response to the GRFN's May 2017 Impact Report addressed the following:

- Table 1, which responded to a number of queries related to water (e.g., groundwater levels/quality; potential effects on nearby lakes, monitoring), fish habitat (e.g., changes in habitat, need for fisheries compensation/offsetting plan), soils (e.g., ore crushing/air quality, loss of soil cover) and air (effects of dust on flora/fauna);
- Four thematic topics:
  - GRFN Activities within the Wawa Region
  - Underground vs. Open Pit Mining
  - Contingency for Tailings Pond (Prodigy noted more details in TSD 5 Schedule 2 "Assessment of Alternatives for Mine Waste Management" and TSD 6 "Tailings and Mine Rock Management Facility and Overburden Stockpiles - Conceptual Design Report"
  - Potential Tailings Pond Breach (Prodigy noted more details in TSD 6 "Tailings and Mine Rock Management Facility and Overburden Stockpiles - Conceptual Design Report"

Based on the October meetings and subsequent communications with GRFN, in January 2018, Prodigy offered to fund additional Traditional Knowledge work. On January 25, 2018 Prodigy offered to provide $15,000 for a workshop with elders to discuss traditional use activities in the vicinity of the proposed Project.

Prodigy's Response to Information Provided to Date by GRFN

Prodigy has reviewed all materials submitted by GRFN to CEAA (including the May 2017 Prodigy Impact Report, GRFN Traditional Treaty Area and Common Traditional Hunting Grounds McCoy Case maps, GRFN's September 2017 comments to CEAA on the EIS) and has used all information provided by GRFN since 2017. The response to IE(1)-04 provided Prodigy's response to the information provided as of January 2018 by GRFN, and is reproduced here:

> "The Garden River First Nation (GRFN) has not provided a Traditional Knowledge study for the Project. However, neither GRFN's May 2017 'Prodigy Gold Impact Report' submitted to

CEAA, nor GRFN's September 2017 comments to CEAA on the EIS provided any information pertaining to specific uses, practices or sites within the PSA, LSA or RSA. At an October 5th 2017 meeting to review the May submission, the GRFN discussed the need to carry out more traditional knowledge work. It was suggested that a one-day workshop be held with elders from the community to discuss the traditional use activities within the vicinity of the proposed Project. Prodigy Gold would like continue to work with the GRFN and has suggested that the parties meet in early January 2018 to continue to address any issues that the GRFN has with the proposed Magino Mine.

Current Use of Lands and Resources for Traditional Purposes
In their May 2017 'Prodigy Gold Impact Report' submitted to CEAA, their September, 2017 comments to CEAA on the EIS, and subsequent engagement in October, 2017 GRFN has not identified any hunting, trapping, fishing, or gathering activities in the PSA, LSA or RSA. In their May 2017 submission to CEAA, GRFN included a map titled "Garden River First Nation Traditional Treaty Territory". Three specific harvesting areas were identified on the map:

(i) A traditional trap line south and southeast of Whitefish Lake,
(ii) A traditional trap line southwest of Wawa, and
(iii) Blueberry gathering and moose hunting area immediately north east of Wawa.

Prodigy has reviewed the above noted site-specific land use information in the context of the Project and, in particular, in the prediction of potential effects caused by the Project. The information provided by GRFN in their May 2017 report to CEAA identifies areas and activities that are outside the Project's zone of influence (that is, are beyond the RSA). Further information is provided below.

Hunting
The GRFN May 2017 submission to CEAA included a map titled "Garden River First Nation Traditional Treaty Territory", which identified hunting areas south and southwest of the Project and around the Magpie River System. These areas, as described below, are beyond the RSA boundary, and will not be affected by the Project:

- The moose hunting area (approximately 25.5 km from the Project) identified north of Wawa Lake.

Trapping
The map in the May 2017 submission to CEAA identified trapping activities south and southwest of the Project and around the Magpie River System. These areas, as described below, are beyond the RSA boundary, and will not be affected by the Project:

- The traditional trapline located southeast of Whitefish Lake (approximately 16 km from the Project); and
- The traditional trapline southwest of Wawa (approximately 45 km from the Project).

Based on public consultation and Aboriginal engagement, Prodigy has identified all of the commercial trappers, including Aboriginal trappers, operating within the PSA, LSA, and RSA. The individual named in GRFN's May 2017 report is not among them. Presumably the 'well-established trap line in the area' as noted on page 3 of GRFN's May 2017 report corresponds with the traditional trapline located southeast of Whitefish Lake shown on the map. Based on this information, Prodigy has concluded that the area of the trapper mentioned on p. 3 of GRFN's May report to CEAA (and identified on the May 2017 "Garden

River First Nation Traditional Treaty Territory" map) does not include any portion of the PSA, LSA, RSA and therefore will not be affected by the Project.

Fishing
GRFN's map submitted to CEAA in May 2017 ('Garden River First Nation Traditional Treaty Territory') specifically notes that Dog and Whitefish Lakes are areas of subsistence fishing. The areas of Whitefish Lake, Dog Lake, and Manitowik Lake (approximately 12.5, 20, and 26 km from the Project) is beyond the RSA and will not be affected.

Gathering
GRFN has not identified specific plants / specific areas of gathering in the PSA, LSA or RSA. GRFN noted on the May 2017 "Garden River First Nation Traditional Treaty Territory" map that "the area is filled with medicine plants traditionally used by FN peoples" but did not provide additional detail. The blueberry gathering area (approximately 25.5 km from the project, well beyond the RSA) identified north of Wawa Lake on the May 2017 "Garden River First Nation Traditional Treaty Territory" map will not be affected by the Project.

Physical and Cultural Heritage and any Structure, Site or thing that is of Historical, Archaeological, Paleontological or Architectural Significance
Through the provision of supplemental Project-specific information and comments on the EIS provided by the GRFN in May and September 2017, no further evidence has been presented of any spiritual sites, trails / camps, or any other current or historical cultural activities in the PSA, LSA or RSA.There are no structures of historical, archaeological, paleontological or architectural significance identified by GRFN within the PSA, LSA or RSA.

GRFN raised questions about archaeological potential and mitigation in their September, 2017 comments to CEAA on the EIS. Prodigy Gold will develop a Historical Resources Management Plan, which will provide direction for construction, operations and closure for any potential disturbance archaeological or historical resources. Prodigy Gold notes there will be no physical activity associated with the Project occurring outside the PSA (except for the construction of the bypass road which will affect parts of the LSA). There are no project components that will be developed outside the PSA (except for accommodations located in Dubreuilville)."

Requested Review of Secondary Source Information

The Agency requested at a May 29, 2018 meeting with Prodigy Gold that the company review publicly available secondary sources (e.g., GRFN website, Ontario Ministry of Natural Resources and Forestry (MNRF), the Ministry of Northern Development and Mines (MNDM), other environmental assessments in the vicinity of the Magino Project) to determine if any additional understanding of GRFN's potential uses in the Magino area could be determined in the interim period while GRFN is developing their own Traditional Knowledge study. Prodigy Gold carried out a review of secondary sources in 2015 to gain a better understanding GRFN's traditional territory and potential interests in the Magino project. Prodigy reviewed the GRFN's website, other federal and provincial government websites (e.g., Indigenous and Northern Affairs Canada /INAC, Ministry of Indigenous Relations and Reconciliation), Canadian Legal Information Institute (CanLII) database of both federal and provincial case law, and the archives of Ontario.

According to the CEAA on-line registry, there are no other projects in the Magino vicinity (i.e. within 100 km radius) that are undergoing federal environmental assessment so the potential involvement of GRFN in other environmental assessment processes is not known. It is noted that the Project Description on the CEAA registry for the proposed Borden Gold Project near Chapleau (approximately 100 km southeast of the Magino project) does not identify the GRFN as an Aboriginal group that will be engaged on that project.

GRFN Participation in Third-Party Review

GRFN was one of four Aboriginal groups to participate in an independent third-party technical review of the EIS, which Prodigy has been actively engaged with.

Engagement with GRFN Post-January 2018/Agreement on Process & TK

Prodigy has committed to a process of working with the GRFN to continue to address GRFN's concerns regarding the EIS and the community's interest in the project. Prodigy supports the GRFN's ongoing participation in the proposed Project. Prodigy was subsequently advised by GRFN at a meeting on May 3, 2018 of a proposed new process between the GRFN and Prodigy that will allow the Parties to further discuss and address any environmental technical issues, Traditional Knowledge and GRFN's participation in the project. Prodigy is actively supporting the newly proposed process and will continue to work with GRFN to understand where Prodigy may need to mitigate potential effects on GRFN uses and impacts on their Aboriginal rights.

Conclusion

To date, based on communications, meetings, and materials provided to Prodigy, GRFN has not indicated traditional use of lands and resources in the PSA, LSA and RSA.

Prodigy recognizes that GRFN is concerned about potential changes to the aquatic and terrestrial environments as a result of the proposed Magino mine development. Great effort has been made to both reduce and mitigate residual impacts to the environment as a result of the proposed development. We are confident that once GRFN has taken additional time to review both the EIS as well as various technical supporting information provided through the CEAA Information Request process that the community will have a more thorough understanding of the lengths to which Prodigy has committed to world class environmental protection standards and inclusion of First Nations into ongoing environmental management that will be integral to overall project success. Prodigy is also thankful for the First Nation-led Independent Third-Party Review of the Magino EIS. The review process was undertaken by scientific and engineering subject matter experts who reviewed the EIS material and fully participated in the public review process.

Prodigy has committed to continued engagement with First Nations through the remaining steps of the Federal Environmental Assessment process as well as anticipated detailed project permitting with the Province of Ontario. The commitment to work with First Nations extends well beyond project permitting. Prodigy has made numerous commitments to continued community engagement through both formal as well as informal processes that will ensure each community has the opportunity to be involved with the Magino project both in terms of environmental management as well as various contracting and job opportunities that will be afforded to the regional area. Prodigy looks forward to continued engagement with GRFN as we progress into detailed project permitting.

Prodigy Gold will mitigate, and if necessary accommodate, potential effects of the Project on GRFN's traditional use of lands and resources or Aboriginal cultural activities/special places, should the additional work GRFN is doing demonstrate the potential for effects, or impact on their Aboriginal rights.

4.0 CEAA-FD6 / IE(02)-06: CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

Reference to EIS:

- Chapter 7, Section 7.7;
- Chapter 16, Section 16.2

4.1 Context and Information Required for a Complete Response

The Agency understands Aboriginal and treaty rights to not only have a physical component (i.e. the act of trapping, fishing, or hunting), but also cultural, social, and political components as well. A potential impact to the practicing of a right can therefore be multi-faceted, and not necessarily limited to the ability/inability to carry out an activity.

The proponent states in its response (Appendix C, P. 94) that its rights assessment framework considers a potential impact to an Aboriginal or Treaty right to be determined by the "presence of an impact to the exercise of the right that cannot be mitigated." The Agency still needs to know what this mitigation is, specifically. It also states on p. 92 that "a number of Environmental Management and Monitoring Plans will be undertaken to mitigate impacts on rights."

The Agency needs to understand how Prodigy has linked the potential impacts to Aboriginal and treaty rights to mitigation measures. The information in this IR response is too vague and does not clearly identify the potential impacts to rights and the mitigation measures intended to address those potential impacts. Establishment of an environmental Monitoring Committee is not sufficient.

Specific Question/ Request for Information:

Clearly identify the Aboriginal and treaty rights that are potentially impacted for each Indigenous group, and clearly identify the mitigation measures intended to address those potential impacts. Demonstrate how these measures would effectively mitigate the potential impacts on Aboriginal and treaty rights.

4.2 Prodigy response

4.2.1 Response to CEAA Comment

Please refer to Appendix 1 for the response to this information request.

5.0 CEAA-IN14 / IE(02)-B14: CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES

Reference to EIS:

- Chapter 7, Section 7.7.2.4

5.1 Context and Information Required for a Complete Response

In its IR response (Appendix C), the proponent states that the removal of beaver lodges/furbearer habitat from the PSA was not explicitly brought forward for consideration in the assessment of effects on hunting partly because "the effect of the removal of beaver lodges/furbearer habitat from the PSA was determined to be not significant". The rationale for this conclusion was not provided.

Also, the proponent states with regards to bear hunting "only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA." The proponent then concludes that removal of black bear foraging habitat would have a negligible effect on hunting, however it is not clear what this conclusion was based on.

Specific Question/ Request for Information:

A. Provide the rationale for the conclusion for why the removal of beaver lodges/furbearer habitat is deemed not to be significant within the context of impacts to current or potential trapping and hunting activities;

B. Clarify how the removal of black bear foraging habitat would be mitigated and lead to the conclusion that this effect on hunting by MNO is negligible.

5.2 Prodigy Response

5.2.1 Response to CEAA Comment Part A

There has been a general upsurge in beaver populations across the Province as trapping activities have generally declined in Ontario over the last several decades due to changes in fur fashion interests, responding at least in part to the environmental conservation movement. Trapping and hunting opportunities for beaver are therefore generally not considered to be limiting in the province or the region.

There are two trappers with traplines that include portions of the PSA. Access to an estimated 5 to 10% of the area of these two traplines is expected to be removed as a result of Project development and operation (EIS Section 7.6.1.5.5). Efforts were made in Project designs to limit disturbance to creek and other aquatic habitats likely to be utilized by beaver and other species dependent on aquatic habitats. In addition, the fish habitat compensation being provided (in the form of new habitat) will at least partially offset any potential adverse effects to local beaver populations. Prodigy has been having ongoing discussions with the two local trappers in an attempt to address any concerns that they might have regarding the potential effect of beaver habitat removal.

5.2.2 Response to CEAA Comment Part B

Of the six groups that provided information to Prodigy, only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA. Black bear habitat quantity and quality are also not regarded as being limited in the RSA. All of the habitat that would

be removed is confined to the PSA. Also, while black bear foraging habitat would be removed from the PSA, this does not mean that the regional bear population would be diminished.

Adverse effects to black bear foraging habitat during the periods of mine construction and operation, would be limited by the proposed development of a compact site and restrictions to minimizing habitat clearing, irrespective of such habitat not being limited in the RSA. At closure, the site would be rehabilitated to a condition that will support wildlife. This is proposed to include habitat capable of supporting black bears, as black bears have fairly generalized habitat requirements. Any potential adverse effects to MNO member hunting of black bears in the future would therefore be mitigated at closure. This is especially the case as black bears will utilize and forage in successional habitats, which can be developed relatively quickly following mine closure.

Prodigy completed an Agreement with MNO in Spring 2018 that has adequately mitigated or accommodated potential effects on MNO's traditional activities, cultural activities or special places, and Aboriginal rights. As noted in the MNO's May 30, 2018 letter to CEAA:

> *This agreement is designed to address the concerns that the MNO had raised in relation to the Project and to ensure that the MNO and its rights-bearing communities are effectively engaged and consulted throughout the life of the Project… The MNO is of the opinion that all land uses and associated potential effects of the Project identified in our Traditional Knowledge and Land Use Study ("TKLUS") for the Project and consequently the concerns raised by way of the Agency's Information Requirements (IE(1)-03 and IE(1)-06) have been adequately considered and appropriately addressed by Prodigy.*

6.0 CEAA-FD10 / FFH(2)-02: FISH AND FISH HABITAT – SUBSURFACE PIPING

Reference to Draft EIS:

- Section 6.1.6
- Section 6.2.4.7.

6.1 Context and Information Required for a Complete Response

In Chapter 6, Sections 6.1.6 and 6.2.4.7 of the Draft EIS Report submitted to the Agency in October 2014, a large subsurface water pipe was proposed to be built beneath the Tailings Management Facility (TMF) and Mine Rock Management Facility (MRMF), whose purpose was to "convey non-contact water from detention basins DB5 and DB6 […] to DB3". The response to FFH(1)-02 states that "engineered drainage pipes are proposed to be placed underneath the TMF and MRMF". It is unclear whether the large subsurface pipe is still part of the design or it is replaced with engineered drainage pipes.

In addition, pipes and sealants can eventually degrade and create a conduit for seepage with unknown consequences for downstream effects, or it may undermine the structural integrity of the TMF/WRMF.

Details regarding the large subsurface pipe or the engineered drainage pipes, including an assessment of changes to water quality from additional seepage due to degradation of pipes over time were not provided in the EIS or in the response to IR-1.

The Agency requires clarification of the proposed infrastructure underneath the TMF and MRMF along with sufficient details to assess the potential changes to water quality and potential adverse effects to fish and fish habitat.

Specific Question/ Request for Information:

A. Confirm whether the large subsurface pipe or engineered drainage pipes will be constructed (either or both);

B. Provide an assessment of possible structural integrity issues due to the construction and degradation of pipes underneath the TMF and MRMF;

C. Describe any changes in water quality that could result from degradation of pipes or sealing material over time;

D. Provide the effects on fish and fish habitat due to possible water quality changes taking the response from Question C into consideration;

E. Describe mitigation measures to prevent adverse effects on fish and fish habitat taking the responses from Questions C and D into consideration;

F. Characterize residual effects, if any, after the mitigation measures have been implemented.

6.2 Prodigy Response

6.2.1 Response to CEAA Comment Part A

The design of the TMF and MRMF in TSD 6 is conceptual and has been substantially advanced since December 2016. The current design includes an engineered drain system under the TMF consisting of pipes. The function of the drain is to convey runoff and infiltration through the TMF embankment and the MRMF that will collect at topographic low points on the native ground surface at the east (upstream) end of the TMF. This prevents buildup of hydraulic head on the outside of the geosynthetic liner that covers the inside face of the TMF embankment. If the water was not drained, the hydraulic head outside the liner could cause the liner and liner anchoring system to fail early in the operational period when the TMF is relatively empty and the liner is not ballasted by tailings.

The current drain design includes two pipes, each of which has a capacity for 1.5 times the expected flow in the pipe. There are two pipes for redundancy in the unlikely event one collapses. The pipes are embedded in a low permeability structural cement grout bed in a prepared trench beneath the tailings mass. The outlet of the drain pipes is at a seepage collection sump, and the water collecting in the sump is conveyed to the WQCP.

A gravity drainage system is preferable to pumping systems because it eliminates the risk of pump failure.

6.2.2 Response to CEAA Comment Part B

In the long term, the pipes beneath the TMF are not required. During operations as the tailings mass develops, the tailings will ballast the liner and buttress the dam so there is no risk of liner or dam failure in the unlikely event that the pipes fail and hydraulic head builds up within the embankment outside the liner. At closure, the drains will be filled under pressure with grout during closure of the TMF. The conservative design (excess capacity, redundant pipes, bedding in low permeability grout) will assure their function while they are needed, and grouting up the pipes at closure will further prevent potential creation of a conduit for seepage that could cause a water quality impact.

6.2.3 Response to CEAA Comment Part C

The water quality management plans and impacts assessment accounted for the operation of the drain pipes. The design is conservative and redundant and the pipes will be grouted closed at closure, so the potential for failure of the pipes that could cause a water quality impact is negligible. The original impacts assessment for water quality therefore addresses these conditions and no additional assessment is necessary.

6.2.4 Response to CEAA Comment Part D-F

Since the existing impacts assessment addresses the conditions for the pipes, no further effects analysis for fish and fish habitat is necessary, and there is no need for additional mitigation measures or characterization of residual effects.

7.0 CEAA-FD12 / FFH(2)-04: FISH AND FISH HABITAT – CONTINGENCY WATER TREATMENT PLANT

Reference to EIS:

- Chapter 7, Section 7.3.4.5.1.4
- Chapter 7, Section 7.3.4.9.1.2

7.1 Context and Information Required for a Complete Response

Response to Question B of FFH(1)-04 states that "The above-referenced TSDs provide the detailed analyses that support the conclusion that a water treatment plant is not necessary. The TSDs also identify the risks and uncertainties, and describe how contingency water treatment would be implemented in the event any of the risks or uncertainties manifest themselves."

It is further stated in the response to Question C of the same IR that "the location of the contingency water treatment plant would be established during revision of the water treatment plan and treatment plant design in the event the contingency actions are invoked".

The Agency notes that it is unclear how feasible it is to construct and operate the treatment plant in a timely manner to avoid compromising the water quality in Otto lake and waterbodies downstream, potentially affecting fish and fish habitat.

The Agency was unable to find any details pertaining to the contingency water treatment measures that will be readily available in the event any risks or uncertainties manifest themselves.

Specific Question/ Request for Information:

A. Describe the feasibility of construction and operation of a contingency water treatment plant in a timely manner should the monitoring data show exceedances above the regulatory criteria;

B. Describe what measures would be taken to ensure no adverse effects occur during the time prior to the treatment plant becoming operational.

7.2 Prodigy Response

7.2.1 Response to CEAA Comment Part A

Parameters which have potential to exceed regulatory criteria are metals, and most notably copper and silver. Metal enrichment in water can be treated through use of a conventional pH (typically lime) precipitation circuit.

Water will be discharged seasonally, during the open water period, from the Water Quality Control Pond (WQCP) starting in year 2 of operations. The average rate of discharge is predicted at 5,038 m^3/d, with an expected peak discharge rate of 26,950 m^3/d (EIS Section 7.3.3.7.3).
For this scale, lime treatment plants can be operated as:

- Simple lime addition system with in-pond precipitation;
- Low density sludge (LDS) systems; or
- High density sludge (HDS) systems.

HDS plants are typically used where higher metal loadings are expected at lower pH conditions and larger volumes of sludge are expected, such as that associated with acid rock drainage (ARD) conditions. The Magino Project is not associated with ARD conditions. Metal loading in effluent associated with the Magino Project is expected to be low, with an associated neutral or near neutral pH.

If it should be determined in the future that enhanced metal removal is required, the most likely form of water treatment would be use of a simple lime addition system with in-pond precipitation. The treatment could potentially be focused only on those source(s) with the higher metal concentrations. It would take approximately six months to develop detailed engineering for such a system, and a further approximately six months for construction. If instead higher metal loadings developed such that an LDS treatment plant was required, detailed engineering would take about nine months, and construction would also take about nine months. Preliminary engineering could be initiated proactively to shorten the overall timing, should water quality trends be identified early.

7.2.2 Response to CEAA Comment Part B

In the event that monitoring indicated that additional treatment was likely to be required for more effective metals removal, interim measures that could be used in advance of the operational availability of a treatment plant would include:

- Further optimizing operation of the in-plant SO_2/Air plant for metals removal prior to tailings being discharged to the TMF;
- Batch liming the WQCP; and/or
- Retaining contact waters within the system.

It is likely that all three measures would be implemented in a complimentary fashion.

The principal advantage of system operations for the Magino project is that effluent discharge is not expected until year 2 of operations. Early monitoring data will inform decisions regarding the likely potential need for additional treatment, and the type of treatment that would be most effective.

8.0 CEAA-FD13 / FFH(2)-05: FISH AND FISH HABITAT

Reference to EIS:

- Chapter 4, Section 4.3.4.3.1;
- Chapter 7, Section 7.3.5.5.1.3;
- TSD 16, Section 4.1.2.1.2;
- TSD 16 Addendum, Figure 2.2 and Table 2.1;
- TSD 7, Section 6.3.1;
- Appendix 6, Table 3

8.1 Context and Information Required for a Complete Response

The response to Question D of FFH(1)-05 states that "no effects on fish and fish habitat are anticipated". This is contradictory to the responses provided for Question F-G of the same IR, which state that "residual effects on fish and fish habitat will not be significant" and that "serious harm to fish and fish habitat will be addressed in an offsetting plan."

The Agency recognizes that a final detailed design will be developed during later stages of project development. However, it is important for the Agency to understand the potential effects on fish and fish habitat from the construction and operation of the water quality control pond (WQCP) outfall structure in Otto Lake.

Furthermore, the statement that "no effects on fish and fish habitat are anticipated" from placement of an outflow structure in Otto Lake appears unreasonable. Otto lake has a maximum depth of 3.2 m and will receive outflow at a "monthly average of approximately 4,320 m^3/day and a maximum of 25,900 m^3/day […] during Years 2 to 12" (TSD 7, Section 6.3.1). Excessive flows from the outfall structure, potentially resulting in scouring in Otto Lake could impact fish and fish habitat.

The Agency also notes that the habitat accounting under the Fisheries Act provided in Appendix 6, Table 3 did not include losses in Otto Lake. If the construction of the water quality control pond outfall structure and/or the operation would cause a loss or alteration of fish habitat, these values should be included in habitat loss accounting.

In determining effects to fish and fish habitat in Otto Lake, the Department of Fisheries and Oceans (DFO) advises using known lake bathymetry, habitat features, and fish assemblage described in Chapter 4, Section 4.3.4.3.1. DFO also recommends using pathways of effects diagrams available on DFO's website for this assessment: http://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html.

Specific Question/ Request for Information:

A. Provide an assessment of potential effects to fish and fish habitat related to the construction of the water quality control pond outfall structure based on the anticipated outfall location, construction methods, and final footprint;

B. Provide an assessment of potential effects to fish and fish habitat related to the operation of the water quality control pond outfall structure due to excessive flows and potential scouring of Otto Lake;

C. Describe any additional mitigation measures to minimize the effects on fish and fish habitat from the construction and operation of the water quality control pond outfall structure in Otto Lake;

D. Characterize the residual effects, if any, after the mitigation measures have been implemented. Predict the amount of fish habitat lost or altered in Otto lake due to the construction, as well as the operation, of the water quality control pond outfall structure and update the habitat loss accounting provided in Appendix 6, Table 3.

8.2 Prodigy Response

8.2.1 Response to CEAA Comment Part A

The response statement to Question D of FFH(1)-05 that there would be no effects on fish and fish habitat was intended to convey that no "serious harm" was predicted, consistent with the responses to parts F-G. There will be small changes to the habitat due to the physical placement of the outlet structure, which consists of an outlet pipe and diffuser with ports.

Assumptions made for the diffuser during modeling included (as per Table 2.1 of TSD 16 addendum):

- Discharge depth: 2.5 m (deeper part of Otto Lake);
- Diffuser height above bottom: 0.5 m; and
- Length of diffuser: 6.90 m

Based on the location of the proposed diffuser, there will be approximately 100 m of discharge pipeline extending from shore to the diffuser. The nearshore pipeline may be buried to a depth of approximately 1 m to protect against ice movement, but the lakebed would be reinstated following burial of the line. The actual in water footprint area of the constructed pipeline, anchors and diffuser will be relatively small (i.e., less than 150 m^2). This represents a small alteration in relation to the overall lake area.

Additional impact the shoreline and lakebed would be associated with the initial construction of the diffuser but this area of disturbance is expected to be highly localized, of short duration and restored to conditions similar to present, following construction. Standard erosion and sediment control measures such as turbidity curtains etc. would be used locally to mitigate potential disturbance to the broader lake area during construction, in addition to completing the construction during acceptable in water construction timing windows. As such, a physical impact of constructing the diffuser and outfall structure are not expected to be serious harm to fisheries.

8.2.2 Response to CEAA Comment Part B

Otto Lake is 13.7 ha in area with a volume of approximately 204,000 m^3 (as per section 2.1.6 of TSD 16 addendum). Accordingly, the maximum 25,900 m^3/day and monthly average 4,320 m^3/day discharge represents only 12.7 percent and 2.1 percent of the lake volume. These values are unlikely to cause turbulence within the lake itself, particularly as the discharge will occur at the deeper part of the lake (2.5 m depth). As for the immediate diffuser location, the diffuser will be raised by 0.5 m from the lake bottom, and the final design will ensure that the ports do not direct the discharge downwards into the lake sediments.

8.2.3 Response to CEAA Comment Part C

The construction of the outlet pipe and diffuser will be a short duration activity that can be effectively isolated from the broader lake habitat and potential effects on fish by using mitigation measures such as standard erosion and sediment controls (turbidity curtains, waddles and sumps/ filtration bags), and by working within the approved in water timing windows.

Although no significant effects are anticipated from the operation of the outfall structure (pipeline and diffuser) we recognize the reviewers comment regarding the potential for lake scour. As described in our response to Part A, the lake volume is sufficient that we do not anticipate any lake turbulence that would disturb the lake sediment. The only potential exception would be if the ports resulted in jets of water being directed towards the lake bottom. This would be mitigated through the design process where the ports will be large enough, in sufficient numbers, and angled away from the sediment to avoid sediment mobilization. Rock scour protection could be added to the design if warranted as a contingency, to only be implemented if necessary.

8.2.4 Response to CEAA Comment Part D

Based on the above responses to Parts A and B, there is expected to be a localized and mainly temporary disturbance associated with construction of the discharge structure (pipeline and diffuser). The potential effects can be effectively mitigated with standard erosion and sediment control measures, and by adhering to in water works timing windows, such there will be no additional residual effects representing serious harm. However, should it be the opinion of DFO that the outfall structure be captured in the overall site offsetting plan, we would include the structure in that document for completeness in its subsequent drafts.

9.0 CEAA-FD14 / FFH(2)-06A: FISH AND FISH HABITAT – SLURRY WALL

Reference to EIS:

- Chapter 4, Section 4.3.4.3.3,
- Chapter 6, Section 6.5.1.7
- Chapter 7, Sections 7.3.2.3, 7.3.2.8, Table 7-53.

9.1 Context and Information Required for a Complete Response

The response to FFH(1)-06a identifies a number of project activities for the construction of slurry wall between Goudreau Lake and the open pit. However, there is no qualitative and quantitative description of the dimensions and features between the area where construction of the slurry wall will occur and Goudreau Lake.

Chapter 4, Section 4.3.4.3.3 mentions that for Goudreau Lake, "vegetation growth is abundant on the north of the island and at the south west end of the lake. The diversity of water depth, vegetative cover, and substrate provide optimal habitat for a range of fish species".

An estimate of how much of this vegetation, specifically aquatic and riparian habitat, will be removed or altered due to the activities identified in the response to Question B of FFH(1)-06a is not provided.

The Agency requires this information to understand the effects on fish and fish habitat from removing or altering aquatic and riparian habitat and vegetation around Goudreau Lake.

DFO recommends using pathways of effects diagrams available on DFO's website to provide an assessment of effects on fish and fish habitat in Goudreau Lake from the above undertaking: http://www.dfo-mpo.gc.ca/pnw-ppe/pathways-sequences/index-eng.html.

Specific Question/ Request for Information:

A. Provide a qualitative and quantitative description of the dimensions and features between the area where construction will occur and the edge of Goudreau Lake.;

B. Predict the amount of aquatic and riparian habitat and vegetation that will be lost or altered due to the activities identified in the response to Question B of FFH(1)-06a;

C. Provide the effects on fish and fish habitat due to loss or alteration of riparian habitat and vegetation at the edge of Goudreau Lake;

D. Describe mitigation measures to prevent adverse effects on fish and fish habitat due to any changes identified in Question C;

E. Characterize residual effects, if any, after the mitigation measures have been implemented;

9.2 Prodigy Response

9.2.1 Response to CEAA Comment Part A and B

The slurry wall was further assessed to a feasibility level design to ensure that the measure was appropriate and was technically feasible. A trade-off study between slurry wall, cutter soil mixing and jet-grouting cut-

off wall construction methods was undertaken and a jet-grouting cut off wall was carried forward as the preferred method. The proposed wall would extend approximately 650 m in length between the ultimate open pit boundary and Goudreau Lake. The footprint of the wall including all temporary cut and fill areas for access road / pad construction is 12,900m^2. This area is above the estimated high water level of Goudreau Lake (382.5 masl), and is characterized as mainly dry to fresh, coarse forest (aspen, birch and jack pine), with a small area of wetland (shrub shore fen) associated with the connection between Webb Lake and Goudreau Lake. Note that the areas upstream of the small wetland connection will be entirely removed by the open pit. An additional 5 m work area is estimated to be needed between the cut off wall road/ construction pad and the lake. This represents an additional 3,250 m^2 of forest habitat that will be temporarily disturbed during construction.

The majority of the work area is expected to remain above the maximum lake area, but will come in close proximity of the lake in a few locations. A minimum buffer of 10 m can be maintained between the construction area and the lake. As per the responses to FFH(1)-06a, the construction will be such that most runoff from the road and pad is directed to the pit side of the work area, away from Goudreau Lake. As such the only runoff directed towards the lake would be from the road / construction pad slope facing the lake. The estimated 5 m is considered sufficient to accommodate the described silt barriers, waddles and ditching if necessary. On site monitoring of the construction stage would ensure that any upset conditions such as sediment releases are identified and corrected in a timely manner.

9.2.2 Response to CEAA Comment Part C

The minimum 10 m offset from the lake and the work area being largely confined to the forest area above the high water level would mitigate any long term impacts to the lake habitat beyond that already addressed in the EIS. Again, most of this proposed work area is in forested habitats above the high water level of the lake and therefore it will not overprint the aquatic vegetation habitat features described in the comment. An exception to this will be the small wetland habitat connecting Webb Lake and Goudreau Lake which would have a mixture of shrub and aquatic vegetation. The loss of this connection between the two lakes due to pit development has already been identified and accounted for as a fisheries impact in the Draft Fisheries Compensation Plan (TSD 20-14) and superseding memorandums. However, should it be determined in detailed design that the crossing of the cut off wall represent additional area of impact, this minor increase would be included in its subsequent revisions.

Any potential impacts during construction such as a sediment release, would be considered an upset condition and quickly identified and corrected through on site monitoring and conventional erosion and sediment control. As such, there are no additional impacts to fish and fish habitat predicted as a result of the cut off wall construction, or the temporary sediment and erosion controls described.

9.2.3 Response to CEAA Comment Part D

There are no additional impacts to fish and fish habitat predicted due to the construction of the cut off wall and the activities associated with its construction. Environmental monitoring of the site will be implemented during construction such that any upset conditions can be identified and corrected quickly if required.

9.2.4 Response to CEAA Comment Part E

Based on our assessment of potential impacts and mitigation measures, there are no anticipated residual effects in addition to those previously determined.

10.0 CEAA-FD28 / FFH(2)-17: FISH AND FISH HABITAT – PIT LAKE WATER QUALITY

Reference to EIS:

- Chapter 7, Section 7.3.2 and 7.3.3;
- Addendum to TSD 16, Section 2.1.3.

10.1 Context and Information Required for a Complete Response

Based on the response to Question A of FFH(1)-17, it appears that the predicted pit lake water quality does not factor in seepage that would flow directly into the pit lake from the TMF and MRMF throughout the life of the project. The response to FFH(1)-35 E indicates that 15% of overall seepage will flow directly to the pit lake. Although direct seepage is described as being "a much smaller volume than the TMF water from the pool and seepage transferred to the pit at closure", a relative comparison for volume of seepage has not been provided and therefore, this conclusion cannot be verified.

Furthermore, the response to Question F of FFH(1)-17 states that "If monitoring indicates that it is not beneficial to connect the pit lake with Goudreau, no channel will be constructed".

The Agency understands that one of the reasons for connecting the pit lake to Goudreau Lake was to ensure that the pit lake does not indiscriminately overflow into surrounding waterbodies. Should it be determined that it is not beneficial to connect the pit lake to Goudreau Lake with a constructed channel, it is unclear what measures will be in place to ensure water from the pit lake does not indiscriminately overflow into Goudreau Lake or other surrounding waterbodies.

This is important for the Agency to understand how excess water flow from the pit lake would be managed as the pit water quality could cause detrimental effects on fish and fish habitat in adjacent water bodies.

Specific Question/ Request for Information:

A. Provide the volume of seepage that will flow directly into the pit lake from the TMF and MRMF for all phases of the project and provide a comparison of that volume against the volume of TMF pool water and water collected from the seepage collection system;

B. Include the seepage that will flow directly into the pit lake from TMF and MRMF in the assessment of pit lake water quality for all phases of the project. If this is not feasible or necessary, provide a rationale;

C. Describe the measures that will be put in place to ensure the water in pit lake does not overflow into the surrounding waterbodies, in the event that monitoring data is not supportive of connecting pit lake to Goudreau Lake;

D. Describe the measures that will be put in place to restrict access for both humans and animals (specifically migratory birds and species of interest to Indigenous groups) in the event that monitoring data is not supportive of connecting the pit lake to Goudreau Lake.

10.2 Prodigy Response

10.2.1 Response to CEAA Comment Part A

During pit mining operations, water collected by sumps in the pit will be transferred to the TMF pool. This management of seepage into the pit is accounted for in the evaluations presented in TSD 7 – Site Water Balance and Quality. During closure, the TMF pool and water collected from the seepage collection system will be transferred to the pit. Together these are expected to be 7% of the ultimate total volume of pit lake water.

According to the analyses presented in TSD 4 – Hydrogeological Study and Groundwater Modeling, seepage from the TMF and MRMF will flow through the bedrock with groundwater into the pit lake. At year 12 (i.e., at the end of operations), 1,524 m^3/d of TMF and MRMF seepage will flow into the pit. Approximately 53% of that seepage is from the TMF and 47% is precipitation infiltration through the mine rock of the MRMF. This TMF and MRMF seepage arriving with groundwater will represent approximately 25% of groundwater inflow to the pit. Once the pit lake is full, water transferred from the TMF pool and collected from the seepage collection system and seepage from the TMF and MRMF is expected to be 16% of the ultimate total volume of pit lake water.

10.2.2 Response to CEAA Comment Part B

During mining operations, water collected from pit sumps is transferred to the TMF pool and therefore there are no effects on water quality. The pit water quality assessment presented in TSD 7 – Site Water Balance and Quality did not include the additional constituent loading resulting from migration of seepage from the TMF and MRMF with groundwater through bedrock during the post closure period. A revised pit water quality assessment has been performed which includes these constituent loading components. The revised assessment is presented in Attachment A. The results show somewhat higher concentrations in the pit lake, but generally the same potential exceedances of water quality objectives (e.g., PWQO and ODWS).

The evaluation is based on conservative mass balance modeling with constant source terms (i.e., the quality of TMF and MRMF seepage stays constant at the values projected to occur in the pool and MRMF seepage trench at the end of operations), and the pit lake fills in approximately 50 years. As discussed in Attachment A, it is expected that biogeochemical processes during filling will attenuate several constituents (e.g., nutrients, cyanide, and trace metals such as copper, cadmium, cobalt, manganese, and iron) in the seepage, in groundwater and within the pit lake. The pit lake water quality will be monitored during filling, and contingency treatment of the pit lake water can be performed during filling to address any unexpected water quality issues.

10.2.3 Response to CEAA Comment Part C

If monitoring indicates that it is not beneficial to connect the pit lake with Goudreau Lake, no channel will be constructed. However, the pit lake will continue to fill as there is a positive water balance. Contingency treatment of the pit lake water and discharge to Goudreau Lake would be performed to control the pit lake level until the water quality of the pit lake is suitable for discharge to Goudreau Lake (when it is full, the flow of seepage is reduced, plus there is a new removal of dissolved constituents from the pit lake and source strengths are expected to decrease over time as conditions stabilize geochemically).

10.2.4 Response to CEAA Comment Part D

At closure, fencing and berms will be constructed to restrict access to the pit for humans and wildlife.

11.0 CEAA-FD48 / FFH(2)-36A: FISH AND FISH HABITAT – TMF SEEPAGE

Reference to EIS:

- Chapter 4, Section 4.3, 4.4.5.1.1.

11.1 Context and Information Required for a Complete Response

The response to Question B of FFH(1)-36 states that "approximately 70% of the seepage from the TMF is captured by the toe drain seepage collection system …. Of the 30% that bypasses the toe drain seepage collection system; approximately half is drawn toward the pit and collected in the pit water management systems. The remaining flow will eventually report to surface water bodies in the vicinity of the mine, but the flow is negligible compared to the surface water flux and the groundwater discharge is diffuse (as opposed to concentrated). Therefore, surface water quality is not expected to become impaired".

The Agency has uncertainties with the above analysis as there is not enough evidence provided in the EIS to substantiate the claim that uncaptured seepage leading into surface water features will not impair surface water quality. TSD 4, Section 6.3.3 states that the seepage by-pass is predicted to be "a maximum of about 2,540 m^3/d at end of Year 12" of operations. It is further stated in the same section that "this seepage by-pass (approximately 50-60%) is captured by the drawdown cone of the open pit and hence would be collected by pit dewatering". The Agency notes that even after 50-60% of seepage by-pass captured by the open pit, there is a substantial amount of seepage leading into the natural environment. Chapter 7, Section 7.3.4.5.1.3 states that "changes to surface water quality from seepage […] from the TMF and MRMF will be minor" even though a specific assessment to derive that conclusion has not been conducted or reported in the EIS.

Furthermore, it is stated in Chapter 7, Section 7.3.2.7 that "The effects from the TMF and MRMF will occur during operations phase, and will continue into the post-closure phase". The same section of the EIS also states that filling of the open pit would take "about 50 years after cessation of mining". The Agency notes that as the open pit fills, it is plausible that the drawdown cone of the open pit pulling seepage from the TMF/MRMF will have a lesser effect on seepage and a higher percentage of seepage can lead towards waterbodies in the vicinity of the TMF/MRMF. The Agency understands that "as groundwater migrates, concentrations will attenuate through geochemical reactions and mixing with native groundwater, and eventually with distance, the effects will not be measurable" (Chapter 7, Section 7.3.2.7). However, it is unclear whether attenuation and mixing of groundwater will be enough to prevent adverse changes in surface water quality. No evidence was found in the EIS to substantiate the claim that "the effects will not be measurable".

The Agency also notes in the response to FFH(1)-35 that "seepage collection wells" are included in the TMF/MRMF pre-detailed design as contingency measures. Knowing that approximately 15% of uncaptured seepage from the TMF/MRMF, it is unclear why these seepage collection or pump back wells are considered a contingency measure rather than a mitigation measure. The Agency also has several uncertainties with the seepage quantity predictions made in the EIS (see FFH(2)-36b and FFH(2)-36c). These uncertainties with seepage modeling can be reduced by proposing additional mitigation measures, such as establishing seepage collection or pump back wells around the TMF and MRMF.

The transient particle tracking of TMF and MRMF seepage by-pass provided in TSD 4, Figures 6-8 and 6-9 shows seepage leading into Spring Lake, McVeigh Creek, Otto Lake and Unnamed Waterbody 9. Changes in water quality due to seepage that is not captured by the seepage collection system or the open pit are important for the Agency to understand the effects on fish and fish habitat.

Specific Question/ Request for Information:

A. Provide an assessment to surface water quality changes during operation in the waterbodies in the vicinity of the TMF and MRMF (including but not limited to Spring Lake, McVeigh Creek, Otto Lake and Unnamed Waterbody 9) from seepage not captured by the seepage collection system and the open pit drawdown cone.

B. Revise the predicted seepage leading into the surrounding surface water features based on changes in the drawdown cone of the open pit as it fills after cessation of mining. Incorporate these results into an assessment to surface water quality changes in nearby waterbodies during post-closure;

C. Provide the effects on fish and fish habitat, if applicable, due to changes in surface water quality;

D. Describe any additional mitigation measures that would prevent adverse effects on fish and fish habitat due to any changes in surface water quality. Include these measures in any assessment provided in response to FFH(2)-36c, part A;

E. Characterize residual effects, if any, after the mitigation measures have been implemented;

F. Reassess the significance determination for fish and fish habitat, if necessary, taking responses from Questions A to E into account;

G. Describe 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.

11.2 Prodigy Response

11.2.1 Response to CEAA Comment Parts A and B

The flux of groundwater across the boundary of the TMF and MRMF was estimated using the groundwater flow model. The flux across specific segments was assumed to all report to the streams along the northern boundary (in the Waterbody 8/Waterbody 9/Otto/Herman watershed) and along the southwest boundary (in the Spring Lake/McVeigh watershed). The flux was compared to the flow of surface water through the two watersheds, which is reported in TSD 7 – Site Water Balance and Quality. Under these assumptions, the flux of groundwater to the northern watershed is approximately 4% of the surface water flow through Otto Lake and the flux of groundwater to the southwest watershed is 13% of the surface water flow through McVeigh Creek during the operational period.

Making the additional conservative assumption that the groundwater quality reporting to the surface water drainages is the equivalent to the predicted average concentrations in the TMF pool as calculated from the information in TSD 7 – Site Water Balance and Quality, then the calculated resultant concentrations in the surface water using the factors above indicates that potentially applicable water quality objectives (i.e., PWQOs and ODWSs) are met for all constituents assessed except Total CN, silver, cobalt, copper, and phosphorus.

It is important to note, however, that the tailings water detoxification criteria for cyanide has been changed from what was used in TSD 7 from 5 ppm Total CN to 1 ppm. This factor of five reduction in cyanide concentration also reduces the concentrations of the metal constituents whose soluble concentrations are

related to cyanide (including silver, cobalt, and copper) by a corresponding amount. Further, the Total CN will degrade significantly in the tailings pond and also during migration in groundwater, which was not accounted for in the mass balance calculations and will result in further reductions in Total CN and metals concentrations before potentially reporting to surface water.

Finally, the phosphorus concentration estimated for the TMF pool does not account for any biological activity or mineral precipitation (e.g., with calcium and other mineral constituents in the water) that will attenuate the phosphorus concentration. Typically in surface waters, the biological and chemical attenuation of phosphorus will reduce the dissolved concentration of phosphorus to levels below the detection limit. A factor of 4 reduction of phosphorus in the TMF pool would be required for the McVeigh Creek watershed, and the biological and chemical attenuation should easily result in this degree of reduction.

Therefore, while the compounding conservative assumptions in this preliminary assessment suggest a potential for limited exceedance of a small number of constituents, biogeochemical factors and dispersion/attenuation that are particular to these constituents are expected to result in no exceedance of potential water quality objectives in surface water in the Otto Lake and McVeigh Creek watersheds.

11.2.2 Response to CEAA Comment Part C

Based on the additional information response to Parts A and B of the question, we do not predict any additional impacts to fish and fish habitat from seepage beyond that previously identified and accounted for in the EIS documentation.

11.2.3 Response to CEAA Comment Part D

Notwithstanding the response to Part C of the comment (no additional effects to Fish and fish Habitat due to seepage), additional mitigation measure that could be employed should monitoring identify potential impacts would include seepage collection wells. The seepage wells would be installed between the TMF and the receiver (e.g., McVeigh Creek) to intercept and return seepage to the TMF until conditions meet provincial and federal standards.

11.2.4 Response to CEAA Comment Parts E to G

We do not predict any changes in water quality due to seepage that would affect fish or fish habitat. Groundwater and surface water monitoring during operations and closure will provide a reliable and defendable data base on which to confirm the predictions of this assessment.

12.0 CEAA-FD25 / CEAA-FD48 / FFH(2)-36B: FISH AND FISH HABITAT – OVERBURDEN THICKNESS AND AQUIFER

Reference to EIS:

- TSD 4, Figures 2-3 and 3-4.

12.1 Context and Information Required for a Complete Response:

As noted in FFH(1)-14, the overburden aquifer is important in controlling groundwater flow. The response to FFH(1)-14 refers to TSD 4, Figures 2-3 and 3-4 to provide the spatial extent for the overburden in the project area. However, the thickness of the overburden and the locations where field measurements were taken was not provided.

Overburden depth affects the behavior of seepage and could impact the effectiveness of the seepage collection system. The information provided in the EIS and the response to IR-1 lacks sufficient detail on the overburden depth, sampling locations and overburden characterization to allow the Agency to understand the efficacy of seepage collection system proposed for the Project.

This information is required to reduce the uncertainty related to the efficacy of the seepage collection system and to understand the changes to water quality and potential effects to fish and fish habitat.

Specific Question/ Request for Information:

A. Provide a figure, such as an isopach map, that shows the thickness of the overburden. Include in the figure overburden sampling locations and overburden characterization. If the figure cannot be provided, provide a rationale;

B. Assess the efficacy of seepage collection system proposed for the Project, taking into account the depths of the overburden requested in Question A.

12.2 Prodigy Response

12.2.1 Response to CEAA Comment Part A

A figure showing locations where the thickness of overburden has been measured is provided as Figure 2.1 of the Addendum to TSD 1- Geotechnical and Geohydrological Investigation Summary (SLR Consulting, February 2017). There are more than 200 test pit and borehole locations. The bedrock surface is very complex, so attempts at constructing a meaningful isopach of overburden thickness or a contoured surface of bedrock proved to be futile. However, the general characteristics of the overburden thickness are described in TSD 1 and the Addendum. In general, the overburden is thin (1-3 m) or non-existent except in the general vicinity of the proposed pit where it is up to 12 m thick.

12.2.2 Response to CEAA Comment Part B

The design of the seepage collection system is based on removing overburden to expose bedrock for the TMF embankment foundation and seepage collection trench construction. Infiltration to the embankment and MRMF and seepage rising under the embankment through bedrock will flow through low areas of the bedrock to seepage collection sumps. The estimated volume of overburden that will be removed has been incorporated in the material balance for the mine and has been used in the design of the overburden storage piles as well as the TMF embankment design (described in TSD-6: Conceptual Design of the TMF, MRMF

and Overburden Piles). The volume of seepage was calculated, and the seepage flows are included in the overall site water balance to assure that the volume of seepage expected can be managed (TSD 7 – Site Water Balance and Quality).

13.0 CEAA-FD23 / CEAA-FD48 / FFH(2)-36C: FISH AND FISH HABITAT – HYDRAULIC CONDUCTIVITY

Reference to EIS:

- Sections 4.2.2, 6.2.3, 6.2.4, 6.3.2 and 6.4
- TSD 1, Figure 6-4
- TSD 4, Table 2-1

13.1 Context and Information Required for a Complete Response

The response to FFH(1)-12 shows that only four measurements of hydraulic conductivity (K) were taken for the depth of 0-10 m, which is not considered statistically representative. Based on TSD 4, Table 2-1, and the response to FFH(1)-12, the distribution of K measurements is summarized as follows:

- Overburden (3 types) n = unknown
- Shallow Bedrock of 0-5 m: n = 0
- Bedrock of depths 5-10 m: n = 4
- Bedrock of depths 10-60 m: n = 74

It appears that the dataset of K values is biased to depths below the typically weathered and/or highly fractured shallow bedrock of 0-5 m of the Canadian Shield. It is stated in the executive summary of TSD 4 that "Sensitivity analyses indicates that variation of hydraulic conductivity is the parameter that affects the overall groundwater fluxes the most throughout the model area." Therefore, the lack of any measured K values in bedrock of 0-5 m creates uncertainty and could lead to substantial variation in the quantity of seepage leading towards surface water bodies.

Specific Question/ Request for Information:

A. Revise the inputs in the groundwater model by incorporating statistically reasonable set of K values from the 0-10m depth. If this is not feasible, provide an assessment of the ability for additional mitigation measures implemented at the start of operations, such as establishing the seepage collection or pump back wells around the TMF and MRMF, to reduce the level of uncertainty associated with seepage quantity predictions. In your response, take FFH(2)-36a and FFH(2)-36b into consideration.

B. Update the water quality predictions taking response from Question A into consideration;

C. Provide the effects on fish and fish habitat, if applicable, due to changes in surface water quality;

D. Describe any additional mitigation measures that would prevent adverse effects on fish and fish habitat due to any changes identified in Question C;

E. [*Part E not included in original list of questions from CEAA*];

F. Characterize residual effects, if any, after the mitigation measures have been implemented;

G. Reassess the significance determination for fish and fish habitat, if necessary, taking responses from Questions A to F into account;

H. Describe 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.

13.2 Prodigy Response

13.2.1 Response to CEAA Comment Part A

The computer model is based on a detailed hydrogeologic conceptual model. The detailed hydrogeologic conceptual model was developed based on review and evaluation of a multitude of data sources, including the measurements of hydraulic conductivity, the drawdown test of the historical underground workings, lithologic texture and thickness characterization from a multitude of test pits and borings throughout the site, geologic characterization of bedrock outcrops, and inspection of core material from exploration boreholes with site geologists. While the weight of evidence of some of these data sources is better than for others, there was nothing in the data that suggested the presence of a weathered and/or highly fractured shallow bedrock layer with a higher permeability in the upper 0-5m of bedrock. Therefore, no such layer was included in the hydrogeologic conceptual model or the computer model.

Further, as acknowledged in the response to to CEAA FD 26 (IR#FFH(1)-15), the Equivalent Porous Medium (EPM) approach was used in the modeling as it provides a reasonable representation of groundwater flow at a regional scale (i.e., hundreds to thousands of meters), but the EPM approach leads to greater uncertainty about the groundwater flow fields and groundwater flux at the local scale (i.e., tens of meters). It is therefore anticipated that there may be unidentified localized areas around the TMF where shallow fractured bedrock conditions may occur, so the contingency of seepage collection wells has been included in the plan to address the uncertainties associated with seepage flows predicted with the groundwater model.

Nonetheless, a sensitivity analysis has been performed where the hydraulic conductivity of the top 10m of bedrock was increased by a factor of 2, 4, and 15 over the baseline value that produced the best calibration and best matched the site conceptual model. The analysis and results are presented in Attachment B. The results indicate that increasing the conductivity by a factor of 2, 4, and 15 results in an increase in seepage bypass by 0%, 2%, and 8% respectively. Therefore, the sensitivity analysis indicates that uncertainty in bedrock hydraulic conductivity in the top 10m of bedrock is not a very sensitive parameter for seepage bypass. This result is expected in consideration that the upper 10m of bedrock are under the influence of the shallow drains for seepage collection.

13.2.2 Response to CEAA Comment Part B

The results of the sensitivity analysis and the weight of evidence supporting the hydrogeologic conceptual model used in the development of the computer model indicate that the earlier results presented are representative and no update to the water quality predictions are necessary. Further, the planned contingencies (pump-back wells) are feasible and can address uncertainties associated with the seepage flows predicted with the groundwater model.

13.2.3 Response to CEAA Comment Part C-H

The sensitivity analysis results and the weight of evidence supporting the hydrogeologic conceptual model used in the development of the computer model indicate that the earlier results presented are representative and no update to the impacts assessment is necessary.

14.0 CEAA-FD2(A1)-19 / IE(2)-27: FISH AND FISH HABITAT – DEWATERING DISCHARGE

Reference to EIS:

- Chapter 6, Table 6-9,
- Chapter 7, Section 7.3.3.7.2

14.1 Context and Information Required for a Complete Response

Chapter 7, Section 7.3.3.7.2 states that "dewatering discharge to Goudreau Lake (from Webb Lake) and Spring Lake (from Lovell Lake and the existing tailings and polishing ponds) may affect water level and lake outflows in Goudreau and Spring Lakes as well as the flow in McVeigh Creek."

Chapter 6, Table 6-9 shows a list of waterbodies that will have to be drained for development of the proposed Magino Mine. The response to IE(1)-27 states that "water drained from these waterbodies will be pumped to the [tailings management facility] TMF for use as process water in the mill". The Agency is unclear how this will be achieved as some of the waterbodies proposed to be drained are within the footprint of the proposed TMF.

Specific Question/ Request for Information:

A. Describe how water drained from the waterbodies within the TMF footprint will be managed during the period of time that the TMF is developed to sufficiently hold the water from all waterbodies. Include in your description the proposed work sequencing that will allow this undertaking.

B. Assess the effects of changes to environment that would result from the removal of the waterbodies and any undertaking required to manage the water prior to discharge in the TMF. Describe mitigation measures, characterize residual effects, and provide a follow-up plan for any effects identified, as appropriate.

14.2 Prodigy Response

14.2.1 Response to CEAA Comment Part A

The reviewer is correct in pointing out that infrastructure development will require select natural waterbodies to be drained prior to completion of the TMF and water management facilities. Prior to the TMF being constructed sufficiently to receive and store inventory water, the non-contact waters from dewatering for construction would be directed to the adjacent current receiver systems as referenced in the reviewers comment (i.e., Webb Lake to Goudreau Lake and Lovell Lake to Spring Lake), or to temporary water management facilities depending on the expected, and monitored water quality. Initial dewatering from the natural, undisturbed waterbodies is expected to be clean water that does not require treatment of any kind. This water would be extracted through floating or suspended pumps (or equivalent means) to prevent sediment entrainment, for discharge directly to the downstream receivers using a splash pad or similar outlet configuration to prevent scour at the discharge point. As the waterbodies are reduced to near bottom and or where water quality deteriorates (to be monitored throughout the operation), dewatering will be directed to appropriate temporary or permanent water management sumps, ponds or filtration measures. This level of construction water management planning will be required at the permitting stage to obtain a Provincial Permit to Take Water (PTTW) and Environmental Compliance Approval (ECA) for Industrial Sewage Works, but would not be completed until the detailed design / approvals stage post EA completion.

As minimum, the construction water management planning would include:

- Sources of water takings (includes lakes to be dewatered as per Chapter 6, Table 6-9);
- Means of extracting the water to avoid sediment and fish entrainment (such as DFO end of pipe screening guidelines);
- Timing of water takings and locations and conditions on where the water will be discharged;
- Volumes and rates of water taking / discharge taking into account the seasonal natural flow regime of the receivers; and
- Monitoring commitments for both quantity and quality of the dewatering operations.

There is considerable seasonal and annual fluctuation in natural flow volumes and water levels locally, that create a natural range of environmentally acceptable flows within the watersheds. This range of natural flows provides for conditions that both the aquatic habitat and biota are acclimated to. Dewatering would occur in a controlled manner to remain within these acceptable natural ranges taking into account seasonal flow values. The specific values will be determined with the Province during the application for a PTTW, but as an example, a proposed threshold for dewatering values could be that the combined existing flow plus the dewatering flow does not exceed the 75th percentile of the natural monthly flow record. A condition such as this for example would emulate a higher flow year, but remain well within the natural flow regime of the system.

14.2.2 Response to CEAA Comment Part B

The direct habitat loss impacts associated with the draining of the waterbodies has been previously summarized in the Table 6-9 as referenced by the reviewer (Chapter 6) and fisheries offset planning documents. Providing that the dewatering of the waterbodies follows the criteria described above (i.e. stays within acceptable natural flow ranges and maintains water quality within Provincial and Federal water quality criteria), there are no additional impacts to fish habitat and fish predicted. The dewatering will occur using pumps which can be turned off in the event of deteriorating water quality or habitat impacts. The dewatering (quantity and quality) will be closely regulated by provincial permit (PTTW and ECA) conditions which will include defined monitoring stations and frequencies along the receiver flow paths.

15.0 CEAA-FD21 / FFH(2)-10: FISH AND FISH HABITAT – WATER QUALITY

Reference to EIS:

- TSD 2, Sections 3.3.1 and 3.3.3

15.1 Context and Information Required for a Complete Response

It is stated in TSD 2, Section 3.3.3: "Dissolved aluminum was detected consistently over time […] It is suspected that the dissolved aluminum results are an artifact of the testing procedures (from the cell materials or from the sampling) or the laboratory". Section 3.3.1 of the same TSD states that "[…] nitrite results are a sampling or laboratory artifact". The response submitted to the Agency in January 2018 stated that these assumptions were made "based on the basic chemistry of these constituents and professional experience in working with environmental data".

The revised response to FFH(1)-10 submitted in March 2018 provided Appendices 3 and 4 for information on testing procedures and their possible influence on aluminum and nitrate levels. Natural Resources Canada (NRCan) reviewed these documents and did not find any indication that the data is possibly of substandard quality.

As is the standard practice, NRCan assumes that the samples were filtrated and acidified. As a result, the samples should be representative of the site conditions. There is not enough evidence in the responses provided to conclude that these results are simply an artefact of the testing procedures or the laboratory.

NRCan notes that typically, aluminum's occurrence in natural waters is controlled by pH and by finely suspended mineral particles. However, increased concentrations of aluminum consistently found in data cannot be dismissed without consideration of how that may affect the water quality predictions for the surrounding waterbodies and effect fish and fish habitat.

Specific Question/ Request for Information:

A. Update the water quality assessment with the inclusion of elevated levels of aluminum and nitrite, or provide rationale/evidence for not doing so;

B. Provide the potential effects on fish and fish habitat taking the response from Question A into consideration;

C. Describe mitigation measures, if applicable, to prevent adverse effects on fish and fish habitat;

D. Characterize residual effects, if any, after the mitigation measures have been implemented;

E. Reassess the significance determination for adverse effects on fish and fish habitat, if necessary, taking responses from Questions A to D into account;

F. Describe 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.

15.2 Prodigy response

15.2.1 Response to CEAA Comment Part A

Aluminum

Relative to aluminum, it should be noted that aluminum is a common product of ore and mine rock shake flask leachate tests, but at neutral to slightly elevated pH values, as indicated by ABA test results, it would be expected that the aluminum would occur in solid phase. One of the main objectives of shake flask extraction tests is to identify soluble metals, so the test samples are filtered prior to analysis. The typical problem with aluminum in these tests is that what appears to be soluble aluminum is actually colloidal aluminum. It therefore shows up as "soluble" in the results but in really is present in solid phase. Consequently, despite aluminum results from shake flask testing showing up as exceeding the CCME guideline value of 100 µg/L (for pH ≥6.5) in 93.7% of the test results in EIS Table 4-19, this aluminum is not biologically available as it is in solid phase.

Nitrite

Nitrogen compounds occur in rocks, but typically not to any appreciable extent, and mainly in sedimentary and metasedimentary rock types, wherein the nitrogen source is derived from organic materials originally present in the sediments (Montross et al. 2013). Moreover, where nitrogen compounds do occur they mainly occur as either nitrate or ammonium, and not as nitrite. Of the rock types analyzed for geochemical properties for the Project, only unit 5 consists of metasedimentary lithologies. In addition, were nitrogen compounds to occur in the shake flask leachate, such compounds would be in an oxygenated test environment, which would not favourable to the production of nitrite.

Appendix A to TSD 2 was prepared by EBA (2013) and provides the shake flask leachate data cited by SLR in TSD 2. Section 6.4 of Appendix A refers to the data presented in Table 11 of Appendix A, wherein the nitrite values are provided, showing that 35.6% of the 68 samples exceeded CCME guidelines. Section 6.4 discusses metal leaching potentials, and states that further detailed results of the shake flask metal leaching test results (presumably related to Table 11) are provided in Appendix H (to Appendix A). However, Appendix H only provides data pertaining to metals, and does not provide any data on nitrite or any other non-metals. Unfortunately, there is consequently no way to trace the origin of the nitrite data shown in Table 11 of Appendix A, which has been copied over to Table 3-7 of the TSD 2 main document.

Therefore in summary it can be stated that the source of the nitrite data shown in any of the Project documentation (including Table 4-19 of the EIS and Table 3-7 of TSD 2) cannot be verified, and that there is no reasonable explanation of why nitrite should be present in the shake flask sample results at the levels indicated. In Wood's experience, nitrite is not normally a parameter of interest in shake flask tests of ore or mine rock. The main source of nitrogen compounds at mine sites is from blasting residuals, and not from rock weathering. The nitrite values shown in the various document tables are therefore not consistent with the evidence and regarded as being spurious and immaterial.

15.2.2 Response to CEAA Comment Parts B to F

In view of the response to Comment A, no additional responses or follow-up are required for Comments B through F. It should be noted in this regard that shake flask leachate test results were not used in the effects assessment to determine projected effluent quality results. More specifically TMF pond water quality projections for metals were determined on the basis of cyanide destruction test work results (SLR 2016, Appendix B); and WQCP effluent metal concentrations were determined on the basis of geochemical field cell results (SLR 2016, Appendix C).

EBA. 2013. Preliminary Geochemical Characterization of Mine Waste Rock at the Magino Property, Ontario.

Montross, G., B. McGlynn, S. Montross and K. Gardner. 2013. Nitrogen production from geochemical weathering of rocks in southwest Montana, USA. Journal of Geophysical Research: Biogeosciences, Vol. 118, 1068–1078.

SLR. 2016. Site Water Balance and Quality Technical Support Document SLR Ref: 200.03005-00000. December 2016, Version A.

16.0 CEAA-FD35 / FFH(2)-24A: FISH AND FISH HABITAT - HARDNESS

Reference to EIS:

- TSD 16 Addendum, Tables 3.2 – 3.5.

16.1 Context and Information Required for a Complete Response

The response to FFH(1)-24 does not adequately characterize the potential chronic effects on aquatic biota due to a two-to-three fold increase in hardness in Otto Lake.

The response identifies a link between hardness values and total dissolves solids (TDS) and states that TDS is a function of magnesium and calcium concentrations. A number of toxicity studies are referred to in the response to justify the predictions of the effects of hardness on aquatic biota in Otto Lake.

However, the Agency has a number of concerns with the use of the studies as justification:

- The TDS lowest observable effect concentrations (LOECs) reported in the Brix et al., (2010) study were derived using effects observed in acute, rather than chronic, exposures. Similarly, the exposures in the cited Chapman et al., (2000) also evaluated acute, and not chronic, effects of increasing TDS associated with exposure to effluents.
- The lowest hardness levels employed in the various experiments in the Brix et al., (2010) study (77, 100, and 124 mg CaCO3/L) were already 1.5 to 2.5 fold higher than the baseline hardness in Otto Lake (52 mg CaCO3/L), therefore the results of this study should not be used to illustrate the risk posed by an increase in hardness from the current Otto Lake level to the predicted average of 110 mg CaCO3/L or predicted max 175 mg CaCO3/L.
- The LOECs of "1402 and 964 mg/L TDS based on salmonid testing" (Brix et al., 2010) cited in the response were not for fertilization success of exposed organisms, which range from 254 to >2800 mg TDS/L.
- All effects levels discussed in the Brix study are for short term exposures. The predicted maximum TDS concentration in Otto Lake is 433.6 mg/L, which approaches the USEPA 500 mg/L TDS standard during salmonid spawning periods. As noted in Brix et al. (2010) "the 500 mg/L TDS standard during salmonid spawning periods should not be increased based on results from the fertilization study given the observed sensitivity of embryo water absorption to elevated TDS."

According to TSD 16 Addendum, Table 3.2 – 3.4, and Appendix L Table 1-25-1, hardness will increase from 52.1 mg $CaCO_3$/L to 110-175 mg $CaCO_3$/L (18.5 mg/L Ca to 54.7 mg/L Ca), under the various climate scenarios modeled during operations. Based on the potential increase in hardness as discharge to Otto Lake begins, it is likely that the ionic strength of Otto Lake will increase quickly and abruptly shift the water composition to adversely affect the resident biota.

To assist with the impact characterization due to alteration of water composition on aquatic life in the natural environment, the US EPA has released a draft method for developing water quality criteria for specific conductivity (SC), a measure of major ion contaminants (as opposed to individual ion concentrations or hardness). EPA chose SC as the exposure measurement for a number of reasons including that SC is simple and cost-effective (resulting in a massive data base of SC and corresponding real-world effects) and because effects are caused by the mixture of ions rather than a single ion. Over the past 10 years, the EPA has produced a large body of evidence (>10 published papers and (resident biota) data from >1000 sites) in 24 ecoregions with a range of background SC. These data can be used to predict the proportion of

genera that will be lost from a waterbody when the ionic concentration increases above background or above an initial condition (Cormier *et al*., 2018a).

The Agency requires a revised assessment of effects to fish and fish habitat, as there is a large body of evidence that shows that sudden changes from a soft to a hard water environment can cause substantial changes in water composition (see FFH(2)-24b) and have adverse effects to the resident biota, such as loss of species.

Specific Question/ Request for Information:

A. Reassess the potential effects on fish and fish habitat due to the predicted increase in water hardness in Otto Lake;

B. Identify mitigation measures necessary to address the potential effects on fish and fish habitat;

C. Characterize residual effects, if any, after the mitigation measures have been implemented;

D. Reassess the significance determination for fish and fish habitat, if necessary, taking responses from Questions A to C into account;

E. Describe 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.

16.2 Prodigy response

16.2.1 Response to CEAA Comment Part A

The background hardness in Otto Lake is 52 mg/L and is expected to increase to a median of 110 mg/L and a maximum of 163 mg/L. This increase will occur gradually over the first year of operation and will not be an instantaneous change. A hardness range of 110 to 163 is not considered harmful to fish and aquatic life. All of the federal water quality guidelines for the protection of fish and aquatic life (CCME 2018) that are hardness dependant are based on a range of hardness from 50 mg/L to 200 or 300 mg/L and these hardness values were not determined to be a risk to biota (CCME 2018). The BCMOE water quality guideline for the protection of fish and aquatic life identifies a range of hardness values used for the determination of the sulphate guideline and states that only above a hardness of 250 mg/L should additional testing be undertaken to evaluate the potential for osmotic stress in aquatic organisms (BCMOE 2013).

In Canada, almost all mines discharge effluent with a hardness concentration much greater than 200 mg/L. These same mines are subject to MMER which requires acute and sub-lethal toxicity testing. These test protocols place organisms (without acclimatization) into differing concentrations of effluent. In a review of EEM data under MMER, Environment and Climate Change Canada (ECCC; 2016) found that sub-lethal effects to fish (fathead minnow) invertebrates (Ceriodaphnia dubia), and plants (P. subcapitata and Lemna minor) generally occurred at concentrations greater than 20% effluent. The effluent at the Magino Project is predicted to be diluted to 25% immediately and 15% within 70 m of the discharge. Based on the national data from other mines in Canada, it is unlikely that an effect based on hardness would be expected in Otto Lake.

While the work done by the USEPA is comprehensive, it is based on establishing an assessment approach on a broad watershed level and is not appropriate for use at a single site in support of an Environmental

Assessment. One of the big challenges with trying to assess the effects of conductivity is that it is impossible to separate the potential toxicity of the substances causing an increase in conductivity versus potential effects of the change in conductivity itself. This is why there is no guideline in Canada or the US for conductivity but rather, ECCC and the Canadian Council of Ministers of the Environment (CCME) choose to set guidelines for individual substances that pose a potential risk to fish and aquatic life. It should be noted that there is no guideline in Canada for hardness, nor is there an effluent limit for hardness under the MMER (Schedule 4) or the Ontario MISA standards.

16.2.2 Response to CEAA Comment Parts B to E

It is not expected that the change in hardness will result in impacts to aquatic biota that would change the assessment conducted within the Environmental Assessment Report.

Environment and Climate Change Canada 2016. Third national assessment of environmental effects monitoring information from metal mines subject to the Metal Mining Effluent Regulations / Industrial Sectors, Chemicals and Waste and Environmental Protection Operations Directorates, Environment and Climate Change Canada. ISBN: 978-0-660-04509-2

CCME (Canadian Council of Ministers of the Environment). 2018. Canadian Water Quality Guidelines for the Protection of Aquatic Life. Canadian Council of Ministers of the Environment, Winnipeg. www.ccme.ca.

BCMOE (British Columbia Ministry of the Environment). 2013. Ambient Water Quality Guidelines for Sulphate, Technical Appendix update. April 2013, Water Stewardship Division, Ministry of the Environment, Province of British Columbia.

17.0 CEAA-FD36 / FFH(2)-24B: FISH AND FISH HABITAT – HARDNESS / BIOTIC LIGAND MODEL

Reference to EIS:

- Chapter 7, Sections 7.3.4.7 and 7.3.4.8,
- Tables 7-83 and 7-84;
- TSD 16 Addendum, Tables 3.2 – 3.5;
- IR-1 Response Appendix K and
- Appendix L, Table 1-25-1.

17.1 Context and Information Required for a Complete Response

The values calculated for hardness (see FFH(2)-24a) are associated with several other parameters of concern. The response to FFH(1)-25 states that "In order to assess the implications of changing hardness over the course of mine operations, the ratio of […] copper to hardness was plotted over the mine life." The effect of changes to water hardness on the toxicity of metals was examined in the assessment of effects to fish and fish habitat at Otto Lake. However, several issues were identified in the assessment.

Otto Lake can be considered a soft water lake as the measured background calcium concentration was 52 mg $CaCO_3$/L (TSD 16 Addendum, Table 3.2-3.4). It is noted in the response to FFH(1)-22 that predicted concentration of copper in Otto Lake was recalculated due to an error in the original CORMIX modelling and a"[…] site specific Biotic Ligand Model was constructed to determine an acute toxicity value (Final acute value, FAV) […] for copper".

While hardness itself is not a parameter that is input into the BLM, calcium, a component of hardness, is. The background (i.e. Year 1, Day 1) calcium in Otto Lake is 18.5 mg Ca/L (TSD 16 Addendum, Table 3.2). However, the predicted calcium concentration on Year 1, Month 10 of 54.7 mg Ca/L, which is 3 times higher than background concentration, was used to derive the revised guideline (Appendix L, Table 1-25-1). The conditions used to determine both the original and the revised BLM-derived copper guidelines are effluent-influenced; they are derived from values that are well above the stated background levels for some key ions. Therefore, these guidelines cannot be considered suitable for Otto Lake.

The Agency notes that no scientific basis or rationale is provided for the use of the BLM approach chosen to derive the FAV for copper in the effluent plume. Furthermore, the validity of the FAV threshold for copper is not substantiated by toxicity data from published sources. Published acute toxicity studies on fish and invertebrates indicate numerous cases where copper was toxic below the calculated FAV of 0.0295 mg/L.

The Agency requires this information to understand the effects to fish and fish habitat from copper, which is associated with hardness values.

Specific Question/ Request for Information:

A. Provide a scientific basis and rationale for using the chosen BLM approach to calculate the FAV for copper and substantiate the validity of the calculated FAV for protection of aquatic biota and fish using data from published sources;

B. Revise the guideline for copper using a more conservative assumption for the degree of water hardness reflective of background conditions, as explained in the Context and Rationale column. In your response, take into consideration FFH(2)-24a;

C. Taking responses from Questions A and B into consideration, update the assessment of changes to water quality and revise the assessment of effects to fish and fish habitat, including the significance determination;

D. Identify any additional measures that may be required to mitigate potential effects to fish and fish habitat based on answers to Questions A – C.

17.2 Prodigy Response

17.2.1 Response to CEAA Comment Part A

The biotic ligand model (BLM) is based on competition with the free copper ion and complexation of the free copper ion to predict acute and chronic toxicity thresholds. The BLM has been adopted and used by the US EPA to develop water quality criterion for copper since 2007 (US EPA 2007). Copper toxicity in water is dominated by its chemical form, typically inorganic copper and the free ion (Cu2+) are the most toxic forms although copper speciation in the water column is often dominated by copper-organic complexes that are generally not bioavailable (Stumm and Morgan 1996). Organisms have a finite number of "binding sites," to which copper can adhere and impart toxicity. Generally, an increase in cation concentrations (calcium, magnesium) increases competition for binding sites and these sites will preferentially bind with the more abundant calcium and magnesium than the fee copper ion there by reducing the potential for copper to effect the organism. It does not matter that the source of the cations are mine effluent as they will still elicit the same effect. In addition, anions present in mine effluent will increase the complexation of copper rendering it less bioavailable. Further, natural factors such as dissolved organic carbon (DOC) also serve to promote copper complexation. It would be unrealistic to base the BLM on baseline water quality as the influence of the additional ions to the water column will serve to modify potential copper toxicity and provide a better estimate of expected conditions. The purpose of an assessment of potential effects undertaken through an EA is to identify the potential effects to the environment and that means that modifiers of impact need to be considered whether they are mine associated or natural.

BLM References:

Di Toro, DM, H.E. Allen, H.L, Bergman, J.S. Meyer, P.R. Paquin and R.C. Santore. 2001. Biotic Ligand Model of the Acute Toxicity of Metals. 1. Technical Basis. Enviro. Toxicol. Chem. Oct; 20(10): 2383-2396.

McConaghie, J. and A. Matzke. 2016. Technical Support Document: An Evaluation to Derive Statewide Copper Criteria using the Biotic Ligand Model. State of Oregon, Department of Environmental Quality, Environmental Solutions Division WQ Standards & Assessement.

Niyogi, S. and C.M. Wood. 2004. Biotic Ligand Model, a Flexible Tool for Developing Site-Specific Water Quality Guidelines for Metals. Environ. Sci. Technol. 38(23): 6177-6192.

United States Environmental Protection Agency. 2007. Aquatic Life Ambient Freshwater Quality Criteria – Copper. EPA-822-R-07-001. U.S. Environmental Protection Agency, Washington, D.C.

United States Environmental Protection Agency. 2016. Draft Technical Support Document: Recommended Estimates for Missing Water Quality Parameters for Application in EPA's Biotic Ligand Model. Office of Water, EPA 820-R-106, March 2016.

17.2.2 Response to CEAA Comment Part B

With respect to the copper benchmark used in the EA, it is important to note that it was based on the chronic continuous criterion (CCC) which is the lowest value predicted by the BLM and presents a concentration that will protect for chronic (long term) effects. The copper guideline calculated by the BLM was for month 5, year 10 of mine operations (the period of highest copper concentrations in Otto Lake under average precipitation conditions) representing a worse case condition. It is expected that the BLM guideline value is higher than the CCME water quality guideline because of the high background DOC and the contribution of additional cations which will compete with the copper ion.

17.2.3 Response to CEAA Comment Parts C to D

The mine will be required undertake MMER to test effluent quality for acute and sub-lethal toxicity and should these test results indicate the potential for toxicity within Otto Lake, an investigation of cause will be implemented and toxicity sampling within the lake could be implemented to confirm effects and the need for any further mitigation. However, based on the assessment conducted, effects associated with copper concentrations are not expected to occur.

Stumm, W, Morgan, JJ. 1996. Aquatic Chemistry, Third Edition. John Wiley and Sons Inc. New York, NY, USA. pp 1022.

US EPA 2007 Aquatic Life ambient freshwater quality criteria – Copper. EPA-822-R-07-001.

18.0 CEAA-FD31 / FFH(2)-20: ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – EFFECTS LEVEL AND EXPOSURE PATHWAYS

Reference to EIS:

- Chapter 7, Sections 7.3.5.5.1.3 and 7.3.5.8
- Table 7-92 and Table 7-93
- IR-1 response Appendix T

18.1 Context and Information Required for a Complete Response

In Chapter 7, Table 7-93, the proponent has assigned a medium magnitude of effect for copper in sediments in Otto and Herman Lakes. This categorization is based on how the magnitude of effect levels were defined for low, medium and high effects in Table 7-92 of the same chapter.

However, the effects level definitions for magnitude of effect for sediment, particularly for copper (Cu) does not allow for the assignment of a high magnitude of effect, regardless of how much higher the predicted concentration becomes in the sediment.

In Otto Lake, the predicted increase in copper in sediment is 14 times its background level and 5 times higher than the Severe Effects Level (SEL). It would therefore be better categorized as a high effect, but the current definitions, as worded, cannot adequately characterize the potential magnitude of effect of this predicted increase in Cu.

Furthermore, it is stated in the response to Question D of FFH(1)-20 that "none of the available information suggests lakes in the LSA are used for swimming or wading, and therefore this (sediment) pathway was considered to be incomplete". The same response further states that "the number of uses in the PSA or LSA is few, their density is low, and there is often little or no commentary in the reports about the importance of the lands/resources in the PSA or LSA".

However, Appendix T of the IR-1 response submitted to the Agency in January 2018 states that Herman Lake, Otto Lake and Goudreau Lake "have been identified as having reasonable likelihood of use by Indigenous people/the public as an aqueous highway." It is possible that these users may come in contact with lake sediment (including suspended sediment, shoreline intertidal sediment and wetlands, beach sediment) during harvesting and recreational activities such as fishing, swimming, and beachcombing etc. As a result, the elimination of this pathway is not justified, particularly as sediments have been reported to have an increased concentration of copper in Otto Lake and Herman Lakes.

Therefore, an evaluation of exposure due to sediments on receptors via dermal contact, incidental ingestion, and inhalation is required in the human health risk assessment (HHRA), and the assessment of effects on the health of Indigenous peoples should be updated accordingly.

Specific Question/ Request for Information:

A. Revise the effects level definitions for the magnitude of effect for "Stream and Lake Sediments" in order to be able to appropriately characterize the magnitude of effect from the predicted increase in copper concentrations in Otto and Herman lake sediments;

B. Revise the magnitude of "Stream and Lake Sediments" from medium to high for copper in sediments of Otto and Herman Lakes, or provide a rationale for why that would not be necessary;

C. Include potential exposure pathways via dermal contact, incidental ingestion, and inhalation of sediments as Indigenous residents and recreational users may come into contact with lake sediment, suspended sediment, shoreline intertidal sediment, wetlands and beach sediment, etc.;

D. Update the effects assessment on the health of Indigenous peoples taking the response from Question C into consideration;

E. Provide mitigation measures to minimize the effect on the health of Indigenous peoples taking responses from Question C and D into account. If consequential effects occur to the current use of lands and resources for traditional purposes, (from restricted or loss of access, for example) provide an assessment of the related effects and necessary mitigation;

F. Provide residual effects, if any, after the mitigation measures have been implemented.

G. Where necessary, reassess the significance determination for residual effects on human health (and current use of lands and resources for traditional purposes).

18.2 Prodigy Response

18.2.1 Response to CEAA Comment Part A

Sediment quality criteria for assessing the magnitude of an effect, as provided in Table 7-92, are structured relative to potential changes in threshold categories (LEL and SEL), and not to absolute values. Using the Table 7-92 criteria, in order to be considered a high level magnitude effect, a sediment concentration for a given parameter would by definition have to change from a baseline condition of less than an LEL concentration (the lowest threshold category) to concentration which is greater than a SEL (the highest threshold category). The set of magnitude criteria therefore does allow for the assignment of a "high" magnitude effect.

However, assignment of a high level magnitude effect can only occur if the parameter under consideration is present at a concentration of less than the applicable LEL in the baseline condition. For a parameter such as copper, where the baseline concentration exceeds the LEL, the assignment of a high magnitude effect is not possible with the current criteria, irrespective of the change in parameter concentration.

If the criteria were to be changed to allow for a broader range of outcomes relative to a "high" level assignment magnitude, the only method of doing so would be to consider adding some form of a multiplier criterion to either the baseline condition, or to the SEL criterion. Adding a multiplier to the baseline condition is intuitively unattractive for two reasons. First, one could in theory have a situation where the baseline condition concentration is well below the LEL, such that even with a large multiplier the resulting concentration could still be well within the LEL (or below the SEL), but would be assigned a high magnitude rating, which would be inappropriate. Second, there is no scientific basis for assigning a specific multiplier to the baseline condition.

Adding a multiplier to the SEL criterion would avoid the first concern described above in connection with the baseline condition, but would still face the difficulty of providing scientific merit, without seeming to be arbitrary. For example, one could apply a 2, 3, 5 or 10 times multiplier criterion to the SEL value, but the justification for any such selection would be difficult to provide.

Another possible approach, or consideration, would be to look to other jurisdictions for supportable criteria. In the case of copper, the Ontario sediment quality guideline values of 16 mg/kg and 110 mg/kg for LEL and SEL criteria, respectively, are dated (1992). A more recent sediment quality guideline of 197 mg/kg is available from the federal government (guideline date 1997). The concern with applying the Canadian Sediment Quality Guideline, as magnitude criteria is that it present a single threshold, which makes distinctions between categories of low, medium and high magnitude difficult. Mixing and matching provincial and federal criteria becomes overly complicated, and is also unattractive.

We are therefore inclined, to keep the existing criteria, but to provide more contextual discussion, as per the response to request B.

18.2.2 Response to CEAA Comment Part B

While retaining a determination of medium magnitude for copper in Otto Lake and Herman Lake sediments, we recognize that the predicted sediment quality values of 514 mg/kg for Otto Lake and 260 mg/kg for Herman Lake are substantially above the provincial SEL value of 110 mg/kg, as well as being above the federal value of 197 mg/kg. In considering these values it is important to stress two aspects: first that the predicted values are regarded as conservative, and second that these predicted values apply only to the top I cm of the sediment column.

Baseline sediment concentrations were determined through sampling with a Petite ponar dredge. Typically such a device will collect sediment from the upper approximately 5 to 10 cm of the sediment column. In order to make a fair comparison between baseline and predicted conditions, as will occur during sediment monitoring, the predicted sediment values shown in Table 7-91 should more appropriately be considered as the average of 1 part upper sediment quality and 4 to 9 parts baseline sediment quality. Using this logic, the predicted lake sediment concentrations for copper would be from 93.2 to 146.6 mg/kg for Otto Lake, and from 59.3 to 81.6 mg/kg for Herman Lake. These are the values that would be expected to be obtained during monitoring towards the end of the mine operations period.

The upper end of the predicted sediment copper concentration range for Otto Lake exceeds the provincial SEL value of 110 mg/kg, but is less than the federal value of 197 mg/kg. The predicted range for Herman Lake is below the SEL and the federal value. Therefore, by taking a more realistic view of sediment accumulation and sampling dynamics, the magnitude of the predicted sediment change is unlikely to cause an adverse environmental effect. Moreover, when other assessment criteria are taken into account (geographic extent, timing and duration, frequency, degree of irreversibility, and ecological context), the overall effect to sediments in Otto and Herman Lakes is still considered to be not significant.

Sediment concentrations during mine operations will be monitored, along with the biological environment. If it should turn out that sediment metal concentrations (such as for copper) appear to be becoming problematic, then adaptive management would be required on the part of Prodigy. This adaptive management could include the implementation of additional water treatment of the WQCP, as discussed in the response to CEAA-FD12.

18.2.3 Response to CEAA Comment Part C

As described in Appendix T, the recreational use of waterways is in the context of Transport Canada regulations and the use of waterways for transportation purposes. The “recreational” use indicated refers to transportation-related uses such as boating and kayaking. There are no known other recreational uses of these waterways wherein people would be expected to come into contact with sediment (e.g. beachcombing, swimming, wading, etc.) as provided in the Proponent’s response to FFH(1)-20 (Part D):

Regarding the sediment exposure pathway itself, Chapter 7 of the EIS, Section 7.7.2.5.1.1 (Summary of Traditional Hunting Uses), Section 7.7.2.5.1.2 (Summary of Fishing Uses), 7.7.2.5.1.3 (Summary of Trapping Uses), and 7.7.2.5.1.4 (Summary of Gathering Uses) describe the traditional uses of indigenous groups that may use the PSA, LSA and RSA. Additional detail is provided in the responses to IE(1)-B07, IE(1)-B10 and IE(1)-B11. As documented in the EIS and further elaborated upon in the responses to various IRs, the TKS/TLUS and other reports provided by Aboriginal groups indicate that while there are some traditional uses of lands and resources in the PSA, LSA and RSA, the uses of several groups are more dense in the area beyond the RSA. Compared to the broader regional area, with respect to various traditional uses of lands and resources, the number of uses in the PSA or LSA is few, their density is low, and there is often little or no commentary in the reports about the importance of the lands/resources in the PSA or LSA. Those groups that currently use the PSA or LSA (MCFN and MNO) also reported uses in the RSA or beyond. There are no permanent settlements or permanent residences occupied by Indigenous people in the PSA, LSA or RSA.

None of the available information suggests lakes in the LSA are used for swimming or wading, and therefore this pathway was considered to be incomplete.

Therefore, no updates to the HHRA (TSD 14) are required.

However, in order to address the Reviewer's concern, the potential for people to come into contact with sediment during low-intensity uses is described further in the response to Part D to this comment.

18.2.4 Response to CEAA Comment Part D

Although there are no known recreational uses of waterways wherein people would be expected to come into contact with sediment, a "recreational low-contact" scenario (i.e., as per Health Canada, 2017) was considered to address the concern:

Predicted baseline sediment concentrations were provided in Table 7-89 in Chapter 7 of the EIS, and predicted operations phase sediment concentrations were provided in Table 7-91. These tables compared the baseline and predicted sediment concentrations to the Provincial Sediment Quality Guidelines (PSQG). The PSQGs were derived based upon the protection of sediment-dwelling ecological organisms and are not intended to protect human health. Therefore, in order to determine whether these concentrations may be a concern for human health, guidance from Health Canada regarding sediment exposure was considered. In March 2017, Health Canada issued its Supplemental Guidance on Human Health Risk Assessment of Contaminated Sediments: Direct Contact Pathway (Health Canada, 2017), which states that the direct contact pathway can be assessed by comparing sediment concentrations to soil quality guidelines that are protective of human direct contact. Therefore, the CCME soil quality guidelines (CCME, 2018) for the protection of human health (SQGHH) considering a residential/parkland land use were used for comparison purposes (alternate guidelines were used in their absence as indicated with a footnote (a) or (b); phosphorus was not included given that it is not directly relevant for human health) as shown in the table below:

Chemical	CCME SQG_{HH}	Otto Lake		Herman Lake	
		Baseline	Predicted	Baseline	Predicted
Phosphorus	Not relevant	1145	2107	514	391
Arsenic	12	6.8	19	2.8	7.2

Cadmium	14	1.27	8.0	0.45	0.9
Chromium	220	10.9	10	13.9	7.3
Copper	1100	39.8	574	37.0	260
Iron	11,000 (a)	5472	6417	9144	19964
Lead	140	25.2	26	6.6	3.0
Manganese	360 (a)	130	96	255	561
Mercury	6.6	0.15	0.27	0.06	0.057
Nickel	200	9.9	15	12.4	11
Zinc	5600 (b)	87	80	45	29

Notes:
All concentrations shown in units of milligrams per kilogram (mg/kg).
Predicted concentration includes baseline concentration (i.e., for the purposes of the calculations completed below, the "Project Case" is calculated as Predicted minus Baseline).
Bold and Shaded – Exceeds CCME SQGHH

a) CCME does not provide a health-based soil contact guideline; US EPA provides a Regional Screening Level for residential uses (U.S. EPA, 2018).
b) CCME does not provide a health-based soil contact guideline; MOE (2016) provides a human health direct contact component value (S1 Risk) for residential/parkland/institutional land uses.

Predicted operations phase sediment concentrations of arsenic at Otto Lake and iron and manganese at Herman Lake were greater than their respective health-based direct contact screening values. Given that direct contact would not be expected given that public use has been characterized as boating and not swimming, using direct contact guidelines to identify the chemicals with the potential for an increased health risk is considered to be protective of incidental contact with suspended sediments.

Health Canada (Health Canada, 2017) provides guidance on quantifying sediment ingestion and dermal contact under various exposure scenarios ranging from low-to-high intensities (see Table 1 in Health Canada, 2017). Given the potential uses by the generic public of these waterways are considered to be boating, direct contact with exposed sediment (e.g. beach-type scenario) is unlikely. Instead, the exposure scenario associated near-shore sediment (shallow) exposure (as per Table 5 in Health Canada, 2017) with low intensity activities (listed as boating/kayaking, deep water swimming, etc.) was considered which would include brief incidental contact with shoreline and suspended sediments. Given that sediment would not be expected to be exposed, generation of dusts and subsequent inhalation were considered to be negligible and not included in the evaluation.

The sediment ingestion rate for low intensity activities (i.e., suspended sediment contact) is shown in Table 4 of the sediment guidance (Health Canada, 2017) and is 7.7 mg/hour for all age groups.

As shown in Table 5.1-1 of Appendix B5 of TSD14 (i.e., the HHRA), recreational users were considered for an exposure frequency of 180 d/yr and an exposure duration of 20 years (i.e., the life of the Project). It was considered reasonable to assume up to 1 hour/day of exposure while swimming; given that site-specific information related to swimming frequency is not available, it was assumed that swimming could occur for three warmest months of the year (e.g. June, July, August; equivalent to 90 days). This is likely an overestimate but was assumed for illustrative purposes.

The following equation from Health Canada (2017) was used to assess the sediment ingestion pathway:

Sediment Ingestion

$$\text{Dose (mg/kg bw/day)} = (C_S \times \text{SedIR} \times RAF_{Oral} \times D_1 \times D_2 \times D_3 \times D_4 \times CF)/(BW \times LE)$$

Where:
C_S = concentration of contaminant in sediment (mg/kg)
SedIR = receptor sediment ingestion rate (mg/hr)
RAF_{Oral} = relative absorption factor from the gastrointestinal tract (unitless)
D_1 = hours per day
D_2 = days per week exposed/7 days
D_3 = weeks per year exposed/52 weeks
D_4 = total years exposed to site (to be employed for assessment of carcinogens only)
CF = conversion factor of 1 kg/1 000 000 mg
BW = body weight (kg)
LE = life expectancy (years) (to be employed for assessment of carcinogens only)

Using these equations and the assumptions outlined above, exposure doses and risk estimates (i.e., HQs and ILCRs) were calculated for arsenic, iron and manganese. Given that iron was not assessed in the HHRA (additional discussion is provided below), the TRV used in the derivation of the U.S. EPA RSL for iron (i.e., 0.7 mg/kg-day from the Provisional Peer-Reviewed Toxicity Values, U.S. EPA 2018) was used in order to calculate the HQs shown below. The relative contribution of the sediment pathway to the risk estimates provided in the HHRA for the multi-media assessment is provided in the tables below.

Exposure Estimates for Recreational Users due to Sediment Contact

COPC	Base Case	Project Case	Base + Project Case
Exposure Doses (mg/kg-day)			
Arsenic (non-carcinogenic)	7.8E-07	1.4E-06	2.2E-06
Arsenic (carcinogenic)	Infant: 4.9E-09 Toddler: 2.2E-08 Child: 1.7E-08 Teen: 1.1E-08	Infant: 8.8E-09 Toddler: 3.9E-08 Child: 3.1E-08 Teen: 1.9E-08	Infant: 1.4E-08 Toddler: 6.1E-08 Child: 4.8E-08 Teen: 3.0E-08
Iron (non-carcinogenic)	5.9E-05	7.0E-05	1.3E-04
Manganese (non-carcinogenic)	2.1E-03	2.5E-03	4.6E-03

Risk Estimates for Recreational Users due to Sediment Contact

COPC	Base Case	Project Case	Base + Project Case
Hazard Quotients (HQs)			
Arsenic	0.0026	0.0047	0.0073
Iron	0.000084	0.0001	0.00018
Manganese	0.016	0.018	0.034
Incremental Lifetime Cancer Risks (ILCRs)			
Arsenic	9.9E-08	1.8E-07	2.8E-07

It is noted that sediment concentrations are provided for Otto Lake, which was assessed in the HHRA considering changes to water quality during the operations phase, and Herman Lake, which was not assessed in the HHRA given that changes to water quality in Otto Lake represented a bounding scenario for the HHRA, as described in Section 5.2.3:

> *Concentrations of chemicals in surface water were predicted by SLR as described in the Surface Water and Sediment Quality TSD. Changes to water quality were predicted for*

Otto Lake and Herman Lake during the operations phase, and for Goudreau Lake during the post-closure phase. During operations, seepages and discharges from the Project will be directed to Otto Lake, which is located within the Project study area, and which drains to Herman Lake located in the LSA. Given that higher concentrations were predicted for Otto Lake, the predictions in Otto Lake were used in the HHRA to conservatively represent changes to water quality in the LSA during operations. Predictions were provided considering three precipitation scenarios: wet, dry and average precipitation conditions. The most conservative concentrations predicted from the three scenarios were selected for assessment in the HHRA.

Therefore, the influence of the sediment contact pathway considering sediment quality data for Otto Lake and Herman Lake were added to the predicted multi-media assessment risk estimates from the HHRA for Otto Lake as shown in the table below for arsenic and manganese.

Table 7.2-1: Hazard Quotients for the Multi-Pathway Assessment

COPC	Hazard Quotients		
	Base Case	Project Case	Base + Project Case
Arsenic (original HHRA)	0.2	1	1
Arsenic (sediment only)	0.0026	0.0047	0.0073
Arsenic (total)	0.2	1	1
Manganese (original HHRA)	0.5	0.9	1
Manganese (sediment only)	0.016	0.018	0.034
Manganese (total)	0.5	0.9	1

Note: Bold font indicates an estimated hazard quotient greater than the target of 1.

None of the Project Case HQs for total exposure including the sediment pathway were affected by the inclusion of the sediment pathway. Therefore, the sediment pathway is not considered to be a concern with respect to human health for arsenic and manganese.

Iron was not shown in the table above because it was not retained as a COPC in the multi-media assessment in the HHRA; as such, a comparison to the HHRA multi-media HQs could not be completed for iron. As described in Section 4.3, chemicals were identified if their predicted concentration was both greater than a health-based guideline and greater than its baseline concentration + 10% (to account for spatial and temporal variability in environmental concentrations, variability in field sampling and laboratory analysis and the conservatism applied in the predictive modeling). Iron was considered with respect to soil quality; however, as shown Attachment 2, Tables 7 and 8, the changes in soil concentrations were predicted to be within 10% of background and as such iron was not retained as a COPC. Similarly, iron was considered with respect to surface water quality; as shown in Attachment 2, Tables 9 through 12, iron concentrations were less than its screening guideline. Therefore, risks to due exposure to iron from these sources were considered to be acceptable.

The HQs due to iron are much less than the target HQ of 1 (i.e., the Project case HQ is 0.0001), indicating negligible risks. Therefore, the sediment pathway is not considered to be a potential concern with respect to human health.

18.2.5 Response to CEAA Comment Part E

Given that no changes were required to the HHRA, and the calculation completed in Part D did not result in an unacceptable risk to human health, no changes to the mitigation measures proposed for the project are required.

18.2.6 Response to CEAA Comment Part F

A residual effects assessment was not required.

18.2.7 Response to CEAA Comment Part G

A re-assessment of the significance determination was not required.

CCME (Canadian Council of Ministers of the Environment). 2018. Canadian Environmental Quality Guidelines Summary Table tool. Available online at: http://st-ts.ccme.ca/en/index.html. Accessed May 29, 2018.

Health Canada. 2017. Supplemental Guidance on Human Health Risk Assessment of Contaminated Sediments: Direct Contact Pathway. Federal Contaminated Site Risk Assessment in Canada. March, 2017.

MOE. 2011. Rationale for the Development of Soil and Groundwater Standards for use at Contaminated Sites in Ontario. PIBs #7386e01. MOE, Standards Development Branch.

U.S. EPA (United States Environmental Protection Agency). 2006. Provisional Peer Reviewed Toxicity Values for Iron and Compounds. Derivation of Subchronic and Chronic Oral RfDs. Superfund Health Risk Technical Support Center, National Center for Environmental Assessment, Office of Research and Development, U.S. Environmental Protection Agency, Cincinnati, OH. 9-11-2006.

U.S. EPA. 2018. Regional Screening Levels – Generic Tables, May 2018. Available at: https://www.epa.gov/risk/regional-screening-levels-rsls-generic-tables. Accessed: May 29, 2018.

19.0 CEAA-FD44 / FFH(2)-32: FISH AND FISH HABITAT / CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES – BROOK TROUT

Reference to EIS:

- Chapter 4, Section 4.4.5.1.1; Section 4.3;
- TSD 15 Section 3.2.4.1 Desktop Analysis;
- IR-1 Response Appendix D;
- Chapter 7, Table 7-107.

19.1 Context and Information Required for a Complete Response

Chapter 7, Table 7-107 mentions that 30.3% of watercourse area in the LSA and 12.5% of watercourse area in the RSA will be removed due to the Project. The Agency notes that these percentages are the same as the percentages provided in the revised response to FFH(1)-32 for reduction in flows that extend to "Summit Lake and corresponds to a 30.3 and 12.5% loss of flow at the LSA and RSA boundaries, respectively". A reference to these percentages for flow changes at the LSA and RSA boundaries were not provided in the revised response to FFH(1)-32, however, the Agency understands that such loss of flow is possible due to the loss of headwater streams that would in part result in a loss of groundwater to this system. Groundwater upwellings support Brook trout spawning; however there is uncertainty whether brook trout are present beyond the LSA and within the RSA.

The response to FFH(1)-32 states that "Brook trout are not known to spawn within the LSA", but "[…]have been reported many kilometers (12) downstream of the site". Based on TSD 15, Figure 3-2, it is understood that fish sampling to identify the presence of brook trout was not conducted outside of the LSA. The response to FFH(1)-32 also states: "it is expected that brook trout have not been found upstream of Speight Lake due to the rail line, which crosses the creek in four places downstream of Spring Lake and a road that crosses the creek just downstream of Summit Lake. Rail lines often have blocked or hanging culverts, which prevent fish access upstream." However, this was not verified by field studies.

Further, it is not clear whether other sources of information were obtained from provincial fisheries managers, non-government organizations, or Indigenous communities to verify the presence or absence of brook trout (also referred to as speckled trout) in the LSA or RSA.

This information is important for the Agency to understand the potential effects on brook trout and their habitat from the changes caused by the Project.

Specific Question/ Request for Information:

A. Identify any linkage that exists between the percentages of area of watercourse removal in Chapter 7, Table 7-107 and the percentage of reduction in flows at the LSA and RSA boundaries;

B. Clarify whether any fisheries studies were conducted downstream of McVeigh Creek and outside of the LSA boundary to identify the presence of brook trout, or to validate whether the rail line crossings are barriers to fish movement. If these studies were not conducted, provide further evidence (e.g. information from provincial fisheries managers, non-governmental organizations, or Indigenous knowledge) to support the conclusion that brook trout are absent from the area affected by the Project;

C. If evidence from Question B cannot be provided, update the assessment of effects to fish and fish habitat from the loss of flow (30.3% at the LSA boundary and 12.5% at the RSA boundary) to include brook trout spawning habitat;

D. Provide mitigation measures to minimize the effects on fish and fish habitat taking the response from Question C into account;

E. Provide residual effects, if any, after the mitigation measures have been implemented;

F. Reassess the significance determination for fish and fish habitat, if necessary, taking responses from Questions A to E into account;

G. Describe 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.

19.2 Prodigy Response

19.2.1 Response to CEAA Comment Part A

The values provided in Chapter 7, Table 7-107 represent the predicted waterbody and watercourse area losses, and are not directly representative of predicted flow losses. Flow losses are calculated as a percent reduction in watershed area as per Chapter 7, Table 7-62. This is a consistent method of estimating an overall surface flow reduction as the surface runoff flows are generally proportional to the drainage area. With respect to the Spring Lake / McVeigh Creek catchment, there will be an approximate 66% reduction in catchment area. This can be inferred as an approximately 66% flow reduction for the system at the LSA Boundary. Other system flow reduction, based on the catchment reductions would decrease considerably at the RSA (outlet from Dipneedle Lake).

The reviewers comment context and rational also specifically refers to the potential for the project to affect groundwater upwellings and dependant Brook Trout located downstream of the LSA and RSA. The effect of the project on groundwater is relatively confined to the LSA. As shown in Figure 7-3 of Chapter 7 of the EIS and Figures 6-6a through 6-6c of TSD-4, the simulated groundwater drawdown at end of mine life only propagates to a short distance downstream of Spring Lake, and as such will have no effect on groundwater upwelling habitat if present further downstream in McVeigh Creek, or downstream of the LSA.

19.2.2 Response to CEAA Comment Part B

No specific fish collections were completed downstream of the LSA as a part of the project investigation, and the rail crossing was not assessed for fish passage.

A considerable amount of fishing effort has however, been conducted in the McVeigh Creek catchment PDA and LSA to establish the resident fish community, with the conclusion that Brook Trout are not present with the LSA. This determination is strengthened and expanded upon with current Indigenous knowledge. Aboriginal groups did not identify brook trout fishing uses or habitat in the PSA, LSA, or RSA in their TKS/TLUS and other reports, during engagement activities, or in their September 2017 comments to CEAA on the EIS. This understanding is based on ongoing engagement with Aboriginal groups (beginning as early as 2012 for some groups), which informed the 2017 EIS submission to CEAA.

The combined scientific and Traditional knowledge base reinforces our conclusion that although Brook Trout are found downstream of the project, they are not present in the PSA, LSA or RSA and will not be affected by the project.

19.2.3 Response to CEAA Comment Parts C to G

As Brook Trout are not considered present in the PSA, LSA or RSA (as per response to Part B) and effects to groundwater upwelling are not expected to occur outside the LSA, there is no need to update the effects assessment, mitigation measure, residual effects, significance determination or follow up monitoring program for this species.

20.0 CEAA-FD2(A1)-11 (39.0) / IE(2)-19: ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – DUST FROM WIND EROSION

Reference to EIS:

- TSD 9, Section 5.2 and Appendix 3.III;
- Section 6.5.3.6;
- Section 7.3.4.5.1.3

20.1 Context and Information Required for a Complete Response

Prodigy's response to IE(1)-19 D focuses on compliance and enforcement, and does not provide either a quantitative basis for exclusion of wind erosion from tailings as a source of dust, or a substantive justification for exclusion of dust from wind erosion from the assessment of the potential effects on human health. As mentioned in the context to comment IE(1)-19, the rationale for exclusion of dust from wind erosion from the air quality assessment given in TSD 9, Appendix 3.III, Section 2.2 ("due to the moisture content and the size of the material being stockpiled (i.e., mine rock and ore prior to primary crushing), wind erosion emissions will not be significant"), is not sufficient, and it is not clarified in this response.

Prodigy's response to IE(1)-19 E refers the reader to TSD 9, Section 5.2 for a description of mitigation measures. The only relevant mitigation measure found in this section is that "mine rock stockpiles will be developed in stages and progressively closed off (i.e., capped) in order to minimize exposed surfaces to wind erosion." Chapter 6, Section 6.5.3.6 indicates that "progressive rehabilitation will be conducted to the extent possible" in the operations phase, but there is no indication in chapters 6 or 7 on when this rehabilitation could be started, and other references in these chapters discuss rehabilitation and revegetation in the closure and post-closure phases. It is also unclear how dust from wind erosion of tailings and at mine rock stockpiles will be reduced during the operations phase before progressive rehabilitation begins. Chapter 7, Section 7.3.4.5.1.3 states that "during operations, sources of dust may include […] wind erosion of the stockpiles, TMF and MRMF. […] Dust will be managed by watering and the progressive re-vegetation of stockpiles, TMF and MRMF", but it is unclear what "watering" entails and how it will be used.

Specific Question/ Request for Information:

A. Include dust from wind erosion into the air quality assessment and into the assessment of effects on human health, or provide a quantitative justification for its exclusion;

B. Provide additional details on the timing of the progressive rehabilitation of the TMF, MRMF and other stockpiles. Where there is a period of time between the formation of any of these components and the beginning of the progressive rehabilitation, describe any other mitigation measures that will be implemented to avoid or reduce dust from wind erosion. In particular, provide additional details on the watering of the TMF, MRMF and stockpiles that is mentioned in Section 7.3.4.5.1.3 of the EIS;

C. Where necessary, describe any effects that may result from exposure to the dust from wind erosion; update mitigation measures to reduce these effects; describe residual effects after mitigation; propose any follow-up programs necessary to verify the efficacy of the mitigation measures or the EA predictions;

D. As required in HE(2)-18, include any new receptor locations identified in response to IE(2)-01 in your response to IE(2)-19.

20.2 Prodigy Response

20.2.1 Response to CEAA Comment Part A

Please see Golder Technical memorandum entitled "Assessment of Wind Erosion Associated with the Argonaut Gold Magino Mine Project" for a quantitative justification for exclusion of wind erosion from the air quality assessment. This document is included as Appendix 2.

20.2.2 Response to CEAA Comment Part B

It is intended that as soon as permanent external perimeter slopes and surfaces of the MRMF are built, progressive rehabilitation will begin. This is planned to occur in year 1 when trials and tests will begin on the South East face of the MRMF. As the external perimeter slopes expand, additional areas will be re-vegetated. This will occur in years 2-14 of operations.

Progressive rehabilitation on the TMF slopes can begin when the permanent Stage 4 slopes are being built. This is currently planned to occur in years 9-17.

Although wind erosion from stockpiles is not anticipated to be significant, the mine equipment fleet will include 2 water trucks. These water trucks will be equipped with sprinklers and water cannons to distribute water over a wide area. The water trucks will be equipped with GPS based tracking technology to record their activity and to be able demonstrate the delivery of water to various destinations. Water suitable for discharge into the environment will be applied to the TMF, MRMF and material handling areas as needed.

20.2.3 Response to CEAA Comment Part C

As outlined in the response to part A, wind erosion of stockpiles is anticipated to be insignificant, and therefore the items requested in this part of the IR are not necessary.

20.2.4 Response to CEAA Comment Part D

As outlined in the response to IE(2)-01, the uses identified by CEAA in the 'context and rationale' for IE(2)-01 are not "places where people are most likely to spend an extended period of time engaged in a particular activity", and therefore are not defined as 'receptors' (as defined in the response) in the EIS, As such, no new receptor locations were identified in response to IE(2)-01 and no updates to the assessments are required.

21.0 CEAA-FD2(A1)-13 (41.0) / CEAA-FD2(A1)-14 (42.0) / IE(2)-22: ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – NOISE MODELLING

Reference to EIS:

- TSD 11

21.1 Context and Information Required for a Complete Response

While the 5 dB adjustment for tonality described in the proponent's response to IE(1)-21 B is consistent with Appendix B of Health Canada's noise guidance, it is unclear how this adjustment was applied, as no details are provided in TSD 11 or in Chapter 7 of the EIS. This information is needed to ensure that effects to health and to current use of lands and resources are based on well-developed models for noise.

Comment IE(1)-22 C required that TSD 11, Section 5.2.2, Figure 5.2.2-1, be updated to include identifying features such as lakes, along with any new receptors?. This updated map was not provided in the response to IR-1. The existing map, as presented, is difficult to follow since identifying features such as lakes are missing.

While the Agency acknowledges Prodigy's commitment to forming an Environmental Monitoring Committee, the responses to IE(1)-22 E, F, and G do not allow the Agency to understand viable options for additional mitigation measures or follow-up programs that could be used, or proposed processes to proactively notify Indigenous communities of anticipated exceedances of noise limits, along with any proposed noise complaint protocols. It is unclear whether these mechanisms have been discussed with Indigenous groups, and if final details can be determined at a later date through the proposed Environmental Monitoring Committee.

Prodigy's response to IE(1)-07 (Appendix 1, page 5) indicates land use at Goudreau Lake by MCFN for hunting and fishing; these areas appear to show potential exceedances of NPC-300 limits according to TSD 11, Figure 5.2.2-1, along with other areas to the east and the south of the PSA. As Prodigy responds to comment IE(2)-01, new receptors may be found, particularly to the east or the south of the PSA.

Since the proponent indicated in its response to IE(1)-22 B that mitigation measures for noise are inherent in the design of the site, it is unclear to the Agency what additional mitigation measures could be implemented by Prodigy if exceedances of NPC-300 limits were to occur in locations of land use.

Specific Question/ Request for Information:

A. Provide details of how the 5 dB adjustment was applied and incorporated into the noise assessment. If this information is clearly detailed in the EIS, provide a reference to the document and section;

B. Update TSD 11, Section 5.2.2, Figure 5.2.2-1 to include identifying features such as lakes, and to include the locations of any new receptors that are identified through engagement and traditional knowledge in the course of addressing Agency IR IE(2)-01, and any updates to the model that stem from question A;

C. Outline a follow-up program to ensure that noise levels in all areas where current use of lands and resources for traditional purposes may occur will remain below MOECC NPC-300 noise limits;

D. Describe additional mitigation measures that can be implemented if noise levels in areas where land use may continue during the Project are found to be above MOECC NPC-300 noise limits;

E. Outline and describe the proposed processes to proactively notify Indigenous communities of anticipated exceedances of noise limits, along with any proposed noise complaint protocols;

F. Demonstrate that Indigenous groups are satisfied with the proposed measures to address noise exceedances, and/or mechanisms described for the proposed Environmental Monitoring Committee;

G. As required in HE(2)-18, include any new receptor locations identified in response to IE(2)-01 in your response to IE(2)-22.

21.2 Prodigy Response

21.2.1 Response to CEAA Comment Part A

As noted in the previous response, the noise assessment did review tonal noise sources. During the assessment the electrical substation was identified as a tonal noise source and as per MOECC noise guidelines a tonal correction of +5 dB was applied to the noise emissions from this source, in the noise prediction model. Furthermore, the predicted noise levels of the electrical substation at the receptors were found to be negligible at all frequencies (i.e., well below existing levels) which would result in any potential tones not being audible at the various receptors (as per Health Canada noise guidance).

21.2.2 Response to CEAA Comment Part B

An update to TSD 11 Figure 5.2.2-1 has been completed to include identifying features such as project buildings, roads and lakes. No new receptor locations were identified in response to IE(2)-01. The updated figure has been provided with this response as Appendix 3.

21.2.3 Response to CEAA Comment Part C

TSD 11 indicated that at all identified receptors, noise predictions are below the MOECC NPC-300 noise limits at all times.

Although there are areas above the exclusionary limits (45 dBA daytime / 40 dBA evening / nighttime) as indicated in Figure 5.2.2-1, the Aboriginal traditional land uses that have been identified within that area are not places where Aboriginal people are likely to spend an extended period of time engaged in a particular activity, and are not considered as receptors for the purpose of the noise assessment. Further, Prodigy has completed agreements with the two groups that have identified current uses within the areas above the exclusionary limit (MNO and MCFN). These agreements have adequately mitigated or accommodated potential effects on the respective Aboriginal groups' traditional uses, cultural activities or special places and potential impacts on Aboriginal rights. Additionally, these areas are not defined as receptors in NPC-300.

Prodigy has committed to the formation of an "Environmental Monitoring Committee" with Aboriginal Groups. Aboriginal groups that have been involved in the Project's environmental assessment process will be invited to participate on this Committee, which will review mitigation and monitoring plans, and review monitoring results (source: extract from Table 7-243, p. 7.513 of June 2017 EIS "Project Interactions with Traditional Use of Land and Resources'). Furthermore, as part of its mandate, the EMC will review mitigation and monitoring plans; while Prodigy has concluded that noise monitoring is not required, the

EMC will provide a forum to discuss noise if the members identify it as a concern during construction or operation.

21.2.4 Response to CEAA Comment Part D

As mentioned in the response to Comment C above, TSD 11 indicated that at all identified receptors, noise predictions are below the MOECC NPC-300 noise limits at all times.

Although there are areas above the exclusionary limits (45 dBA daytime / 40 dBA evening / nighttime) as indicated in Figure 5.2.2-1, the Aboriginal traditional land uses that have been identified within that area are not places where Aboriginal people are likely to spend an extended period of time engaged in a particular activity, and are not considered as receptors for the purpose of the noise assessment. Further, Prodigy has completed agreements with the two groups that have identified current uses within the areas above the exclusionary limit (MNO and MCFN). These agreements have adequately mitigated or accommodated potential effects on the respective Aboriginal groups' traditional uses, cultural activities or special places and potential impacts on Aboriginal. Additionally, these areas are not defined as receptors in NPC-300

Inherent noise mitigation measures were included in the noise assessment (TSD 11, Table 5.2.1-3). In the unlikely event that noise exceedances are observed at an identified receptor, a noise abatement plan could be implemented to reduce noise from the project. Potential add-on noise control measures will depend on the source(s) causing the exceedance, but may include:

- Barriers / Berms
- Silencers
- Acoustical lagging
- Administrative controls (e.g., equipment operation schedule)

21.2.5 Response to CEAA Comment Part E

As mentioned above in Comment D, in the event there is an exceedance at an identified receptor, as defined in MOECC NPC-300, a noise abatement plan could be implemented to reduce the noise from the project.

Appendix A (Commitments Table) of the IR#1 response package includes commitments related to noise monitoring during the permitting phase (p. 4, p. 9). Prodigy has not proposed specific processes to proactively notify Aboriginal groups of anticipated exceedances of noise limits during the construction or operation phases, nor has a specific noise complaint protocol been proposed with Aboriginal groups.

Aboriginal groups have reviewed the EIS, including the proposed Environmental Monitoring Committee (EMC) component, which is a life-of-mine commitment made at the request of potentially affected Aboriginal groups. Noise has not been identified by Aboriginal groups as a key concern or issue (although BFN commented on noise monitoring through their participation in the third-party review of the EIS).

In the 'Context and Rationale', CEAA refers to hunting and fishing by MCFN in the Goudreau Lake area. As noted above, although these area are areas above the exclusionary limits (45 dBA daytime / 40 dBA evening / nighttime) as indicated in Figure 5.2.2-1, Prodigy has negotiated bilateral agreements with MCFN and MNO that have accommodated potential effects of the Project on their traditional activities and Aboriginal rights.

Prodigy further notes that the mitigation measures related to effects on traditional uses / practices for each Aboriginal group are summarized in the response to IE(2)-06 'Potentially Impacted Aboriginal and Treaty

Rights & Mitigation for Each Indigenous Group'. Additional detail on potential effects and mitigation is also provided in various other IR#1 responses (see the concordance tables in Appendix 1: 'Traditional Uses in the PSA, LSA, and RSA and Concordance Tables' prepared and submitted March 20, 2018 to CEAA as part of the completeness review package).

21.2.6 Response to CEAA Comment Part F

The response to IE(2)-03 'Updated Assessment of the Potential Project-Related Effects & Applicable Mitigation Measures' provides additional detail on the validation of mitigation measures with Aboriginal groups. Selected excerpts are provided below; please refer to that response for further detail:

- "Aboriginal groups also emphasized as a priority the need for monitoring of project effects and the effectiveness of mitigation. As a result, the Environmental Monitoring Committee (EMC), comprised of representatives of all Aboriginal groups participating in the project, has been developed. The EMC will address follow-up of the accuracy of effects prediction and effectiveness of mitigation and will include communication and reporting back to the Aboriginal groups."
- "The Environmental Monitoring Committee will have responsibilities related to how traditional use and traditional knowledge information is conveyed, updated and used in the design and operation of the project; review of the EEM program and regulatory permit applications; review of monitoring programs; review of environmental management plans; development of the fish habitat Offsetting/Compensation Plan."
- "With respect to bilateral agreements with Aboriginal groups, agreements have been signed between Prodigy Gold and MCFN, MNO and RSMIN. Additionally, agreements are either under negotiation or contemplated with the other Aboriginal groups associated with the project. A variety of accommodation and/or compensation mechanisms has been provided through the entire suite of terms and conditions of the agreements. Very limited uses within the PSA were identified by Aboriginal groups to Prodigy, and are listed in the response to IE(02)-06 ''Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group'. Where a use that will be directly impacted by the project development could not be avoided, Prodigy has or will be compensating Aboriginal groups according to the terms and conditions of agreements with groups. Prodigy has completed agreements that have adequately mitigated or accommodated potential effects on the respective Aboriginal groups' traditional uses, cultural activities or special places and potential impacts on Aboriginal and/or Treaty rights. In particular, the environmental protection, cultural awareness, financial and implementation aspects of the agreements address specific effects. The specific details of these agreements remain confidential."

21.2.7 Response to CEAA Comment Part G

As outlined in the response to IE(2)-01, the uses identified by CEAA in the 'context and rationale' for IE(2)-01 are not "places where people are most likely to spend an extended period of time engaged in a particular activity", and therefore are not defined as 'receptors' (as defined in the response) in the EIS, As such, no new receptor locations were identified in response to IE(2)-01and no updates to the assessments are required.

22.0 CEAA-FD65 (19.0) / HE(2)-18: ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – AIR, NOISE, VIBRATION RECEPTOR LOCATIONS

Reference to EIS:

- TSD 9, Section 3.6.2
- TSD 11, Section 5.2.2
- TSD 12, Section 3.3.4
- TSD 14, Appendix A, Section 4.1

22.1 Context and Information Required for a Complete Response

While the Agency acknowledges Prodigy's response to HE(1)-18 and IE(1)-01 for excluding receptor points HHR007, HHR008, HHR009 and HHR011, it remains that additional receptors may be identified through Prodigy's response to IE(2)-01. These receptors need to be considered in the air quality, noise and vibration assessments, and any changes predicted in these assessments need to be carried through into assessments on human health and current use of lands and resources, in locations where land use by Indigenous peoples can be reasonably expected during any phase of the Project. Any mitigation measures and follow-up programs should be relevant to locations where land use may occur – for example, in IE(2)-22, it is noted that land use may be occurring in areas where noise levels are predicted to exceed MOECC NPC-300 limits. It is unclear to the Agency what measures could be implemented by Prodigy if exceedances of NPC-300 limits were to occur in locations of land use, or if increases in noise from background levels would result in a decrease in the quality of experience of users (For instance, is Prodigy contemplating proactive notification to Indigenous land users to ensure that they avoid receptor locations during times of exceedances? If so, provide details of the intended measures. A commitment to ongoing dialogue via the Environmental Monitoring Committee is not a proxy for clearly articulated measures).

The Agency requires this information to understand the potential effects of changes to the environment on Aboriginal Peoples health, physical and cultural heritage and the current use of lands and resources for traditional purposes in locations where use is known to occur or may occur.

Specific Question/ Request for Information:

A. Include any new receptor locations identified in response to IE(2)-01 in the air quality, noise and vibration assessments.

B. Provide the following:

- updated assessment and conclusions, including of effects to human health and to current use of lands and resources when there is a pathway of effect from the air quality, noise or vibration assessments;
- specific and measurable mitigation measures;
- a rationale and analysis of conclusions for residual effects;
- determination of significance of residual effects with magnitude levels based on quantitative descriptors;
- a follow-up program for potential effects to human health, 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; and
- input from Indigenous groups on the methodology (including significance criteria), mitigation measures, follow-up programs and conclusions for residual effects.

22.2 Prodigy Response

22.2.1 Response to CEAA Comment Part A

As outlined in the response to IE(2)-01, the uses identified by CEAA in the 'context and rationale' for IE(2)-01 are not "places where people are most likely to spend an extended period of time engaged in a particular activity", and therefore are not defined as 'receptors' (as defined in the response) in the EIS, As such, no new receptor locations were identified in response to IE(2)-01and no updates to the assessments are required.

22.2.2 Response to CEAA Comment Part B

As outlined in the response to IE(2)-01, the uses identified by CEAA in the 'context and rationale' for IE(2)-01 are not "places where people are most likely to spend an extended period of time engaged in a particular activity", and therefore are not defined as 'receptors' (as defined in the response) in the EIS, As such, no new receptor locations were identified in response to IE(2)-01 and no updates to the assessments are required.

23.0 CEAA-FD66 (20.0) / HE(2)-19: ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – SIGNIFICANCE CRITERIA

Reference to EIS:

- TSD 14
- IR-1 Response, Appendix B5

23.1 Context and Information Required for a Complete Response

The revised significance assessment criteria provided in response to HE(1)-19 A, and shown in Appendix B5, Table 3.4-1 and 3.4-2, do not adequately address several factors related to human health. It is unclear how the significance assessment addresses each of these factors.

- Short term exposures to a contaminant can result in health effects with a long duration. Therefore duration and frequency criteria should assess the duration and frequency of the human health effect, and not the duration and frequency of the conditions causing the effect;
- The reversibility criterion should distinguish, if possible in a quantitative manner, between an effect that is "temporary" and an effect that is "reversible with time", and a time horizon where an effect would become "permanent";
- The magnitude assessment criteria do not address non-threshold pollutants; the criteria should distinguish between threshold and non-threshold pollutants, and carcinogens vs. non-carcinogens;
- The magnitude assessment references the same thresholds (hazard quotient (HQ) > 1, incremental lifetime cancer risk (ILCR) > $1x10^{-6}$ and percent highly annoyed (%HA) > 6.5%) for low and high magnitude levels. In cases where any of these thresholds are exceeded, it is unclear how Prodigy distinguishes between a project-related health effect that is "not expected and by extension a change in human health is not expected" (low magnitude), and a project-related health effect that has "the potential to occur and may result in a change to human health" (high magnitude). As several chemicals of potential concern (COPC) are shown in TSD 14, Appendix A, Section 7 to have predicted HQ or ILCR values that exceed the named thresholds, it is important that the EIS describes, in a transparent manner, how they concluded that these exceedances of their thresholds are "not expected and by extension a change in human health is not expected". The conservativeness of the model cannot be the sole rationale for drawing that conclusion, particularly in cases where the inputs are not realistic.
- Significance should be assessed based on residual effects after mitigation has been implemented. Monitoring and follow-up programs should not be embedded within the magnitude criteria. These programs are established to address any uncertainties related to the predictions of effects on human health from the assessment itself.

While the original question HE(1)-19 C required Prodigy to "carry carcinogenic chemicals with constant and long-term exposures through the human health risk assessment, even if HQ values are expected to remain below 1", Prodigy's response only discusses $PM_{2.5}$. In addition to $PM_{2.5}$, other carcinogens were screened out of the HHRA because predicted exposure levels are lower than regulatory benchmarks. As further discussed in HE(2)-21, ensure that the HHRA addresses toxicological characteristics of carcinogens and presence/absence of any potential additive effects from various exposure routes and pathways. Carcinogenic chemicals can result in human health effects at any dose. The significance determination for human health should account for exposures with HQ values below 1 that are constant and of long-term

duration, in order to have a complete understanding of potential effects of the Project on the health of Aboriginal peoples.

Specific Question/ Request for Information:

A. Update the significance criteria provided in Appendix B5, Tables 3.4-1 and 3.4-2 to address points (i) to (v) in the Context and Rationale section, or discuss specifically how each of these elements are addressed in the criteria proposed in those tables;

B. Identify any carcinogens that were screened out from the HHRA because their predicted HQ values are expected to remain below 1, and include them in a revised HHRA;

C. Where necessary, update mitigation measures to reduce any new effects identified through questions A or B; describe residual effects after mitigation; propose any follow-up programs necessary to verify the efficacy of the mitigation measures or the EA predictions;
D. As required in HE(2)-18, include any new receptor locations identified in response to IE(2)-01 in your response to HE(2)-19, as necessary.

23.2 Prodigy Response

23.2.1 Response to CEAA Comment Part A

Assessment Criteria

The significance criteria provided in Appendix B5, Tables 3.4-1 and 3.4-2 were developed to align with the significance criteria used by all disciplines for the effects assessment as described in Chapter 2, Section 2.4.5 of the EIS:

- Magnitude;
- Geographic Extent;
- Timing and Duration;
- Frequency;
- Degree of Irreversibility;
- Ecological Context; and
- Social Context.

All disciplines were required to use these assessment criteria to assess the residual effects of the Project and come to a determination of whether the effect would be "significant" or "not significant". As introduced in Section 3.4 of TSD 14, the effects assessment for the HHRA considered the following criteria:

- Magnitude: size or degree of the effect;
- Geographic Extent: spatial scale of the effect;
- Duration: temporal scale of the cause of the effect;
- Frequency: rate at which the effect occurs;
- Degree of Reversibility: ability to return to pre-Project conditions; and
- Ecological and Social Context: resilience of the VEC to the potential adverse effects of the Project and its value to people.

The effects level definitions were provided in Table 3.4-1 (provided in TSD 14 Errata dated 2018Feb22):

Table 3.4-1: Effects Criteria and Levels for Determining Significance

Effects Criteria(a)	Definition	Effects Level Definition		
		Low	Medium	High
Magnitude[b][c]	Size or degree of the effect	Definitions for magnitude are provided in Table 3.4-2		
Geographic Extent[b]	Spatial scale of the effect	Predicted effect is limited to the area within the Prodigy property boundary (Project Study Area)	Predicted effect extends beyond the Project Study Area but is contained within the Local Study Area	Predicted effect extends beyond the Local Study Area
Duration[d]	Temporal scale of the cause of the effect	Conditions causing the predicted effect are evident in the short-term (i.e., during the construction phase, or closure and post-closure phase)	Conditions causing the predicted effect are evident in the operations phase	Conditions causing the predicted effect extends for the long-term (beyond any one phase)
Frequency[b],[d]	Rate at which the condition causing the effect occurs	Conditions or phenomena causing the predicted effect to occur infrequently (i.e., several times per year)	Conditions or phenomena causing the predicted effect to occur at regular, although infrequent intervals (i.e., several times per month)	Conditions or phenomena causing the predicted effect to occur at regular and frequent intervals (i.e., daily or continuously)
Irreversibility[b]	Ability of the effect to be reversed	Predicted effect is readily reversible (i.e., temporary)	Predicted effect is reversible with time	Predicted effect is unlikely to be reversible (i.e., permanent)
Ecological Context	Resilience of the VEC to the potential effects of the Project	Not applicable		
Social Context	Value to people	Not applicable		

a) The assumptions and limits of the effects criteria will be described as part of the environmental effects assessment.
b) Criteria relate to the effect.
c) Where available, existing environmental standards, guidelines or objectives will be used to define the effects level definitions.
d) Criteria relate to the conditions causing the effect.

The effects level definitions provided in Table 3.4-1 above were common to all disciplines with the exception of magnitude, where each discipline had specific definition of magnitude.

Therefore, the intent was to evaluate human health in a manner that would be comparable to the other disciplines (e.g. air quality, surface water quality). However, the evaluation of human health was completed by means of a human health risk assessment (Appendix A of TSD 14) and noise assessment (Appendix B of TSD 14), which, in practice are different in some notable ways from the effects assessment methods used for other disciplines (e.g., air quality, surface water quality) in the EIS. For example, one of the components of human health risk assessment is an explicit discussion of uncertainty and conservatism. Risk estimates (i.e., HQs and ILCRs) also inherently consider the geographic extent, duration, frequency, and other characteristics of the predicted changes to the environment that may result from Project activities. Further discussion on the six assessment criteria and how they were considered in the context of the human health is provided below:

- Magnitude indicates the size and degree of the effect. Magnitude was evaluated in the human health risk assessment by the predicted hazard quotient (HQ) and/or incremental lifetime cancer risk (ILCR) calculations for threshold (non-carcinogenic) and non-threshold (carcinogenic) chemicals, respectively. Magnitude was also evaluated in the noise assessment by the predicted change to %HA (percent highly annoyed). Further discussion related to this assessment criterion is provided below.
- Geographic extent refers to the area affected (i.e., the LSA). Receptor locations were identified within the LSA. Therefore, the geographic locations were set and potential risks were considered for each of these locations. As a result, geographic extent was fixed in the assessment and was not used to determine significance of residual effect for human health.
- Duration is defined as the amount of time from the beginning of an effect on a VEC until when the effect has ended or dissipated to the point of not being detectable. Duration is expressed relative to Project stages. Exposure duration is not an independent variable in the human health risk assessment because it was necessary to assume an exposure duration in order to calculate an estimate of a daily exposure dose resulting from chronic exposure to a chemical. For the evaluation of short-term exposures, it was assumed that receptors were continuously exposed to the maximum exposure concentrations achieved during the duration of the Project (i.e., exposure and estimated risks are conservative and do not vary over the duration of the Project). Further discussion related to this assessment criterion is provided below.
- Frequency refers to the number of times an effect is expected to occur over a given period. For the evaluation of the human health, the frequency of exposure is not an independent variable because it was necessary to assume a particular exposure frequency to calculate an estimate of a daily exposure dose in accordance with risk assessment guidance that would result from chronic exposure to a chemical. For the evaluation of short-term exposures, information was available for air quality related to the frequency of exceedance of health-based criteria based on the modeling results and was therefore considered qualitatively in the interpretation of the risk calculations (i.e., magnitude). As a result, frequency is not used to determine significance of residual effect on human health.
- Irreversibility is defined as the likelihood and time required to return to a state that is similar to baseline or comparable to similar conditions not affected by the Project. The human health risk assessment did not include an assessment of irreversibility of potential health effects, which cannot be determined with any certainty for people. As a result, irreversibility is not used to determine significance of residual effect.
- Ecological/Social Context is defined as the resilience of the VEC to the Project effects and its value to people. Given that we are evaluating human health, an evaluation of its ecological/social context is not applicable.

Because these inherent attributes could not be used to determine environmental significance, environmental significance for human health was evaluated based on the following:

- the magnitude of the risk, as indicated by the predicted hazard quotient (HQ) and/or incremental lifetime cancer risk (ILCR) calculations for chemicals and the predicted %HA calculations for noise;
- the duration of the effect, as indicated by the timeframe of the predicted concentrations (e.g. 1-hour, 24-hour, and annual air quality predictions for chemicals; 24-hour predictions for noise);
- the degree of conservatism and uncertainty in the predictive analysis; and

- if necessary (i.e., if risk magnitudes were predicted that were greater than the regulatory benchmarks), the monitoring programs proposed to assess environmental conditions throughout the Project in order to identify whether the predicted concentrations are realized.

The predicted HQs or ILCRs (and %HA for noise), by themselves, do not fully reflect the potential for an adverse effect because the magnitude of any HQ or ILCR (and %HA) is a function of the predictive exposure and effects assessments, each of which depends on the realism or conservatism applied during the modelling procedure (i.e., air quality modeling and surface water quality modelling; exposure assessment scenario assumptions in the HHRA; assumptions in the noise modelling). Additionally, the predicted HQs or ILCRs are the result of a predictive assessment that have not considered that a monitoring (and/or additional mitigation) program will be in place to assess environmental conditions (i.e., monitoring actual concentrations of chemicals in air and surface water) throughout the Project; if a monitoring program during the Project identifies an environmental concentration that may pose a potential risk to human health (as identified via a HHRA [Appendix A of TSD 14]), mitigation will be put in place to prevent a health effect from occurring (e.g. monitoring of surface water is described under TSD 20-12 Water Management Plan; monitoring of air quality is described under the Golder technical memorandum dated March 5, 2018[1]). Together, magnitude of risk and change to noise levels, conservatism (which includes qualitative assessment of likelihood of risk) and mitigation measures were used to determine overall risk, which in turn was used to make a determination of environmental significance in the context of the evaluation of the human health. The overall risk, conservatism and mitigation associated with the risk estimates were assessed on a chemical specific basis.

Table 3.4.2 is updated as follows (from the version provided in TSD 14 Errata dated 2018Feb22):

Table 3.4-2: Magnitude Levels for Human Health

Magnitude		
Negligible	Low	High
Project-related environmental exposures are predicted (as identified via HHRA [Appendix A] and/or noise assessment [Appendix B]) to be less than regulatory benchmarks (i.e., HQ ≤1 for all chemicals; ILCR ≤ $1x10^{-6}$; %HA ≤ 6.5%).	Project-related environmental exposures are predicted (as identified via HHRA [Appendix A] and/or noise assessment [Appendix B]) to exceed regulatory benchmarks (i.e., 1 <HQ ≤20 for mercury only, 1 <HQ ≤10 for all other chemicals; $1x10^{-6}$ <ILCR≤$1x10^{-4}$; 6.5% <%HA ≤10%).	Project-related environmental exposures are predicted (as identified via HHRA [Appendix A] and/or noise assessment [Appendix B]) to exceed regulatory benchmarks (i.e., HQ > 20 for mercury only, HQ > 10 for all other chemicals; ILCR > $1x10^{-4}$; %HA > 10%).

If project-related environmental exposures are predicted to be less than regulatory benchmarks, then health effects are not expected and by extension a change in human health is not expected. Conversely, if project-related environmental exposures are predicted to exceed regulatory benchmarks, this does not necessarily equate to a certain health effect being realized or by extension a change to human health; rather, it triggers a thorough review of the assumptions considered in the quantitative assessment (via HHRA [Appendix A] and/or noise assessment [Appendix B]) and may also trigger future monitoring to ensure that the concentrations assessed in the quantitative assessment will not be realized once the Project is undertaken. A significant residual effect to Human Health is defined as a project-related environmental exposure, that exceeds regulatory benchmarks (i.e., a potential health risk measured via HHRA [Appendix A] and/or noise

[1] Technical Memorandum RE: Description of Air Quality Management Plan for the Proposed Magino Mine Project. Prepared for Kyle Stanfield, Argonaut Gold Inc. Prepared by Golder Associates (Natalie Jones). Golder Project No. 1659317-2080. March 5, 2018.

assessment [Appendix B]) established by federal and/or provincial agencies and may result in a change to human health without the implementation of recommended future monitoring and/or mitigation.

Table 5.4-3 (provided in TSD 14 Errata dated 2018 Feb 22) provides an evaluation of the significance of residual effects for the Human Health VEC.

Table 5.4-3: Significance of Residual Effects on Human Health

Residual Effect	Magnitude	Geographic Extent	Duration	Frequency	Irreversibility	Ecological Context	Social Context	Overall Assessment of Significance
Human Health	Low	Medium	High	Low to High	Low to High	Not applicable	Not applicable	Not significant

Further discussion on each of the assessment criteria is provided below, specifically with respect to mercury in fish:

- The magnitude is low (i.e., 1 <HQ <20; actual calculated Project Case HQ is 16). A magnitude of risk for mercury with an HQ less than 20 is considered to pose a low risk to human health given that various conservative assumptions (i.e., "risk drivers") were incorporated into the assessment that have likely overestimated the potential risks due to consumption of fish (please refer to the responses to HE(2)-24, HE(2)-25 and IE(2)-14). When HQs are re-calculated considering more representative risk drivers such as, fish consumption rate (i.e., for non-subsistence eaters), a lower fish bioconcentration factor, and a lower bioaccessibility, HQs range from approximately 1 to 5 for the Project Case (i.e., a reduction factor of 3 to 15-fold). Additionally, it was assumed that 100% of mercury predicted in surface water would be present as methylmercury in the HHRA, when baseline surface water quality indicates that a very small proportion (0.04% up to 22% as shown in the response to IE(2)-14) is actually present as methylmercury, corresponding to a further HQ reduction of up to 5-fold. Therefore, incorporating this assumption would result in predicted HQs meeting the target HQ of 1. Therefore, a Project Case HQ that is less than 20 is considered to be reasonable to categorize as a low magnitude risk.
- Geographic extent is medium (i.e., the predicted effect extends beyond the Project Study Area but is within the Local Study Area). The geographic extent is inherent in the assessment and therefore is not considered in the residual effects assessment.
- The duration is high (i.e., the conditions causing the predicted effect extends for the long-term (beyond any one phase)). Given the assessment of fish consumption was completed over a long exposure period (i.e., 20 years), and potential health effects due to mercury may be long term, a high duration is considered to be reasonable.
- The frequency is high (i.e., Conditions or phenomena causing the predicted effect to occur at regular and frequent intervals (i.e., daily or continuously)). The frequency is inherent in the assessment and therefore is not considered in the residual effects assessment.
- The irreversibility is high (i.e., irreversible). The irreversibility is inherent in the assessment and therefore is not considered in the residual effects assessment.
- Ecological and social context are not relevant for the residual effects assessment.

Therefore, the overall residual effect on Human Health was considered to be not significant based upon both the acceptable HQs when considering more representative exposure assumptions (i.e., with respect

to fish ingestion as provided in responses to IE(2)-14, HE(2)-24, HE(2)-25)) and the implementation of a monitoring program (TSD 20-12) that will verify whether the predicted concentrations from the EA could be realized and, if they are, that mitigation measures would be implemented to prevent a health effect from occurring.

23.2.2 Response to CEAA Comment Part B

The following text will be added to Section 8.0 of the HHRA.

Carcinogenicity Consideration

Metals

As presented in Section 6.0, there is no dose threshold for cancer-causing chemicals below which adverse effects are not expected. That is, theoretically, any dose can exert a toxic effect. In selecting COPCs for evaluation in the HHRA, the predicted concentrations of chemicals were compared to health-based guidelines derived by federal, provincial, and international regulatory agencies. Further discussion on the carcinogenic chemicals considered in the HHRA are described further below.

Arsenic, beryllium, cadmium and nickel were identified as non-threshold chemicals via the inhalation route (IARC, 2018). Nickel was conservatively included (as an inhalation carcinogen) in the HHRA given that the only nickel species considered to be carcinogenic by IARC are nickel refinery dust and nickel subsulfide (IARC, 2018). These non-threshold chemicals were compared to health-based guidelines which are derived based upon a carcinogenic endpoint. CalEPA (2018) provides chronic inhalation unit risks for arsenic, beryllium, cadmium and nickel which are based on carcinogenic effects (See Appendix A, Attachment 2, Table 3). These inhalation unit risks are converted (CalEPA) sto reference exposure levels (RELs) and are considered to be protective of potential carcinogenic effects. The maximum annual concentrations predicted for arsenic, beryllium and nickel were less than the CalEPA REL concentrations, therefore these chemicals were not retained for further evaluation in the HHRA. The maximum annual concentration of cadmium predicted at two locations was greater than the cadmium CalEPA REL, therefore cadmium was retained for the chronic inhalation assessment for carcinogenic risk. A comparison of the maximum concentration of non-threshold (via inhalation) chemicals to CalEPA RELs is presented below.

Table 6.1-3: Screening of Carcinogenic Chemicals

Parameter	Maximum Annual Concentration (at any location)	CalEPA REL	Retained for Chronic Inhalation Assessment?	Basis of Unit Risk
Arsenic	0.00000239	0.00030	No	CalEPA - The inhalation unit risk (0.00033 per µg/m^3) was based on the 95% UCL predicted from fitting a linear model to human data, adjusted for interaction with smoking.
Beryllium	0.00000381	0.00042	No	CalEPA - The CalEPA inhalation unit risk (0.00042 per µg/m^3) was adopted from the IRIS value for lung cancer in occupationally exposed males.
Cadmium	0.00092767	0.00024	Yes	CalEPA - The inhalation unit risk (0.00024 per µg/m^3) was based on human occupational exposures and lung cancer.
Nickel	0.00031618	0.014	No	CalEPA - The inhalation unit risk (0.0038 per µg/m^3) was based on a study that demonstrated an increased risk of lung cancer associated with occupationally-exposed humans.

1. Source of RELs: CalEPA, 2018.
2. All concentrations provided in units of micrograms per cubic metre (µg/m^3).

Particulate Matter

The International Agency for Research on Cancer (IARC) released a publication in 2013 which added particulate matter (PM) to its list of known human carcinogens. However, no regulatory guidance is currently available for the evaluation of PM (i.e., specifically PM10 and PM2.5) as a non-threshold contaminant in risk assessment; therefore PM was evaluated in the HHRA for non-carcinogenic endpoints. The classification of PM as a carcinogen by IARC was based largely on PM produced as a by-product of combustion of fuels for transport, power generation, industrial activities, heating and cooking (2013). The major source of PM10 produced by Project-related activities is expected to be road dust. The mechanism of action of road dust-related PM would not represent the same mechanism of action as combustion-related PM, and the same biologic response would not be expected. Predominate sources of PM2.5 as a result of Project activities is expected to be divided between road dust and tailpipe exhaust. As with PM10, road dust related PM2.5 is not expected to be comparable to combustion related PM2.5. PM2.5 sourced from tailpipe exhaust would fall under the carcinogenic consideration of PM from IARC (2013) and evaluation of carcinogenic risk associated with this source of PM2.5 would be appropriate. However, as stated above, no regulatory guidance is available for the evaluation of carcinogenic PM (i.e., specifically PM10 and PM2.5). Furthermore, only total PM2.5 concentrations were available and utilized in the HHRA. It would not be accurate to assume that all PM2.5 produced by Project activities would result in carcinogenic effects.

In Section 4.3.1.1 of the HHRA, to evaluate the potential risks from carcinogenic PM (in lieu of specific regulatory guidance related to non-threshold evaluation of PM10 and PM2.5), diesel particulate matter (DPM) was evaluated. DPM is comprised entirely on PM produced as a by-product of combustion of diesel fuel, and was evaluated as a carcinogenic COPC in the HHRA. As stated above, only a portion of the PM2.5 expected as a result of Project activities will be attributable to combustion (i.e., tailpipe exhaust) and therefore would be applicable to a carcinogenic evaluation. Given that the total concentration of DPM is

attributable to combustion by-products, the evaluation of DPM is considered to be protective of exposure to portion of tailpipe exhaust related PM2.5 expected as a result of Project activities. As presented in Section 7.1 of the HHRA:

With respect to the potential for carcinogenic effects, the maximum annual average DPM concentration of all receptor locations of 1.5 µg/m³ (fenceline) is lower than the published mean DPM exposure in the United States (2 µg/m³), published levels from vehicular emissions (20 to 25 µg/m³) and from diesel-powered equipment in underground mine operations (10 to 5,570 µg/m³; Ghio et al. 2012). Therefore, the health risks due to DPM are considered to be negligible.

Given that unacceptable risks are not expected as a result of inhalation exposure to DPM, and that less tailpipe exhaust-related PM2.5 is expected than DPM, no unacceptable risks are expected as a result of inhalation exposure to carcinogenic PM is expected from the Project.

23.2.3 Response to CEAA Comment Part C

No change to currently recommended mitigation measures are proposed as a result part A or B of this comment.

23.2.4 Response to CEAA Comment Part D

See response to Information Request IE(2)-01 – No new receptor locations were identified IE(2)-01 therefore no change to the HHRA is proposed.

California Environmental Protection Agency (CalEPA). (2018). Hot Spots Unit Risk and Cancer Potency Values. Office of Environmental Health Hazard Assessment, Air Toxicology and Epidemiology. Internet Site, accessed May 30, 2018, from https://oehha.ca.gov/air/air-toxics-hot-spots

International Agency for Research on Cancer (IARC). 2013. Air Pollution and Cancer. IARC Scientific Publications. World Health Organization. Available online at: https://www.iarc.fr/en/publications/books/sp161/AirPollutionandCancer161.pdf

IARC. 2018. IARC Monographs on the Evaluation of Carcinogenic Risks to Humans. Available at: http://monographs.iarc.fr/ENG/Classification/index.php. Accessed: May 2018. Website last updated April 18, 2018.

24.0 CEAA-FD67 / HE(2)-20 – ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – TOXICITY REFERENCE VALUES

Reference to EIS:

- TSD 14

24.1 Context and Information Required for a Complete Response

From Prodigy's response to HE(1)-20 B, it is unclear whether the applied toxicity reference values (TRVs) in the HHRA are designed to protect human receptors in the most sensitive life stage. It is also unclear how the life-stage characteristics of receptors, such as the age-dependent adjustment factors for life stage (ADAFs), were included in the estimate for health risks of non-threshold carcinogens. This information is required to have a complete understanding of potential effects of the Project on the health of Aboriginal peoples.

Specific Question/ Request for Information:

A. Provide detailed examples of calculations of the final ILCR values to demonstrate that TRVs and ADAFs used in the assessment are designed to protect human receptors in the most sensitive life stage;

B. Where updated calculations show ILCR values that could lead to significant effects to human health, describe additional mitigation measures that can be applied to reduce new effects identified through question A; describe residual effects after mitigation; propose any follow-up programs necessary to verify the efficacy of the mitigation measures or the EA predictions.

24.2 Prodigy Response

24.2.1 Response to CEAA Comment Part A

Following a conference call on May 15, 2018 between the Proponent, CEAA and Health Canada, the Proponent received clarity on this comment. Health Canada requested that potential mutagenic effects of carcinogenic COPCs be further investigated. Should mutagenic effects be identified as a toxic endpoint of a COPC, Health Canada has requested that a consideration of ADAFs be taken into account.

Toxicity reference values (TRVs) for chemicals are, where supporting toxicological data are available, designed to protect the most sensitive receptors from the most sensitive toxicological endpoint (i.e., health effect). However, as indicated by Health Canada (2013; Interim Guidance on Human Health Risk Assessment for Short-Term Exposures to Carcinogens at Contaminated Sites), there is some evidence that short-term exposures at early life stages to carcinogens that exhibit a mutagenic mode of action (i.e., cause direct damage to DNA) may pose an increased risk beyond that calculated using standard dose averaging. The HHRA included the assessment of cadmium and diesel particulate matter (DPM) as carcinogens in the inhalation pathway analysis. As shown in Table 3 in Attachment 2 of Appendix A, the CalEPA inhalation unit risk of 0.0042 per µg/m3 (converted to an air concentration of 0.0024 µg/m3) was used in the HHRA for the evaluation of cadmium. This TRV is based on lung cancer incidence in workers from occupational exposures, and CalEPA does not include a review of genotoxicity or mechanisms of action in its summary (2009 Technical Support Document for Cancer Potency Factors; Appendix B: Chemical-Specific Summaries of the Information Used to Derive Unit Risk and Cancer Potency Factors, Jan 20, 2011). The toxicological profile for cadmium from ATSDR (2012) indicates that cadmium may be mutagenic. However, even if the highest ADAF for the infant of 10 was applied to the estimated Project Case ILCRs of 1x10-6 shown in Table 7.1-4 of Appendix A, the Project Case ILCR would meet the federally acceptable negligible

cancer risk level of 1x10-5 (Health Canada, 2012); therefore, risks due to cadmium are considered to be acceptable.

The CalEPA inhalation unit risk of 0.00033 µg/m3 was used for the evaluation of DPM as shown in Table 3 in Attachment 2 of the HHRA. This TRV also is based on lung cancer incidence in workers from occupational exposures (2009 Technical Support Document for Cancer Potency Factors; Appendix B: Chemical-Specific Summaries of the Information Used to Derive Unit Risk and Cancer Potency Factors, Jan 20, 2011). CalEPA (2011) states that DPM has been shown to consist of substances including polycyclic aromatic hydrocarbons and nitroaromatic compounds which are known to be mutagenic. The ILCRs for DPM for the estimated Project Case, as shown in Table 7.1-4 of the HHRA Appendix exceed the target ILCR of 1x10-6. With the application of the highest (i.e., most conservative) ADAF for the infant of 10, ILCRs would remain in exceedance of the target ILCR and would exceed the federally acceptable negligible cancer risk level of 1x10-5 (Health Canada, 2012). As presented in Section 7.1 of the HHRA Appendix, the maximum annual average DPM concentration of all receptor locations of 1.5 µg/m³ (fenceline) is lower than the published mean DPM exposure in the United States (2 µg/m³), published levels from vehicular emissions (20 to 25 µg/m³) and from diesel-powered equipment in underground mine operations (10 to 5,570 µg/m³; Ghio et al. 2012). Therefore, the health risks due to DPM are considered to be negligible in comparison to ambient concentrations. Nevertheless, DPM has already been identified for monitoring, as shown in Section 6.1 of TSD 14 Human Health. Therefore, no additional mitigation measures are recommended.

The HHRA also included the assessment of arsenic as a carcinogen in the multi-pathway analysis, which was the only carcinogen evaluated. As shown in Table 2 in Attachment 5 of Appendix A, the Health Canada oral slope factor of 1.8 per mg/kg-d was used as the TRV in the HHRA. This TRV is based upon Health Canada's drinking water guideline (Health Canada, 2006; Guidelines for Canadian Drinking Water Quality: Guideline Technical Document: Arsenic). This document indicates that the carcinogenic mechanism of action of arsenic is unknown. Furthermore, the supporting information provided in Health Canada (2006) does not indicate that damage to DNA has been observed in toxicological studies. Additionally, ATSDR (2008) has provided both in vitro and in vivo genotoxicity study results but these studies have been equivocal with respect to mutagenicity. As a result, applying ADAFs that are not scientifically supported was not completed in the HHRA.

No change to the current HHRA evaluation is required; however, a worked example of an ILCR calculation was already provided in Attachment 7, Section 2.1.1 in the Human Health TSD Errata.

24.2.2 Response to CEAA Comment Part A

No change to the current HHRA evaluation is required.

ATSDR (Agency for Toxic Substances and Disease Registry). 2008. Toxicological Profile for Arsenic. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

ATSDR (Agency for Toxic Substances and Disease Registry). 2012. Toxicological Profile for Cadmium. Atlanta, GA: U.S. Department of Health and Human Services, Public Health Service.

CalEPA (California Environmental Protection Agency). 2011. 2009 Technical Support Document for Cancer Potency Factors; Appendix B: Chemical-Specific Summaries of the Information Used to Derive Unit Risk and Cancer Potency Factors, Jan 20, 2011. Available online at: https://oehha.ca.gov/air/crnr/technical-support-document-cancer-potency-factors-2009. Last accessed May 24, 2018.

Ghio, Andrew J., Smith, Candice B., Madden, Michael C. 2012. Diesel Exhaust Particles and Airway Inflammation. Current Opinion in Pulmonary Medicine, 18(2). p 144–150.

Health Canada. 2006. Guidelines for Canadian Drinking Water Quality: Guideline Technical Document: Arsenic. Prepared by the Federal-Provincial-Territorial Committee on Drinking Water of the Federal-Provincial-Territorial Committee on Health and the Environment.

Health Canada. 2012. Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA), Version 2.0. Federal Contaminated Site Risk Assessment in Canada.

Health Canada. 2013. Interim Guidance on Human Health Risk Assessment for Short-Term Exposure to Carcinogens at Contaminated Site. Federal Contaminated Site Risk Assessment in Canada.

25.0 CEAA-FD68 / HE(2)-21 – ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – EXPOSURE ROUTES AND PATHWAYS

Reference to EIS:

- TSD 14

25.1 Context and Information Required for a Complete Response

Prodigy's response to HE(1)-21 A indicates that "it is common practice to provide a separate assessment of the inhalation exposure pathway from the multi-media pathways (i.e., ingestion and dermal contact pathways)." Prodigy assessed the non-threshold health effects of the inhalation exposure pathway separately from those of the multi-media pathways (i.e., ingestion and dermal contact pathways), based on the assumption that the two pathways have different toxicological endpoints (i.e., different modes of action and different target organs). Health Canada notes, in its 2010 guidance Federal Contaminated Site Risk Assessment in Canada, Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRAChem), in Section 6.3.5, page 86, that "exposure estimates or risk estimates may likewise be summed across exposure routes (ingestion, dermal, and inhalation routes) if there is evidence that the same mechanisms of toxicity occur or the same target organs are affected".

As one example that would be relevant to this review, a renal toxic effect (e.g., proteinuria) has been reported during chronic exposures to cadmium through inhalation, as well as oral ingestion (ATSDR, 2012: Toxicological Profiles for Cadmium. https://www.atsdr.cdc.gov/ToxProfiles/tp5.pdf). Therefore, renal toxic effects of cadmium should be considered as additive for the exposure routes at issue (i.e. inhalation and ingestion).

Any oversights of potential exposure pathways, target organs, and toxic endpoints of other COPCs may result in an incomplete risk assessment, which is required to have a complete understanding of potential effects of the Project on the health of Aboriginal peoples. Prodigy should carefully review toxicological characteristics of COPCs for their modes of action, target organs, toxic endpoints, etc. and clarify presence/absence of any potential additive effects from various exposure routes and pathways.

Specific Question/ Request for Information:

A. As per Health Canada's guidance, describe potential additive effects from various exposure routes and pathways in the HHRA. In particular, demonstrate how additive effects for cadmium are considered, as per the reference provided in the Context for this question;

B. Where new effects on human health are found through question A, describe additional mitigation measures that can be applied to reduce these effects; describe residual effects after mitigation; propose any follow-up programs necessary to verify the efficacy of the mitigation measures or the EA predictions;

C. As required in HE(2)-18, include any new receptor locations identified in response to IE(2)-01 in your response to HE(2)-21.

25.2 Prodigy Response

25.2.1 Response to CEAA Comment Part A

The following text will be added to Section 8.0 of the HHRA.

Additivity may be considered both in terms of the additivity of co-exposures of multiple chemicals and their combined toxicity or in terms of additivity of multiple exposure routes (e.g. summing exposure and risk for the ingestion and inhalation pathways). While the focus of the specific question in part A is additivity of exposure routes, the same principles apply when considering the additivity of multiple chemicals via the same exposure route. For both of these types of additivity, it is important to note that moving beyond assessing individual chemicals by single exposure pathways in practice in risk assessment is not well-supported by the available toxicological data.

Most toxicity studies used to derive TRVs are conducted on single chemicals, but environmental exposures are rarely limited to single chemicals and may not be limited to single pathways. Environmental exposures are generally to more than one chemical (i.e., chemical mixtures). Chemicals in a mixture may interact in four general ways to cause a response in a receptor:

i. non-interacting – chemicals in the mixture do not produce a response in combination with each other. The toxicity of the mixture is the same as the toxicity of the most toxic chemical in the mixture;
ii. additive – chemicals in the mixture have similar targets and modes of action but do not interact. The toxicity of the mixture is simply the sum of toxicity for the individual chemicals;
iii. synergistic – there is a positive interaction among the chemicals in the mixture such that the response is greater than would be expected if the chemicals acted independently or in an additive manner; and,
iv. antagonistic – there is a negative interaction among the chemicals in the mixture such that the response is less than would be expected if the chemicals acted independently or in an additive manner.

However, in order to assess mixture effects quantitatively, detailed studies of the interactions between COPCs are required, and little scientific literature is available in this regard. Toxicological studies that form the basis of TRVs are typically carried out on individual chemicals and do not often consider co-exposures to other contaminants. The only contaminant types for which mixtures have specific regulatory guidance are for petroleum hydrocarbon (PHC) subfractions (CCME 2008), polycyclic aromatic hydrocarbons (PAHs) (CCME 2010), dioxins and furans (CCME 2002), and most recently (e.g. Health Canada, 2016, Government of Canada, 2015) some perfluorinated compounds (PFCs). Additionally, for the few studies that have investigated combined effects of co-exposures, quantifying the effect of the interaction is fraught with uncertainty. Although adding HQs for COPCs with the same target organs can be done, this assumes that both COPCs have the same mode of action and that the combined effect is additive as well. In addition, interpreting the results of the summed HQs is equally difficult because no regulatory guidance nor regulatory benchmarks are available for mixture risk assessment.

Toxicity studies evaluating multiple exposure routes are also limited. Detailed information would be needed for each pathway-specific toxicological mechanism of action and the interaction of the toxic response via each exposure pathway would need to be quantified. Occasionally, route-to-route extrapolation can be done to fill a gap in an assessment, most frequently where there is a TRV available for one route of exposure but not available for another. This is most often done for the ingestion and dermal routes of exposure – it is standard practice in HHRA to adopt the oral TRV for the dermal route and sum the risks from both pathways. This is done much less frequently for extrapolation from an oral route to an inhalation route (or vice versa). Less often, if there is some evidence that the target organ or mechanism of action could be the same for a chemical via both ingestion and inhalation, then the available TRV could be adopted for the exposure route lacking a TRV in order to provide a quantitative assessment for informational purposes. However, this is

done in limited circumstances as conclusions and decisions should not be made based on such an approach.

For the reasons outlined above, potential toxic interactions including summing multiple exposure routes were not incorporated into the HHRA.

The following text is provided for information purposes to address the Reviewer's concern raised in response comment HE(2)-21 but does not require changes to the text in the HHRA report (as noted above):

In the HHRA, potential risks to human health from inhalation exposure were evaluated separately from potential risks to human health from multi-media exposure (i.e., ingestion and dermal contact). This is a common practice for the evaluation of risks to human health (i.e., in Risk Assessments in support of Environmental Assessment) given that that the oral and inhalation exposure routes generally have different mechanisms of action and toxicological endpoints. However, as presented in Health Canada's document Federal Contaminated Site Risk Assessment in Canada Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRAChem) (2010), exposures from multiple exposure pathways may be summed together if the same mechanism of toxicity and/or the same toxicological endpoints result from multiple pathways. The Health Canada guidance document referenced in the comment (the DQRA guidance) is intended for contaminated sites and is not necessarily applicable or specific to EAs; however, it has been considered herein at the request of Health Canada. It is important to note, however, that assessing mixture toxicity in practice is not well-supported by the available toxicological data (please refer to the preamble above).

With specific respect to cadmium as noted in the comment, the Agency for Toxic Substances and Disease Registry (ATSDR) Toxicological Profile for Cadmium (2012) identified that the kidney is the target organ for cadmium via both inhalation and oral ingestion exposure routes. Given that detailed information on the mechanisms of action were not available, the HHRA did not sum the risk estimates for these two pathways. However, for the purposes of addressing Health Canada's concern, the potential additive effects of cadmium have been considered in order to be protective of potential renal effects due to both exposure routes.

Cadmium was retained for the inhalation pathway for the 1-hour and annual averaging periods in the inhalation assessment and the oral/dermal pathways in the multi-media assessment. The predicted HQs for the inhalation assessment and multi-media assessment for cadmium are presented in Section 7.0 and in Attachment 6 of the HHRA. The table below provides a summary of the cadmium HQs calculated for each receptor and pathway considered in the inhalation and multi-media assessments to consider their applicability for an assessment of additive effects. Further rationale is provided below the table to support the assessment of applicability.

Receptor	Pathway	Base Case	Project Case	Base + Project Case	Applicable for Additive Evaluation?
Seasonal/Recreational User at the Fenceline	Inhalation – 1 hour averaging period	n/a	HQ = 2	HQ = 2	No – not appropriate to compare risk from acute exposure to risk from chronic exposure. Please refer to text below the table.
Seasonal/Recreational User at the Fenceline	Inhalation – annual averaging period	n/a	ILCR = 1E-06	ILCR = 1E-06	No – cadmium is only carcinogenic via inhalation
Seasonal/Recreational Users at Camps / Cottages	Inhalation – annual averaging period	n/a	ILCR = 7E-08	ILCR = 7E-08	No – cadmium is only carcinogenic via inhalation
Seasonal/Recreational User at the Fenceline	Multi-media – operations phase	HQ = 0.2	HQ = 1	HQ = 1	No – not appropriate to compare risk from acute exposure to risk from chronic exposure. Please refer to text below the table.
Seasonal/Recreational User at the Fenceline	Multi-media – post-closure phase	HQ = 0.18	HQ = 0.25	43	No – inhalation is not applicable to post-closure scenario

Note:
"n/a" – baseline air concentration was not available.
Bold font indicates an estimated hazard quotient greater than the target risk of 1 or incremental lifetime cancer risk greater than the target of one in one million.

Therefore, for the pathways and risks assessed in the HHRA for cadmium, an assessment of additive effects is not warranted. Further rationale is provided below:

Cadmium was retained for the inhalation pathway for the annual averaging period for carcinogenic effects; however, given that cadmium is only carcinogenic via inhalation and not via ingestion, an assessment of additive effects is not applicable.

Cadmium was also retained for the multi-media pathway for the post-closure phase of the Project; however, given that only the multi-media pathway applies to this scenario as no airborne chemicals would be generating during this phase of the Project, an assessment of additive effects is not applicable.

A seasonal/recreational user at the fenceline was evaluated for cadmium for both the inhalation pathway for the 1-hour averaging period and the multi-media pathway for the operations phase. These pathways apply to the same receptor, however, inhalation for the 1-hour averaging period is an acute exposure while the multi-media pathway is a chronic exposure. Summing HQs for acute and chronic exposures is not scientifically defensible as shown below.

Attachment 5, Table 1 of the HHRA presents the TRVs used for the evaluation of the multi-media pathway in the HHRA. As stated in Sections 4.3.1.1 and 6.2 of the HHRA, health-based air quality guidelines were adopted as TRVs for the 1-hour inhalation assessment. The TRVs selected for evaluation of the 1 hour inhalation pathway and the multi-media pathway for cadmium are compared below.

Pathway	Selected TRV	Source of TRV	Basis of TRV
Multi-media – Food	0.001 mg/kg-d	US EPA (2014)	The US EPA has developed oral RfD for cadmium for food (0.001 mg/kg-d) and water (0.0005 mg/kg-d). The highest cadmium level in the human kidney that does not produce proteinuria has been determined to be 200 µg/g fresh weight of renal cortex tissue. A toxicokinetic model was used to determine the level of chronic oral exposure that would result in a cadmium kidney concentration of 200 µg/g fresh weight of renal cortex tissue. The toxicokinetic model assumes that 0.01% of the body cadmium kidney burden is eliminated daily and that absorption of cadmium from food and water are 2.5% and 5%, respectively. A NOAEL for chronic cadmium exposure via water and food was determined to be 0.005 mg/kg-d and 0.01 mg/kg-d, respectively. An uncertainty factor of 10 to account for human variability was applied to the NOAELs to develop the RfD for water and food. Duration of study: not applicable
Multi-media – Water	0.0005 mg/kg-d	US EPA (2014)	
Inhalation – 1 hour	0.03 µg/m^3	ATSDR (2016)	ATSDR - A LOAEL of 0.088 mg/m^3 for histological alterations limited to the respiratory tract (alveolar histiocytic infiltrate and focal inflammation in alveolar septa) was used to derive the MRL. The LOAEL was adjusted for duration (6.2 h/d, 5 d/wk) and a human equivalent concentration (0.617 mg/m^3), resulting in an adjusted LOAEL of 0.01 mg/m^3. An uncertainty factor of 300 was then applied. Duration of study: 6.2 hours per day, 5 days a week for two weeks

Agency for Toxic Substances and Disease Registry (ATSDR). (2016). Minimal Risk Levels (MRL). Internet Site, last updated March 2016, accessed 5 January 2017 from http://www.atsdr.cdc.gov/mrls/mrllist.asp.

United States Environmental Protection Agency (US EPA). 2014. Integrated Risk Information System (IRIS). Available at http://www.epa.gov/IRIS/. Accessed September 25, 2014.

As shown in the table above, the TRV used to calculate risk due to inhalation for the 1-hour averaging period is based on a short-term study. The TRVs for inhalation and multi-media pathways were also derived based on different toxic-end points, based on the duration of the exposure. As inhalation for the 1 hour averaging period is an acute exposure, expected health effects are limited to respiratory effects (i.e., effects to the organ which would be subject to the short duration exposure). More significant effects in secondary-target organs is a result of chronic exposure. Regardless of toxic endpoint however, the application of an acute TRV to a chronic pathway such as multi-media is not considered to be appropriate. As such, an evaluation of the potential additive renal effects of cadmium from acute inhalation and multimedia exposure is not considered to be appropriate for the HHRA.

Given that chronic exposures via both inhalation and multi-media pathways are possible, a comparison of the potential effects of cadmium from the annual averaging period for inhalation and the multi-media pathway was completed for informational purposes.

Cadmium was retained as a COPC for the inhalation pathway for the annual averaging period as a carcinogen only. This approach was considered appropriate as the lowest health-based threshold available for cadmium, therefore the most sensitive toxicological endpoint, was based on a carcinogenic effect (Attachment 2, Table 3; 0.00024 µg/m3 – CalEPA REL). However, in order to address the concern raised in the Reviewer's comment, an assessment of potential non-carcinogenic risks due to inhalation of cadmium for the annual averaging period, and potential additive effects in combination with the non-carcinogenic risks estimated in multi-pathway assessment, were evaluated below.

Non-carcinogenic chronic inhalation TRVs for cadmium are not readily available from many regulatory sources, including Health Canada. The TRV selected for this evaluation is provided by the Ontario Ministry of the Environment and Climate Change (MOECC, 2016), 3.0E-05 mg/m3, based on the MOECC 24-hour ambient air quality criteria (AAQC, MOECC, 2016).

The table below presents the evaluation of the potential additive effects of cadmium. Additive effects were assessed by summing the hazard quotients predicted for cadmium for the inhalation pathway for the annual averaging period and the multi-media pathway for each assessment case. As presented in Section 7.0 of the HHRA, a HQ value less than 1 indicates that a health risk is not expected; conversely, a HQ value greater than 1 indicates that the predicted exposure concentration of a COPC is greater than its health-based guideline, and that the potential exists for health risks in the short-term.

Receptor	Pathway	Base Case	Project Case	Base + Project Case
Seasonal/Recreational User at the Fenceline	Inhalation – Annual averaging period	n/a	HQ = 0.003	HQ = 0.003
	Multi-media – operations phase	HQ = 0.2	HQ = 0.974	HQ = 0.974
	TOTAL:	HQ = 0.2	HQ = 0.997	HQ = 0.997

Note:
HQs were presented to three decimal places for clearer illustration.
Bold font indicates an estimated hazard quotient greater than the target risk of 1.
The additive effects of inhalation of cadmium for the 1-hour averaging period and the multimedia pathway result in an HQ less than one.

25.2.2 Response to CEAA Comment Part B

See Response to A - No additional health risks were identified as a result of an evaluation of the potential additive effects of cadmium. Therefore, no additional mitigation measures or monitoring is recommended.

25.2.3 Response to CEAA Comment Part C

See response to Information Request IE(2)-01 – No new receptor locations were identified IE(2)-01 therefore no change to the HHRA is proposed.

Agency for Toxic and Disease Registry (ATSDR). 2012. Toxicological Profile for Cadmium. U.S. Department of Health and Human Services, Public Health Service. Available from: https://www.atsdr.cdc.gov/ToxProfiles/tp5.pdf

CCME (Canadian Council of Ministers of the Environment). 2010. Canadian soil quality guidelines for the protection of environmental and human health: Carcinogenic and Other PAHs. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

CCME (Canadian Council of Ministers of the Environment). 2008. Canada-Wide Standard for Petroleum Hydrocarbons (PHC) in Soil: Scientific Rationale. Supporting Technical Document. PN 1399. January 2008.

CCME (Canadian Council of Ministers of the Environment). 2002. Canadian soil quality guidelines for the protection of environmental and human health: Dioxins and Furans. In: Canadian environmental quality guidelines, 1999, Canadian Council of Ministers of the Environment, Winnipeg.

Government of Canada. 2015. Interim Advice to Federal Departments for the Management of Federal Contaminated Sites Containing Perfluorooctane Sulfonate (PFOS). Federal Contaminated Sites Action Plan (FCSAP). Version 1.3, October 1, 2015.

Health Canada. 2016. Updates to Health Canada Drinking Water Screening Values for Perfluoroalkyl Substances (PFAS). Dated April 13, 2016.

Health Canada. 2010. Federal Contaminated Site Risk Assessment in Canada Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRAChem).

Ontario Ministry of the Environment and Climate Change (MOECC). 2016. Modified Generic Risk Assessment (MGRA) "Approved Model". Standards Development Branch. November 1, 2016.

26.0 CEAA-FD71, CEAA-FD2(A1)-7 (37.0) / HE(2)-24 – ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – WHOLE BODY FISH TISSUE DATA

Reference to EIS:

- TSD 14
- TSD 15-1, Appendix C
- TSD 15-2

26.1 Context and Information Required for a Complete Response

Prodigy's responses to HE(1)-24 B and IE(1)-15 indicate that the comparison of whole body fish tissue data for mercury collected in 2016 indicates that the range of concentrations observed are similar to those reported for muscle and liver tissue from 2011 and 2012, and that the use of the 2011-2012 data are considered to be representative of whole body fish. No statistical analysis was provided to demonstrate that the range of concentrations for mercury or other contaminants were similar. This information is required to ensure that the understanding of potential effects of the Project on the health of Aboriginal peoples is based on complete and representative data, particularly given the concern about mercury hazard quotients described in IE(2)-14.

Specific Question/ Request for Information:

A. Provide statistical analysis to justify that the whole body fish tissue data collected in 2016 has a range of concentrations similar to those reported for muscle and liver tissue in 2011 and 2012;

B. If the statistical analysis does not demonstrate that the whole body fish tissue data collected in 2016 has a range of concentrations similar to those reported for muscle and liver tissue in 2011 and 2012, update the HHRA to include the 2011-2012 and 2016 fish tissue and whole fish data;

C. If the HHRA is updated through question B, describe additional mitigation measures that can be applied to reduce new effects identified in the updated HHRA; describe residual effects after mitigation; propose any follow-up programs necessary to verify the efficacy of the mitigation measures or the EA predictions;

D. As required in HE(2)-18, include any new receptor locations identified in response to IE(2)-01 in your response to HE(2)-24.

26.2 Prodigy Response

26.2.1 Response to CEAA Comment Part A

Please refer to the table below, which provides a statistical summary of the mercury fish tissue data used in the HHRA from the EBA (2013) baseline study (referenced in the original TSD 15, compared to the 2016 data from the 2017 Fish and Fish Habitat Addendum (TSD 15 Addendum). All concentrations are provided in units of mg/kg wet weight. As shown, a similar range of concentrations were found in 2016 versus the data collected in 2011-2012 used in the HHRA. The HHRA used the maximum measured concentrations as exposure point concentrations in the multi-media assessment (i.e., 1.5 mg/kg for muscle tissue). Revision to the HHRA is not considered to be necessary given the fish quality data used in the HHRA are representative of fish tissue collected in support of the EA.

Data	Maximum	Minimum	Mean	Median	75th Percentile	95th Percentile
2011-2012 (Herman Lake, liver)	0.75	0.09	0.39	0.40	0.57	0.70
2011-2012 (Herman Lake, muscle)	1.5	0.054	0.41	0.26	0.48	1.3
2016 (Herman and Otto Lakes, whole body)	0.94	0.15	0.43	0.35	0.59	0.82

26.2.2 Response to CEAA Comment Part B

As indicated in the response to part (A) above, no revision to the HHRA is required.

26.2.3 Response to CEAA Comment Part C

As indicated in the response to part (A) above, no revision to the HHRA and no further mitigation measures are required.

26.2.4 Response to CEAA Comment Part D

See response to Information Request IE(2)-01 – No new receptor locations were identified IE(2)-01 therefore no change to the HHRA is proposed.

27.0 CEAA-FD72 (23.0) / HE(2)-25 – ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – CONSERVATISM AND UNCERTAINTY

Reference to EIS:

- TSD 14, Sections 8.0 and 9.0

27.1 Context and Information Required for a Complete Response

Prodigy's response to HE(1)-25 A indicates that "a quantitative uncertainty/sensitivity analysis was not considered to be required, given that any chemicals associated with potential risks based upon the calculated HQs and ILCRs have proposed monitoring in surface water and air." Monitoring may be proposed to confirm the assumptions used in the HHRA, but monitoring alone is not sufficient to support the conclusion drawn in TSD 14, Section 9.0 that "considering the assumptions and conservative approach relied upon in the HHRA, potential health effects from the Project are not expected." It is not appropriate to rely only on highly-conservative assumptions and on the "conservative approach" to conclude that identified potential health effects from the Project are not expected.

An uncertainty analysis would quantify the level of conservativeness for each of the input parameters named in TSD 14, Section 8.0, Table 8-1, and the impacts or significance to the risk estimates discussed. It would provide information to determine the conservativeness built in by using generic consumption rates rather than site-specific data; excluding emissions related to off-site vehicle traffic; excluding the sediment exposure pathway; applying the Ontario Typical Range (OTR98) of chemical soil parameters rather than using the site specific baseline soil data; and not using baseline data for wild game and contaminant uptake in country foods.

Hazard quotient (HQ) estimates for the conservative HHRA scenario assumed in TSD 14 should be compared to HQ estimates for a representative HHRA scenario, to obtain a quantitative sense of the sources of uncertainty listed in TSD 14, Section 8.0, Table 8-1. The Agency requires this comparison, in order to clarify which mitigation measures are most important to reduce potential effects to human health, and to focus follow-up programs on parameters with the highest uncertainties. It is of particular interest to understand the uncertainty surrounding mercury, given the high hazard quotients identified (see IE(2)-14).

Specific Question/ Request for Information:

A. Compare hazard quotient (HQ) estimates for the conservative HHRA scenario provided in TSD 14 to HQ estimates for a representative HHRA scenario;

B. Describe, based on the comparison provided in response to question A, how existing mitigation measures and follow-up programs are used to address each source of uncertainty identified in TSD 14, Section 8.0, and Table 8-1;

C. Where necessary, describe any new mitigation measures or follow-up programs that can serve to reduce sources of high uncertainty in the HHRA;

D. As required in HE(2)-18, include any new receptor locations identified in response to IE(2)-01 in your response to HE(2)-25.

27.2 Prodigy Response

27.2.1 Response to CEAA Comment Part A

Following a conference call on May 15, 2018 between the Proponent, CEAA and Health Canada, the Proponent received clarity on this comment. Health Canada clarified its main concern was specifically with respect to a representative HHRA scenario of mercury in the multi-media assessment as outlined in IE(2)-14. In response to IE(2)-14, the level of conservatism applied to the multi-media assessment of mercury in surface water was quantified by adjusting the conservative exposure inputs (i.e., "risk drivers") used in the calculation of HQs in the HHRA, and comparing the predicted HQs from the conservative scenario with the HQs predicting using the adjusted, less conservative exposure inputs. HQs were adjusted based on less conservative, more representative fish ingestion rates, bioconcentration factors (BCF) and oral bioavailability. See IE(2)-14 for full details.

Arsenic, cadmium, cobalt, manganese, lead and selenium were retained for the multi-media assessment in surface water, in addition to mercury. The same conservative assumptions which were applied to the evaluation of mercury for the multi-media pathway were applied to the evaluation of arsenic, cadmium, cobalt, manganese, lead and selenium. The approach to the response for IE(2)-14 is also appropriate for arsenic, cadmium, cobalt, manganese, lead and selenium as fish ingestion was the driving pathway for these COPCs in the multi-media assessment, just as fish ingestion was the driving pathway for mercury. Full details of the quantification of the conservatism in the HHRA are provided in IE(2)-14.

For context, surface water HQs were adjusted via the application of representative fish ingestion rates from Chan et al. (2014) and compared with the HQs from the conservative HHRA assessment in the table below. Only HQs for the Base + Project Case are presented.

	Conservative HHRA (current assessment)		Representative HHRA (less conservative)	
COPC	Ingestion of Fish HQ	Total HQ	Ingestion of Fish HQ	Total HQ
Arsenic	9.10E-01	1.32	3.06E-01	0.72
Cadmium	1.06E+00	1.15	3.57E-01	0.45
Cobalt	5.39E+00	5.67	1.81E+00	2.09
Lead	3.98E-01	1.00	1.34E-01	0.74
Manganese	8.69E-02	0.65	2.92E-02	0.59
Selenium	4.35E-01	0.45	1.46E-01	0.16

*HQs were presented to two decimal places in order to demonstrate the reduction in value via the application of less conservative exposure inputs.

As presented in response to IE(2)-14, the application of a less conservative, representative fish ingestion rate reduced the predicted HQs for fish ingestion, and total HQs. For example, the HQ for cobalt in the conservative HHRA for the Base + Project Case is predicted to be 6, but is reduced to an HQ of 2 in the more representative HHRA scenario, thus demonstrating the conservatism of the HHRA.

The conservatism applied in the inhalation assessment in the HHRA relates to the use of the Maximum Point of Impingement (MPOI) location for the assessment of potential risk. The MPOI represents the highest potential Project-related changes in environmental quality that may occur along the Project boundary or "fenceline" as shown on Figure 5.1.1-1. The MPOI was used to conservatively represent other off-site locations within the Local Study Area (LSA) given that it is uncertain that all receptor locations where people are likely to use the area have been identified. The use of the MPOI as a receptor location is highly conservative as it assumes that a human receptor would be as close as possible to the Project footprint (i.e., standing against the "fence"), and remain at that position for the duration of the exposure periods

assessed (i.e., 1 hour, 24 hours, or up to 20 years). In reality, no permanent human receptors (i.e., cabins, homes, etc.) were identified in such close proximity to the Project footprint; people present at this location are expected to be transient in nature. Therefore, the use of the MPOI represents the worst possible exposure scenario, albeit one which is highly unlikely to occur. In assessing the worst case scenario in the HHRA, and recommending mitigation measures and monitoring based on this worst case scenario, all less conservative (and more likely) scenarios are protected for.

As shown in the predicted air concentration presented in the TSD 9 Air Quality, concentrations of Project-related chemicals in air decrease as distance from the Project footprint increases. An isopleth figure depicting the change in concentration with distance is presented in Appendix 3.V of TSD 9 Air Quality (Figure 1-1). This in turn means that potential risk (i.e., HQs and ILCRs) also decrease as distance from the Project footprint increases. This is illustrated in Attachment 6 of the HHRA Appendix, Tables 1-4. For all inhalation assessment periods (i.e., 1 hour, 24 hours, or a year), the HQ and/or ILCR for the "fenceline" receptor is greater than the HQs for receptors further away from the Project footprint. As an example, the HQs for PM_{10} for the 24-hour averaging period (project case) are presented below for receptor locations at increasing distances from the Project Footprint (See Attachment 6, Table 2).

Receptor ID	Proximity to Project Footprint	HQ
Fenceline	Closest possible proximity to Project Footprint	7
HHR010	Moderate proximity to Project Footprint; closer than HHR005	3
HHR005	Furthest receptor from Project Footprint compared to Fenceline and HHR010	0.4

The HQs for receptors even further from the Project footprint than those considered in the HHRA would be potentially exposed to chemical concentrations and HQs which are lesser still. However, mitigation measures were recommended based on the predicted HQs at the "fenceline", rather than actual receptors further away from the Project footprint. As such, mitigation measures are protective of higher risks than are expected at more representative receptor locations and any lesser risk expected at these further locations is accounted for.

27.2.2 Response to CEAA Comment Part B

As presented in Table 8-1, all sources of uncertainty in the HHRA were considered to overestimate risk. The level of conservatism applied in the HHRA (i.e., the significance of the overestimation) were quantified in response A through the comparison of the HQs predicted in the conservative HHRA and the HQs predicted for a less conservative, more representative scenario. As a worst case exposure scenario enables the conclusions of the HHRA to be protective of the worst possible exposure related to Project activities. As such, the mitigation measures currently proposed based on the assumed worst case scenario are protective of the more realistic scenario for which the potential for risk is considered to be much lower (as illustrated in the Response to A).

Mitigation specifically to address the points of uncertainty in the HHRA is not required as the worst case scenario has already been assessed and mitigated for. As the uncertainty in the HHRA would only be expected to overestimate risk rather than underestimate it, and mitigation has already been recommended to protect human receptors from the overestimated risk, no mitigation measures are necessary to protect against possible unknown risk. All potential risk, even scenarios of unlikely high exposure have been accounted for.

27.2.3 Response to CEAA Comment Part C

No new mitigation measures or follow-up programs are recommended as a result of this comment. As shown in the response to Part A above, the only COPC that still had a predicted HQ greater than the target

HQ of 1 for the multi-media assessment was cobalt. However, cobalt had already been recommended for monitoring in surface water based on a predicted multi-media HQ in surface water greater than 1 in the conservative HHRA submitted as part of the EA. No additional COPCs have been identified as posing potentially unacceptable risks in the HHRA as a result of the evaluation of adjusted risk drivers in this comment.

27.2.4 Response to CEAA Comment Part D

See response to Information Request IE(2)-01 – No new receptor locations were identified IE(2)-01 therefore no change to the HHRA is proposed.

28.0 CEAA-FD2(A1)-6 (36.0) / IE(2)-14 – ABORIGINAL PEOPLES HEALTH / SOCIO-ECONOMIC CONDITIONS – HAZARD QUOTIENT ESTIMATES

Reference to EIS:

- TSD 14, Section 5.2
- TSD 14, Appendix A, Section 7.2 and 9.0.

28.1 Context and Information Required for a Complete Response

Prodigy's response to IE(1)-14 indicates that "hazard quotients were greater than 1 for both Base Case and Project Case scenarios (TSD 14, Appendix A, Section 7.2, Table 7.2-1), indicating a potential health risk due to mercury in fish tissue. As a result, monitoring of water quality was proposed given that the pathway by which mercury concentrations in fish tissue may change is as a result of increased mercury in surface water." According to Table 7.2-1, the Project Case HQ for mercury is estimated at 16, and the Base + Project Case HQ is estimated at 21. The Agency notes that no mitigation measures are identified in TSD 14, Section 5.2, or in response to IE(1)-14, to reduce effects to human health by reducing the potential for bioaccumulation and exposure to humans through consumption.

TSD 14, Appendix A, Section 9.0 indicates that predicted health risks for mercury is "largely due to the fish ingestion pathway, which relied upon conservative predictions of chemical uptake into fish tissue and assumptions related to the amount and frequency of fish consumed by people. Although health risks were predicted for [mercury], considering the assumptions and conservative approach relied upon in the HHRA, exposure and by extension health risks were likely overpredicted and therefore potential health effects from the Project are not expected."

Health Canada also notes that the HHRA may have underestimated long-term risk from multi-pathway exposure to mercury by dose-averaging the exposure frequency, as noted in TSD 14, Section 7.1: "hazard quotients were calculated for non-carcinogenic COPCs as shown for the 1-hour and 24-hour averaging periods above, except that amortization using the Exposure Term (represented by the exposure time and exposure frequency provided in [TSD 14,] Section 5.1) has been incorporated into the calculation (Health Canada 2012)."

The dose-averaging should be considered and applied based on toxicological characteristics (e.g., elimination half-life, persistence, concentration- vs. dose-based toxicity) on a chemical-by-chemical basis (Health Canada, 2016: Memorandum: A Primer for Evaluating Human Health Risks at Contaminated Sites for Chronic and Less-Than-Chronic Exposures to Chemicals). Dose-averaging may not be appropriate for the assessment of mercury due to its long elimination half-life and developmental toxic effects (ATSDR, 1999: Toxicological Profile for Mercury). It is unclear how toxicological characteristics of mercury, and its suitability for the dose-averaging were considered in the HHRA.

As an extension of comment HE(2)-25, the Agency requires that a representative HHRA scenario be presented and compared to the conservative HHRA scenario presented in TSD 14, to increase the Agency's confidence that the exposure and health risks were "likely overpredicted" for mercury by the conservative HHRA scenario. In particular, this comparison would quantify the extent to which health risks from the fish ingestion pathway are overpredicted.

Specific Question/ Request for Information:

A. From HE(2)-25 A, compare hazard quotient (HQ) estimates for mercury for the conservative HHRA scenario to HQ estimates for mercury for a representative HHRA scenario;

B. Describe how the comparison presented in question A demonstrates that exposure and health risks were "likely overpredicted" for mercury, and are largely due to the fish ingestion pathway. In particular, this comparison would quantify the extent to which health risks from the fish ingestion pathway are overpredicted by the conservative scenario;

C. Discuss why dose-averaging was chosen for the HHRA for mercury, and describe how the toxicological characteristics of mercury, including elimination half-life, persistence, and concentration- vs. dose-based toxicity, are considered;

D. Identify and describe mitigation measures to reduce the effects to human health, including measures that would reduce the potential for bioaccumulation and exposure to humans through consumption;

E. Provide details of follow-up programs to confirm that exposure and by extension health risks were likely overpredicted, and to confirm that potential health effects from the Project would not occur;

F. As required in HE(2)-18, include any new receptor locations identified in response to IE(2)-01 in your response to IE(2)-14.

28.2 Prodigy Response

28.2.1 Response to CEAA Comment Parts A and B

This text should be added to Section 7.2 of the HHRA.

In the HHRA, a worst-case exposure scenario for mercury in surface water was evaluated in the multi-media assessment; consequently, this scenario resulted in a predicted HQ of 16 for the Project Case, which in turn resulted in an HQ of 21 for the Base + Project Case for mercury. Exposure to mercury via fish ingestion was the highest predicted exposure ratio of all pathways considered in the multi-media assessment, and was therefore considered to be the driving pathway.

The evaluation of human exposure to mercury via fish ingestion is considered to be an evaluation of the worst- case scenario based on conservative exposure assumptions (i.e., "risk drivers"). For example, fish ingestion rates provided by Health Canada (2004) were selected for use in the HHRA. These fish ingestion rates are based on a study by Richardson (1997) which surveyed Amerindian and Inuit Aboriginal Peoples in the Canadian Arctic, thus likely overestimating fish ingestion by human receptors for the Project. A recent study from Chan et al. (2014) can be considered more representative of Aboriginal receptors in the LSA, as the study considered Aboriginal Peoples from specific regions (i.e., ecozones) in Ontario. The ecozone distinction is considered to be a more representative scenario as it takes into account the types of traditional foods available in particular regions of Ontario, and how factors such as landscape and weather affect the availability of food which in turns influences the consumption of different foods by Aboriginal Peoples. Based on the rationale provided in the Chan et al (2014), the Project falls within Ecozone 2 (Boreal Shield/Northeast). Chan et al. (2014) determined daily consumption rates for average and heavy (i.e., 95th percentile) Aboriginal consumers. Below is a comparison of the fish intake rates provided by Health Canada (2004; Richardson, 1997) and Chan et al. (2014). The values for a heavy receptor from Chan et al. (2014) is presented.

Parameter	Units	Infant	Toddler	Child	Teen	Adult	Reference
Fish	g/day	0	95	170	200	220	Health Canada, 2004
		0	31.94	57.16	67.25	73.97	The intake rate for the adult was selected from Chan et al. (2014) for a heavy consumer in Ecozone 2. The fish ingestion rates for other age groups were calculated by adjusting the adult ingestion rate by the ratio of the ingestion rate for a particular age group to the ingestion rate for adults as per Health Canada guidance (2012).

The fish ingestions rates provided by Chan et al. (2014), which can be considered more representative of Project receptors given that rates were derived based on Aboriginal consumers in the same (ecozone) region of Ontario, are significantly lower than those provided by Health Canada (2004; Richardson, 1997) based on Aboriginal receptors in the Canadian Arctic and in America. The use of the Health Canada fish ingestion rates in the HHRA is considered to be a conservative scenario based on atypical fish consumption for the area. A comparison of the HQ calculations using the more representative fish ingestion rates provided by Chan et al. (2014) is presented below (red text).

COPC	Hazard Quotients								
	Incidental Ingestion of Soil	Inhalation of Soil Dust	Dermal Contact with Soil	Ingestion of Berries	Ingestion of Moose	Ingestion of Fish	Ingestion of Surface Water	Dermal Contact with Water	Total HQ
Operations Phase Scenario									
Base Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	4.54E+00	5.98E-04	2.75E-05	5
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	1.53E+00	5.98E-04	2.75E-05	2
Project Case									
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	1.62E+01	1.40E-03	6.43E-05	16
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	5.44E+00	1.40E-03	6.43E-05	5
Base + Project Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	2.07E+01	2.00E-03	9.18E-05	21
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	6.96E+00	2.00E-03	9.18E-05	7

The use of more representative fish ingestion rates rather than the conservative fish ingestion rates selected for use in the HHRA result in a reduction of the Base + Project Case HQ from 21 to 7, illustrating the level of conservatism used in the model.

Furthermore, as presented in Section 7.2, the water-to-fish BCF for mercury is a site-specific value (73,000, see HHRA Appendix Attachment 3, Table 4) which was calculated as the average BCF from baseline water quality data and baseline fish muscle tissue data. Literature values as summarized in Attachment 3, Table 3 of the HHRA Appendix, ranged widely for methylmercury, from 1000 to up to 11,000,000, with most values between 10,000 and 100,000. If a less conservative BCF (10,000) is selected for mercury, but the conservative fish ingestion rates from Health Canada (2004; Richardson, 1997) are retained, the predicted HQs for mercury for the multi-media pathway become (red text):

COPC	Hazard Quotients								
	Incidental Ingestion of Soil	Inhalation of Soil Dust	Dermal Contact with Soil	Ingestion of Berries	Ingestion of Moose	Ingestion of Fish	Ingestion of Surface Water	Dermal Contact with Water	Total HQ
Operations Phase Scenario									
Base Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	4.54E+00	5.98E-04	2.75E-05	5
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	4.54E+00	5.98E-04	2.75E-05	5
Project Case									
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	1.62E+01	1.40E-03	6.43E-05	16
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	2.21E+00	1.40E-03	6.43E-05	2
Base + Project Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	2.07E+01	2.00E-03	9.18E-05	21
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	6.76E+00	2.00E-03	9.18E-05	7

If a less conservative BCF (10, 000) is selected for mercury and the more representative fish ingestion rates from Chan et al. (2014) are applied, the predicted HQs for mercury for the multi-media pathway become (red text):

COPC	Hazard Quotients								
	Incidental Ingestion of Soil	Inhalation of Soil Dust	Dermal Contact with Soil	Ingestion of Berries	Ingestion of Moose	Ingestion of Fish	Ingestion of Surface Water	Dermal Contact with Water	Total HQ
Operations Phase Scenario									
Base Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	4.54E+00	5.98E-04	2.75E-05	5
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	1.53E+00	5.98E-04	2.75E-05	2
Base + Project Case									
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	1.62E+01	1.40E-03	6.43E-05	16
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	7.45E-01	1.40E-03	6.43E-05	1
Base + Project Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	2.07E+01	2.00E-03	9.18E-05	21
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	2.27E+00	2.00E-03	9.18E-05	2

The use of a less conservative BCF values in the HHRA result in a reduction of the Base + Project Case HQ from 21 to 7, and from 21 to 2 when both a less conservative BCF and more representative fish ingestion rate (Chan et al., 2014), illustrating the level of conservatism used in the HHRA.

Further conservatism was applied to the assessment of mercury with regards to the chemical speciation of mercury. Surface water modelling results provided to the Human Health Discipline by the Surface Water Discipline were only available for total mercury. As concentrations of methylmercury were not quantified, it was conservatively assumed that 100% of the mercury found in the environment is in the form of methylmercury, and that all of this methylmercury would be bioconcentration in fish tissue.

For characterization of baseline water quality, the Surface Water Discipline collected and analyzed samples for both total mercury and methylmercury. The laboratory certificates of these analyses are provided in Appendix C of TSD 16 Surface Water and Sediment Quality. The results illustrate that methylmercury does not make up 100% of the total mercury measured in surface water but rather only a fraction of the total mercury concentration. Some results are provided below for context (See Appendix D of TSD 16 full results):

Date of Sampling Event	Sampling Location	Concentration of Total Mercury (mg/L)	Concentration of Methylmercury (mg/L)
July 30, 2013	Site6/GC1	2.1	0.000088
July 30, 2013	Site11/HL-OUTLET2	3.1	0.000160
September 11, 2013	HL-OUT	1.6	0.000083
March 11, 2014	UL8-B-BOTTOM	0.00181	0.000401

Full sampling results for surface water are provided in TSD 16 Surface Water and Sediment Quality, Appendix C. While these sampling results were not used directly in the HHRA, the results illustrate that the assumption of methylmercury making up 100% of the total measured concentration of mercury is an overestimate.

Furthermore, it was conservatively assumed in the HHRA that 100% of the methylmercury a human was exposed to would be bioavailable. According to Simon et al. (1990), 95-to-100% of mercury is bioavailable. An oral bioavailability of 100% was assumed for fish consumption in the HHRA in order to represent the worst case scenario. If an oral availability of 95% rather than 100% is applied, the predicted HQs for mercury for the multi-media pathway are shown below (red text):

COPC	Hazard Quotients								
	Incidental Ingestion of Soil	Inhalation of Soil Dust	Dermal Contact with Soil	Ingestion of Berries	Ingestion of Moose	Ingestion of Fish	Ingestion of Surface Water	Dermal Contact with Water	Total HQ
Operations Phase Scenario									
Base Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	4.54E+00	5.98E-04	2.75E-05	5
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	4.32E+00	5.98E-04	2.75E-05	4
Project Case									
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	1.62E+01	1.40E-03	6.43E-05	16
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	1.54E+01	1.40E-03	6.43E-05	15
Base + Project Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	2.07E+01	2.00E-03	9.18E-05	21
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	1.97E+01	2.00E-03	9.18E-05	20

If an oral availability of 95% rather than 100% is applied, and a more representative fish ingestion rate from Chan et al. (2014) is applied, the predicted HQs for mercury for the multi-media pathway become (red text):

COPC	Hazard Quotients								
	Incidental Ingestion of Soil	Inhalation of Soil Dust	Dermal Contact with Soil	Ingestion of Berries	Ingestion of Moose	Ingestion of Fish	Ingestion of Surface Water	Dermal Contact with Water	Total HQ
Operations Phase Scenario									
Base Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	4.54E+00	5.98E-04	2.75E-05	5
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	1.45E+00	5.98E-04	2.75E-05	2
Project Case									
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	1.62E+01	1.40E-03	6.43E-05	16
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	5.16E+00	1.40E-03	6.43E-05	5
Base + Project Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	2.07E+01	2.00E-03	9.18E-05	21
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	6.61E+00	2.00E-03	9.18E-05	7

If an oral availability of 95% rather than 100% is applied, a more representative fish ingestion rate from Chan et al. (2014) is applied, and a less conservative BCF value (10,000) is applied, the predicted HQs for mercury for the multi-media pathway become (red text):

COPC	Hazard Quotients								
	Incidental Ingestion of Soil	Inhalation of Soil Dust	Dermal Contact with Soil	Ingestion of Berries	Ingestion of Moose	Ingestion of Fish	Ingestion of Surface Water	Dermal Contact with Water	Total HQ
Operations Phase Scenario									
Base Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	4.54E+00	5.98E-04	2.75E-05	5
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.36E-04	1.45E+00	5.98E-04	2.75E-05	2
Project Case									
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	1.62E+01	1.40E-03	6.43E-05	16
Mercury	0.00E+00	0.00E+00	0.00E+00	0.00E+00	9.71E-06	7.07E-01	1.40E-03	6.43E-05	1
Base + Project Case									
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	2.07E+01	2.00E-03	9.18E-05	21
Mercury	5.18E-04	7.12E-07	5.57E-05	6.22E-02	4.45E-04	2.16E+00	2.00E-03	9.18E-05	2

The use of a less conservative oral bioavailability value in the HHRA resulted in a reduction of the Base + Project Case HQ from 21 to 20, from 21 to 7 when both a less conservative BCF and more representative fish ingestion rate, and from 21 to 2 when a less conservative oral bioavailability, BCF and fish ingestion rate are applied illustrating the level of conservatism used in the model. Incorporation of the actual fraction of mercury in surface water that is present as methylmercury, which as illustrated above is a small fraction of total mercury, would further reduce these predicted HQs.

Regardless of the conservatism of found in the HHRA, as presented in Section 5.0 of TSD 14 Human Health, mitigation measures are currently recommended for mercury in surface water.

28.2.2 Response to CEAA Comment Part C

Dose-averaging is routinely completed in risk assessment as described by Health Canada in the Preliminary Quantitative Risk Assessment (Health Canada, 2012) and Detailed Quantitative Risk Assessment (Health Canada, 2010a) guidance documents. Additionally, Health Canada has published a document specifically related to human health risk assessment of mercury related to fish consumption (Health Canada, 2007; Human Health Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption). In this document, Section 4.5 outlines the method of estimating human exposure to methylmercury in fish as follows:

$$\text{PDI}\left(\frac{\mu\frac{\text{g}}{\text{kg}}\text{bw}}{\text{day}}\right) = \frac{\text{fish muscle intake (g/day) x [methylmercury concentration (µg/g)]}}{\text{average body weight (kg)}}$$

The PDI is then compared to the provisional tolerable daily intake (pTDI or TRV; 0.00047 mg/kg-day (Health Canada, 2010b)) to assess whether there is a potential risk to human health due to consumption of fish. The pTDI or TRV itself is based upon dose-averaging, wherein the concentrations in human hair are back-calculated to a safe daily dose level based upon an adverse effect. This same approach was used in the HHRA and is therefore considered to be reasonable.

In reference to the inhalation assessment, the 1-hour and 24-hour predicted air concentrations were assessed without amortization given these are short-term exposures and direct comparison with their respective guidelines was completed. However, the annual predicted air concentrations were amortized in the exposure assessment given that a person would not be expected to remain stationary at their given receptor location (e.g. the fenceline) for the duration of their lifespan. Amortization is reasonable to incorporate into a chronic assessment to provide a more realistic estimate of potential exposure over the course of the Project. Amortization, as for oral exposures, is also considered to be reasonable for inhalation exposures, given that the TRVs used to derive inhalation TRVs are often based on rodent studies in which rodents are exposed to a contaminant in air for a brief time each day (e.g. 6 hours per day for 5 days per week), which is then extrapolated to a continuous exposure (i.e., 24 hours per day and 7 days per week). Therefore, no changes to the HHRA were required.

28.2.3 Response to CEAA Comment Part D

As requested by Health Canada and provided in response to comment HE(2)-25, the risks to human health due to fish consumption are low, and any mitigation measures related to human consumption are not warranted. This conclusion is also based upon the conservative assumptions used in the calculations of HQs (see response to part B above) and that a monitoring program will be implemented to ensure that water concentrations of mercury in these lakes do not increase over the course of the Project. In the event that water concentrations do increase, measures would then be implemented as part of a future monitoring plan.

Please also refer to the comment and response to BFN-134: Comment: HH risk is largely driven by metals levels in fish. Therefore, detailed Fish tissue monitoring in adjacent lakes, is required during and after operations.

Response: The predicted health risks due to fish tissue were estimated on the basis of concentrations in water increasing, which could result in an increase in concentrations in fish tissue. Therefore, water quality monitoring was proposed, which would indicate whether there could be a potential for fish tissue concentrations to increase. If water quality concentrations do increase, then further monitoring of fish tissue would be a logical next step. These types of contingencies would be provided in a future monitoring plan, which is outside the scope of the EIS.

28.2.4 Response to CEAA Comment Part E

See Response to A. The conservatism utilized in the HHRA has been quantified via a comparison of the predicted HQ using conservative fish ingestion rates (i.e., Health Canada, 2004; Richardson, 1997) to the predicted HQ using more representative fish ingestion rates (Chan et. al, 2014), specifically for mercury as discussed with Health Canada. The effect of selecting a less conservative BCF and oral RAF were also quantified. Monitoring is already proposed, as presented in TSD 14 Human Health for all COPCs where potentially unacceptable risks were identified (i.e., via exceedance of target HQ or target ILCR). No additional mitigation measures or monitoring programs are recommended.

28.2.5 Response to CEAA Comment Part F

See response to Information Request IE(2)-01 – No new receptor locations were identified IE(2)-01 therefore no change to the HHRA is proposed.

Health Canada. 2004. Federal Contaminated Site Risk Assessment in Canada. Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment. Prepared by Environmental Health Assessment Services Safe Environments Programme September 2004. ISBN: 0-662-38244-7; Cat. No.: H46-2/04-367E. Ottawa, ON.

Health Canada. 2007. Human Health Risk Assessment of Mercury in Fish and Health Benefits of Fish Consumption. Bureau of Chemical Safety, Food Directorate, Health Products and Food Branch.

Health Canada. 2010a. Federal Contaminated Site Risk Assessment in Canada, Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRAChem). Health Canada. Ottawa, ON.

Health Canada. 2010b. Federal Contaminated Site Risk Assessment in Canada, Part II: Toxicological Reference Values (TRVs) and Chemical-Specific Factors. Version 2.0. Health Canada. Ottawa, ON.

Health Canada. 2012. Federal Contaminated Site Risk Assessment in Canada, Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA). Version 2.0. 2010 (Revised). Health Canada. Ottawa, ON.

Laurie Chan, Olivier Receveur, Malek Batal, William David, Harold Schwartz, Amy Ing, Karen Fediuk, Andrew Black and Constantine Tikhonov. First Nations Food, Nutrition and Environment Study (FNFNES): Results from Ontario (2011/2012). Ottawa: University of Ottawa, 2014. Print.

Richardson, G.M. 1997. Compendium of Canadian Human Exposure Factors for Risk Assessment. Ottawa: O'Connor Associates Environmental Inc.

29.0 CEAA-FD76 / TW(2)-01: CLOSURE PLAN AND MITIGATION

Reference to EIS:

- Chapter 7, Sections 7.4.2, 7.4.3, 7.4.4, 7.4.5, 7.4.6, 7.4.7

29.1 Context and Information Required for a Complete Response:

Part 2, Section 6.3 of the EIS Guidelines states that each mitigation measure "will be specific, achievable, measurable and verifiable, and described in a manner that avoids ambiguity in intent, interpretation and implementation."

Elements of restoration, rehabilitation and monitoring plans are included as mitigation measures in various sections of Chapter 7, and are used to support the conclusion of non- significance for several residual effects including current use of lands and resources for traditional purposes (loss of species habitat), migratory birds and species at risk.

The response to TW(1)-01 (CEAA-FD76) included a table (Table 1) linking mitigation commitments and monitoring to the Valued Components and Key Direct Effects as well as the Closure Plan. In addition, mitigation and monitoring measures are discussed within several other IR1 responses (e.g., TW(1)-07 (CEAA-FD82), TW(1)-10 (CEAA-FD85)).

However, Table 1 does not contain a comprehensive list of mitigation commitments and monitoring programs. In several cases, the information provided in Chapter 7, other IR-1 responses and Table 1 conflict. For example:

- In Table 1, monitoring of terrestrial vegetation is scheduled to occur every five years until the forest canopy reaches 10 m in height, however in Chapter 7, Table 7-117, forest monitoring is scheduled to occur annually in July.
- In Chapter 7, Table 7-157, where bat monitoring is scheduled to occur post-closure during the spring emergence and fall pre-hibernation swarm. However in IR-1 response to TW(1)-07 (CEAA-FD82), bat monitoring is scheduled annually in the winter for five years.
- The responses to TW(1)-01 and TW(1)-03 (CEAA-FD76 and CEAA-FD78), speak to terrestrial habitat monitoring post-closure, not species specific monitoring (migratory birds including waterfowl and Species at Risk - Eastern Whip-poor-will, Common Nighthawk, Olive-sided Flycatcher, Canada Warbler, Chimney Swift, and Rusty Blackbird). However, Part F of the proponent's response to TW(1)-03 (CEAA-FD78), states that one of the objectives of the follow up monitoring plan is to "detect and measure changes in avian species diversity, density and richness." This objective can only be achieved with species-specific surveys.

The Agency acknowledges that these programs will be finalized by the Closure Working Group and updated in response to future environmental conditions. However, information presented at this time must be clear and consistent across chapters and sections of the proponent's documentation. Furthermore, additional information is required to substantiate the conclusions made in the significance assessment. In the absence of details on the specific design criteria, duration and frequency for monitoring and mitigation programs, it is not clear how a conclusion of no significance was determined. Further, details on applicable follow up programs were not clear in the event that design criteria are not met and alternate mitigation measures are required.

This information is important for the Agency to understand the residual effects as the loss of plant species and habitat may result in effects to migratory birds, species at risk, current use of lands and resources for traditional purposes, and physical and cultural heritage.

Specific Question/ Request for Information:

A. Update Table 1 from the response to TW(1)-01 (CEAA-FD76) with mitigation and monitoring measures discussed within the EIS and responses to IR-1 (TW(1)-01 through TW(1)-12 (CEAA FD76 through CEAA-FD85 and CEAA-FD2(A1)-21)), ensuring that the "specific, achievable, measurable and verifiable" objectives, design criteria, duration (based on number of years, project phase or achieving specific design criteria) and frequency are included, and consistent across all documentation. Where appropriate, describe how efficacy of mitigation programs will be verified and alternative mitigation measures to be implemented if design criteria are not met;

B. Provide a detailed description of the proposed rehabilitation plan for the project area including approximate areas of rehabilitation by ecosite type (including peat accumulating wetlands), and linkages between appropriate ecosites to habitat used by migratory and breeding birds, species at risk, amphibians and species of interest to Indigenous groups. Where details will need to be finalized through a regulatory process, provide clear information on the outcomes that a particular aspect of the rehabilitation plan is meant to achieve;

C. Remove non-committal phrases such as "explore" and "should" from mitigation and monitoring measures and replace with actionable commitments;

D. Provide a commitment that input received from Indigenous groups will be included in the design and implementation of the rehabilitation plan. Specify if a role may be played by Indigenous groups in any follow-up programs.

29.2 Prodigy Response

29.2.1 Response to CEAA Comment Part A

Table 1 has been revised and updated as shown below to include the requested information and to address previous document inconsistences. In the case of previous document inconsistencies these are shown as being addressed in square bracketed underline text. It should also be noted that mitigation measures inherent in the basic Project design are not included in the Table 1 listings.

29.2.2 Response to CEAA Comment Part B

Rehabilitation details are provided in Table 1 in the response to comment Part A, and in the Preliminary Closure and Rehabilitation Plan. The intent of vegetation community rehabilitation at closure will be to mimic, to the extent practicable, those communities and wildlife habitats that were present on the PSA prior to Project development, and also to provide selective wildlife habitat for species such as Common Nighthawk, recognizing that the proportions of each habitat cannot be maintained.

In the baseline condition, RSA upland forest community types were dominated by a mix of deciduous (66%) and coniferous (34%) forest ecosite types, with coniferous communities tending to occur in clustered areas as per the Terrestrial Ecology Baseline Study, Technical Support Document, November 2016 (SLR 2016).

RSA deciduous community ecosite types include:

- Dry to Fresh, Coarse: Trembling Aspen, Birch (B055; 33%);
- Moist, Coarse: Aspen Birch Hardwood (B070; 12%); and
- Moist, Fine: Aspen – Birch Hardwood (B119; 2%).

RSA coniferous community ecosite types include:

- Dry to Fresh, Coarse: Jack Pine, Black Spruce (B049; 11%);
- Dry to Fresh, Coarse: Spruce, Balsam (B052; 5%);
- Moist, Coarse: Jack Pine, Black Spruce (B065; 13%);
- Moist, Coarse: Spruce Conifer (B067; 3%); and
- Moist, Fine: Black Spruce – Pine Conifer (B114; 2%).

Subject to revegetation test plot performance and input from the Closure Working Group, a site rehabilitation commitment has been made through EIS documentation, as per Table 1 above, to develop approximately 300 to 400 ha of forest / woodland / meadow habitat. This will include patches of woodland with over 70% conifer component that will provide winter cover for moose, along with areas of open woodlands with rock barrens for Common Nighthawk. Forested areas will also provide habitat for Canada Warblers and raptors. In addition, patchy meadow areas will be developed for moose and raptor feeding. An estimated 30 to 50 ha of wetland (peat accumulating) habitat will be developed to provide habitat for bird, reptile and amphibian, and mammal species that utilize such habitats.

Pending the results of revegetation test plot performance, and input from the Closure Working Group, it would be reasonable to assume that aspen / birch communities could be developed similar to ecosite types B055 and B070 on TMF and MRMF slope areas shown in Figure 10-1 of the Preliminary Closure and Rehabilitation Plan, along with zones of the jack pine / black spruce B049 ecosite type. The TMF and MRMF deck areas will provide a greater range of soil moisture types and will likely be suitable for B065, B067, B049 ecosite type coniferous forest growth, along with aspen / birch forest ecosite types.

Areas of rock barren suitable for Common Nighthawk nesting will occur on the TMF and MRMF slope areas. Meadow habitat can be developed as patches within the TMF and MRMF deck areas. Wetland habitat will be developed in association with the rehabilitated WQCP area, Water Body 6, and the flooded pit perimeter zone.

The TMF and MRMF slope area shown in Figure 10-1 of the Preliminary Closure and Rehabilitation Plan measures approximately 290 ha, and the TMF and MRMF deck area measures approximately 370 ha, for a total of about 660 ha. This area is sufficient to accommodate the tentatively planned 300 to 400 ha of forest / woodland / meadow habitat, together with substantive areas of rock barrens.

Further details including ecosite type development and associated linkages will be developed through more detailed closure planning, with input and guidance from the Closure Working Group.

29.2.3 Response to CEAA Comment Part C

Non-committal phrases such as “should”, “consider” and “explore” have been removed from Table 1 text, and have been replaced with words such as “will”, which are shown in square bracketed, underlined text.

29.2.4 Response to CEAA Comment Part D

Prodigy herein commits that input received from Indigenous groups through consultation on the EIS and through efforts of the Closure Woking Group will be fully considered in the design and implementation of

the Project site area closure rehabilitation plan. More specifically, as an outcome of the ongoing engagement and review processes, Prodigy and Aboriginal groups have further developed mitigation measures as reflected in the Commitments Table submitted to CEAA in January 2018 as part of the response to IR-1 (Appendix A – Commitments Table). The key additional mitigation identified as a result of the third-party / bilateral review processes with First Nations and MNO relates to participation in Closure Planning, Traditional Use of Lands and Resources, Follow-up and Monitoring, and Environmental Management Plans. For example, some key areas to support Aboriginal groups' participation in closure planning, follow-up and monitoring, and environmental management plans are listed below:

- Closure planning workshops will be held in participating Indigenous communities in the late spring / early summer of 2018 to help detail a Draft Closure Plan meeting Provincial approval requirements, that will be prepared for further community consultation in late 2018. The Final Closure Plan will be informed by the EA commitments as well as consultation input. This will be undertaken prior to filing the Closure Plan with the Ontario Ministry of Northern Development and Mines in early 2019.
- Revegetation seeding trials are being initiated in June 2018 with the participation of Aboriginal groups to help understand what species of plants groups would like to see established during the closure process.
- A follow-up program to ensure that changes in traditional use patterns and traditional knowledge will be used in the ongoing design and operation of the project.
- Ground and surface water monitoring programs will be developed with Aboriginal participation and input on the sampling methods to inform the description of each waterbody.
- The Environmental Monitoring Committee will have responsibilities related to how traditional use and traditional knowledge information is conveyed, updated and used in the design and operation of the project; review of the EEM program and regulatory permit applications; review of monitoring programs; review of environmental management plans; and development of the fish habitat Offsetting / Compensation Plan.

Table 1: EIS Key Mitigation and Monitoring Commitments related to Habitat Restoration and Rehabilitation with Links to the Preliminary Closure and Rehabilitation Plan

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
Terrain and Soils		
• Development of comprehensive erosion and sediment control plans; • Inspections and repairs to Project facilities as necessary during a 3 to 5 year period after closure	• Ensure that the potential for landslides and erosion are detected early and that appropriate mitigation or contingency actions are put in place promptly to minimize or avoid the effects • Ensure that recovery of quality soils is maximized to the extent possible, and that efforts are made to create additional soils during the operations phase on the stockpiles	
Groundwater		
• Seepage control systems for the TMF and MRMF, with the collected water being discharged into the WQCP for discharge under regulation to the environment	• Groundwater monitoring will be performed to track TMF seepage water quality and determine if there are any indirect effects on surface water and other VCs. • Locations of proposed monitoring wells are presented in the Environmental Monitoring Plan (TSD 20-9). • Monitoring of groundwater quality will be discontinued during the post-closure phase once it has been demonstrated that the objectives of closure have been met. Changes to groundwater quality will be assessed relative to baseline quality at monitoring well and piezometer locations, and to regulatory water quality objectives and standards.	
Surface Water Quantity		
• Implementation of the rehabilitation plans for the mine site following its operation, through the implementation of a Certified Closure plan, will serve to avoid effects on surface water quantity and flow over the long term	• Lake water levels (Herman/Otto Lake, Spring Lake, Goudreau Lake, and reference lakes); • Lake outflows (Herman/Otto Lake, Spring Lake, Goudreau Lake, and reference lakes); • Stream flows (McVeigh Creek, Goudreau Creek, Herman Creek, and inflows to Water Body 8 and Water Body 9)	
Surface Water Quality		
• Implementation of Erosion and Sediment Control through BMPs and engineering design to limit erosion and mobilization of sediments, promote settling of sediments and mitigate the migration of suspended solids into nearby surface water features.	• Closure phase water quality monitoring at specified or to be determined sites, generally annually but more frequently at select sites • Annual Post-Closure phase water quality monitoring at specified, or to be determined sites. Changes to surface water quality will be assessed relative to baseline conditions, and to regulatory water quality criteria.	

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
• Implementation of a construction inspection program for all phases of the Project • Monitoring the water quality of the Pit Lake during the post closure phase. If the water quality meets water quality objectives then the pit will be allowed to discharge into Goudreau Lake. If the Pit Lake does not meet water quality objectives, then the lake will not be allowed to spill until sufficient treatment measures are in place or alternative methods are evaluated and implemented		
Stream and Lake Sediments		
• Implementation of Erosion and Sediment Control through BMPs and engineering design to limit erosion and mobilization of sediments, promote settling of sediments and mitigate the migration of suspended solids into nearby surface water features. • Implementation of a construction inspection program for all phases of the Project • Development of a Fugitive Dust Best Management Practices Plan to control fugitive particulate emissions from on-site roadways and handling	• Sediment quality to be monitored in depositional areas at designated sites in accordance with Closure Plan and EEM requirements. Changes to sediment quality will be assessed relative to baseline conditions, and to regulatory criteria.	
Fish and fish Habitat		
• Once the pit is full, it will be connected to Goudreau Lake via a constructed channel. The channel will be a natural channel design and this, combined with habitat enhancements in the littoral zone of the pit (created during closure phase) will increase spawning, nursery, and adult habitat for some resident fish species. • In addition, pit filling will provide opportunities for wetland creation in a constructed littoral zone of the Pit Lake, which will increase habitat for forage fish on which the recreational fish feed.	• Relative to the Open Pit and channel connection to Goudreau Lake, photograph habitat at standard locations over ice free season, conduct water sampling, collect fish in spring and fall and assess presence, absence, recruitment and relative abundance to confirm habitat performance, with monitoring frequencies and duration to be determined through terms and conditions of the fisheries offset plan. Assess habitat restoration success against applicable fisheries authorization criteria.	
Terrestrial Vegetation		

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
• The final rehabilitation of mining materials management facilities and overall site rehabilitation provides opportunities for the replacement over time of some terrestrial vegetation. • Because extensive areas of upland forests exist across the LSA, RSA, and beyond, the focus of forest restoration is best defined within the context of wildlife habitat requirements; that is, restoring suitable habitat for ground-nesting birds that select for open woodlands (e.g., Common Nighthawk), rather than on restoration of the upland forest itself.	• Verify that the forest is recovering as designed, through soil sampling, use of quadrats to document plant species and percent cover progressing, and referenced photography, with annual sampling at same time of year (July recommended) [for the first 5 years post closure, and at 5 year intervals thereafter until the forest canopy reaches 10 m in height.] • [Assess revegetation success against criteria developed through the Closure Plan Working Group.]	• As discussed in response to CEAA-FD78 (IR number: TW(1)-03), monitoring [to be conducted annually for the first 5 years post-closure, and at 5 year intervals thereafter until the forest canopy reaches 10 m in height]. Survey sites and methodology (point counts) will be the same as those used during baseline studies to enable comparisons of the bird community. Vegetation monitoring will be conducted concurrently and include ecosite classification and percent cover of vegetation strata including trees, shrubs, herbs, and mosses. • End use revegetation goals will be further defined through the Closure Working Group, and as part of site restoration process, it will be important to include vegetation species of interest (tree and ground flora) or value to the Aboriginal peoples and other local communities. • AS part of the Environmental Management Plan test plots will be developed in advance of closure to evaluate the most effective approach to key areas, as per the response to CEAA-FD85 / TW(1)-10. • Performance standards and reference plots will also be established as per the response to CEAA-FD85 / TW(1)-10 • Plantings will be implemented to avoid creating monocultures and "linear" design, and plantings in pods (groupings of species) are recommended to increases success rates, seed diversity and development of community elements (linkages, microclimates)
Wetlands		
• Filling of the open pit to create a lake will provide opportunities for wetland creation in the constructed littoral zone. • One wetland area that might be returned onto the landscape is the Water Quality Control Pond, formerly Water Body 7, plus the additional habitat adjacent to Otto Lake, and portions of the filled pit itself.		• Prodigy anticipates that it [will likely be possible] to rehabilitate 30-50 ha of wetland within the PSA. This compares to approximately 199 ha of organic/peat wetland, and 16 ha of mineral wetland expected to be removed as a result of project development • Additional wetland development opportunities will occur in association with fish habitat offset development • Wetlands will be monitored to understand progression and biotic reliance [with monitoring details and frequencies, and success criteria, to be defined through the Closure Working Group]
Significant Wildlife Habitat		

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
• Final rehabilitation of mining facilities provides opportunities for restoring the upland forest removed that might be used for Moose calving on the height of the TMF and MRMF. Once fully established, this replaced habitat could also be utilized by Moose for late winter cover. It will be necessary to engineer shallow slopes at several places along the TMF and/or MRMF embankments to allow Moose to access this habitat in the Post Closure Phase. • It is anticipated that upon Closure, habitat for the Common Nighthawk would be enhanced. • The creation of a large waterbody through filling of the open pit will restore foraging habitat for Bald Eagle. • Restoring forest at the mine site [will] include objectives for habitat elements that are important to SSC such as mixed shelterwood woodlands and floating-leaved wetlands for moose; open woodlands with rock barren openings for Common Nighthawk; and sources of a water supply and shrubby understory for Canada Warbler.	• Verify the quality/ function of habitat created to replace winter cover for moose through mapping, GPS delineation, and plant inventories; Post-Closure monitoring to be conducted annually [for the first 5 years post-closure, and at a reduced frequency thereafter to be determined through the Closure Plan and the Closure Working Group] • Verify the occurrence of moose calving on the TMF and MRMF through mapping, GPS delineation, plant inventories, and game camera use; Post-Closure monitoring to be conducted annually [for the first 5 years post-closure, and at a reduced frequency thereafter to be determined through the Closure Plan and the Closure Working Group] • Verify the quality/ function of the mixedwood and deciduous forest habitats created for Canada Warbler through mapping, GPS delineation, and plant inventories; Post-Closure monitoring to be conducted annually [for the first 5 years post-closure, and at a reduced frequency thereafter to be determined through the Closure Plan and the Closure Working Group] • Verify the quality/ function of the coniferous or mixed forests created for Olive-sided Flycatcher and Bald Eagle through mapping, GPS delineation, and plant inventories; Post-Closure monitoring to be conducted annually [for the first 5 years post-closure, and at a reduced frequency thereafter to be determined through the Closure Plan and the Closure Working Group] • Verify the quality/ function of the coniferous or mixed forests with a relatively open canopy with inclusions of bedrock openings created for Common Nighthawk through mapping, GPS delineation, and plant inventories; Post-Closure monitoring to be conducted annually [for the first 5 years post-closure, and at a reduced frequency thereafter to be determined through the Closure Plan and the Closure Working Group]	• Rehabilitation targets will be discussed with the Closure Working Group, but Prodigy generally anticipates that that it [will likely be possible] to rehabilitate (establish) 300-400 ha of forest / woodland / meadow habitat (including some woodland with over 70% conifer component that will replace winter cover for moose), which will [provide] open woodlands with rock barren for Common Nighthawk, forest canopies for Canada Warblers and raptors, meadows for moose and raptor feeding, 30-50 ha of wetland habitat, and over 350 ha of open water habitat • In general: o The TMF will include a dry cover comprising of a combination of upland and wetland habitats. o The MRMF will include uplands and barren habitat on the crest of the facility. The slopes will likely remain barren except for the benches and the low sloped areas. o Wildlife corridors will be established to allow for passage through the PSA. o The process plant area/ore stockpile will include early successional habitat with some tree cover. o The open pit will form a pit lake that [will] be connected to the natural surrounding waterways [via Goudreau Lake] once water quality has been shown to be compatible with the natural aquatic environment. o As discussed under CEAA-FD82 (TW(1)-07), Prodigy has committed to a series of consultations that will be undertaken with the Province and Indigenous groups to assess what the best mitigation measures will be for bats. Options will include: Habitat remediation or Roost Enhancements Construction [together with opportunities for creation of hibernacula]. This approach will be carried forward into the Closure Plan.

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
Migratory and breeding birds		
• The final rehabilitation of mining waste management facilities and the site rehabilitation will provide opportunities for the eventual replacement of some canopy warbler habitat through the restoration of upland forests. • The final rehabilitation of mining waste management facilities and site rehabilitation provides opportunities for the replacement of some of the waterfowl habitat removed (e.g., Water Quality Control Pond, (formerly Water Body 7), plus additional habitat adjacent to Otto Lake, and portions of the filled pit itself). The presence of a filled pit lake with suitable water quality for aquatic life will contribute to staging and foraging habitat for waterfowl in the Post Closure Phase. • The final rehabilitation of mining waste management facilities and site rehabilitation will provide opportunities for the replacement of some terrestrial and waterfowl habitat that would be suitable for foraging. In addition, the presence of a filled pit lake with suitable water quality for aquatic life will also contribute to foraging habitat of raptors.		• Prodigy will undertake a breeding bird survey at regular intervals [as determined through consultation with the Closure Working Group, tentatively scheduled to commence 5 years after the completion of active closure, and to occur at 5 year intervals thereafter for a period of 15 years] to help inform how well restoration is meeting end use ecological objectives.
Mammals		
• Final rehabilitation of mining materials management facilities provides opportunities for creation of habitat for Bear berry foraging habitat, particularly on the TMF and MRMF embankments and the vegetation communities to be created on top of these facilities. • Final rehabilitation of mining materials management facilities and surrounding disturbed areas will provide opportunities for creation of habitat for moose and reconnecting the landscape. As evidenced by the well-used created ponds associated	• [Rehabilitation success to be determined through the application of criteria developed through the Closure Plan Working Group]	• Mitigation measures to facilitate the progressive rehabilitation of the site for use by mammals [will] refer to guidelines for habitat restoration and include creating pathways of connectivity for both aquatic and terrestrial species. These pathways [will] include ecopassages at water crossings under the reconstructed Goudreau Road and internal roads that cross drainage features.

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
with the past-producing mine, well-vegetated ponds are used by moose. • Final rehabilitation of mining materials management facilities and surrounding disturbed area associated with mining buildings will provide opportunities for creation of habitat for furbearers. • Construct the TMF and MRMF with multiple locations on the side slopes that are at an angle, and surfaced suitably for access by mammals • The seed collection program in support of restoration [will] specifically include Dwarf Raspberry (*Rubus pubescens*), Pin Cherry (*Prunus pensylvanica*), Velvet-leaf Blueberry (*Vaccinium myrtilloides*), and Dwarf Blueberry (*Vaccinium caespitosum*) plus other species that may be recommended by Indigenous communities in the area • Mitigation measures to facilitate the progressive rehabilitation of the site for use by mammals [will] refer to guidelines for habitat restoration and include creating pathways of connectivity for both aquatic and terrestrial species. These pathways [will] include ecopassages at watercrossings under the reconstructed Goudreau Road and internal roads that cross drainage features. • With progressive rehabilitation, connectivity for mammals [will] be restored, in part through the construction of suitable slopes on the MRMF to allow mammalian access. • Progressive rehabilitation will initiate restoration before closure		
Species at Risk		
• Final rehabilitation of the site provides opportunities for creation of hibernacula [and roosting sites] for bats. The open pit walls may provide niche habitat for some bat species until the pit is filled.	• Verify the use of bat hibernaculum and roosting through the use of bat-recorders and infrared cameras, visual inspections and DNA analysis of droppings to confirm difficult to identify Myotis species; with Post-Closure monitoring to occur during the spring emergence and fall	• This includes construction of the TMF and MRMF with opportunities for bat hibernation and roosting. The objective of monitoring would then be documentation of use by these species, and if necessary, habitat modifications to improve suitability post-closure (Monitoring will occur spring and fall)

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
	pre-hibernation swarms [at frequencies to be determined but for a period of not less than 5 years]	• Monitoring of bat numbers will be implemented after mitigation with the objective of assessing the occupancy of the new or remediated hibernaculum. Monitoring will be conducted using visual surveys and sound recorders (see SLR 2017 for details). • [In addition to monitoring spring emergence and fall pre-hibernation swarms], new roosts [will] be monitored every winter for at least five years after creation to ensure that internal [winter] conditions remain suitable. Replacement roosts can take years to be colonize.
Traditional use of lands and resources		
• Taking into consideration the design of the Project, the results of the effects analysis, and the mitigation measures that will be implemented for the Atmospheric Environment, Physical Environment, Biological Environment, Human Health Risk Assessment disciplines, the only specific mitigation measure identified with respect to Traditional Use of Lands and Resources is the formation of an Environmental Monitoring Committee.	• No specific monitoring indicators are proposed with respect to Traditional Use of Lands and Resources; development of any additional key indicators will be done in consultation with Aboriginal groups via the Environmental Monitoring Committee	
Additional Closure Plan Commitments referenced in Preliminary Closure and Rehabilitation Plan (SLR, 2016) – Progressive Rehabilitation		
• Portions of the area covered by the tailings facility will be incorporated into the Project facilities. The unused embankments and pond areas associated with the existing tailings facility and polishing pond will be graded to stable slopes and seeded with native plant mixtures to initiate natural rehabilitation. • As sections of the MRMF are filled to capacity during the mining phase, the placed mine rock will be graded to flatter overall slopes in some areas, while in others, the individual bench slopes will be retained and smoothed out or flattened. The intent is to create a more natural-looking rock pile with different surfaces, ranging from almost flat to		

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
steeper rock slopes in order to create varying types of wildlife and avian habitats. Selective overburden and soil cover will be placed in the flatter and gently sloping areas to promote vegetative growth. Selective seeding will be undertaken to initiate natural revegetation and rehabilitation. • To the extent practicable, overburden and soil cover will be placed in flatter areas on the outer side of the TMF embankment. Selective seeding will be undertaken to initiate natural revegetation and rehabilitation.		
Additional Closure Plan Commitments referenced in Preliminary Closure and Rehabilitation Plan (SLR, 2016) – Temporary Suspension		
None		
Additional Closure Plan Commitments referenced in Preliminary Closure and Rehabilitation Plan (SLR, 2016) – State of Inactivity		
None		
Additional Closure Plan Commitments referenced in Preliminary Closure and Rehabilitation Plan (SLR, 2016) – Final Closure		
• Site surface soils will be inspected and tested as necessary to determine if there are any fuel spill residues requiring cleanup. Soil remediation will be conducted as necessary and to accepted risk-based standards. • Site infrastructure associated with the processing plant, and associated ancillary facilities will removed and foundation areas will be covered with soil and rehabilitated. • Erosion controls would be constructed to control erosion while vegetation is established. Steeper rock cuts will be reclaimed as rock outcrops; these will weather and assume a natural appearance over time. • For soil and overburden stockpiles, after their removal for final rehabilitation, the disturbed areas will be graded and seeded with native plant mixtures to initiate natural rehabilitation. Erosion controls would be constructed to control erosion while vegetation is established.	• Water quality will be monitored at both upstream and downstream locations to monitor both surface water and groundwater, as well as mine and pit lake water quality. Details of the monitoring program will be described in the Operations Monitoring Plan and Certified Closure Plan. Sampling will be initiated prior to closure (carried over from the operations phase). A preliminary list of parameters to be monitored is presented in Table of the 11-2 of the Preliminary Closure Plan. As a minimum, water quality for both surface and groundwater will be monitored for the parameters listed in *O. Reg. 240/00* and *560/94*. Dissolved metals, if any, will be analyzed in groundwater samples, and total recoverable metals, if any, will be analyzed in surface water. During the closure period and for three years thereafter, semi-annual samples will be collected. Sampling will be conducted monthly of any water transfers into the pit lake. • In addition to water quality, selective lake level and flow measurements will be undertaken to determine lake level fluctuations and the volumes of water transferred to the pit lake.	

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
• Prodigy may accelerate pit filling through the use of the operations water supply system (i.e., from Goudreau Lake). The pit is expected to take up to 50 years to fill; 43 years if Goudreau Lake water is also used to fill the pit. A channel connecting the pit lake to Goudreau Lake will be excavated when the pit lake level is near the level of Goudreau Lake. An earthen berm will be erected around the perimeter of the pit to limit access. • The pit rim will be partially revegetated; this will include leaving some areas as open gravel areas and covering the remaining areas with topsoil and vegetation. A substantial portion of the rim will be left to allow nature to form a natural littoral zone when the pit water level finally reaches the rim area. This rim area will be covered with organic matter and old trees and tree stumps to help create conditions suitable for fish and amphibian breeding. • For the MRMF, a selective overburden and soil cover will be placed in the flatter and gently sloping areas to promote vegetative growth. Selective seeding will be undertaken to initiate natural revegetation and rehabilitation. Erosion controls would be constructed to control erosion while vegetation is established. • Wildlife access ramps have been designed as part of the Project. These ramps will be graded into the mine rock to allow wildlife access to the surface of the MRMF. • As the tailings surface is dewatered and stabilizes, the tailings surface would be progressively covered with overburden, soil and any amendments necessary to support vegetation. The surface will be seeded to initiate natural rehabilitation. The operational	• After the three-year period, provided the water quality remains stable, an application will be made to the MNDM to refine the monitoring program to reduce sampling frequency, and reduce monitoring parameters and locations, and/or cessation of the monitoring program altogether. After that it is expected that the monitoring program would focus on the pit lake filling • Monitoring of the aquatic environment will continue into closure as determined by regulatory requirements. At closure, the fish habitat suitability will be assessed through water quality and flow regime monitoring. The quantity of habitats, habitat types and their connectivity community composition, and fish distribution will be evaluated, as well as the monitoring data regarding metal burden in the muscle tissue of selected fish species. • Benthic invertebrate and phytoplankton sampling will be conducted on completion of closure and three years after closure. • Fisheries inventories will be carried out after closure and five years after closure to demonstrate that conditions in the waterways and waterbodies are the same or improving following closure. • Monitoring of any fish habitat offset measures will commence prior to closure and continue in accordance with the Fisheries Act Authorization • Terrestrial habitat and wildlife monitoring will be designed to monitor the success of rehabilitated areas. Specific monitoring requirements will be determined by regulatory requirements and consultation with local communities. This includes ensuring that natural revegetation is successful and erosion is not present in significant amounts.	

EIS Mitigation Commitments	EIS Monitoring Commitments	CEAA FD76, CEAA FD79, CEAA FD85 and CEAA FD2(A1)-21 Additions / Clarifications
spillway will be lowered and enlarged to allow it to pass the probable maximum flood event safely. • A ramp to allow moose and other wildlife to access the TMF deck. Wildlife access will also be possible via the spillway once the TMF closure is completed. • The connector transmission lines no longer needed after closure will be demolished and the disturbed areas rehabilitated. • Access and haul roads no longer needed will be graded and covered with soil and seeded, as necessary, to initiate natural rehabilitation. Certain access roads needed for long-term post closure activities will be retained.		

30.0 CEAA-FD77 / TW(2)-02: MIGRATORY BIRDS / CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES – TMF WATER QUALITY

Reference to EIS:

- Chapter 7, Section 7.4.5, and 7.4.6;

30.1 Context and Information Required for a Complete Response

Part 2, Section 6.2.4 of the EIS Guidelines requires the proponent to consider "direct bird or wildlife mortality that could be caused by clearing of sites or birds and wildlife being in contact with contaminated waters."

The responses to TW(1)-02 (CEAA-FD77)A-G do not address the potential effects of water quality in the tailings management facility (TMF) on waterfowl and furbearer. Furthermore, there is conflicting information regarding the potential effects of three detention ponds and the Water Quality Control Pond (WQCP) on waterfowl and furbearers.

Chapter 7, Section 7.4.5.5.2 states that "water in [the tailings pond and water quality control pond …] and wetlands may not meet guidelines, resulting in an increased exposure of waterfowl to contaminants." Additionally, Chapter 7, Section 7.4.6.6 states: "Where technically and economically feasible, measures will be implemented to exclude access by mammals to water quality ponds." However, the response to TW(1)-02 (CEAA-FD77) states that there will "no effects on waterfowl because the water quality will be superior to the discharge standards authorized under [Metal Mining Effluent Regulations] MMER and [Ontario Municipal Industrial Strategy for Abatement] MISA."

However, the Agency notes that there are insufficient details on the potential effects of the water quality in the TMF, the detention ponds and the WQCP on waterfowl and furbearers, including bioaccumulation of contaminants. The proponent should assess potential effects of water quality from the TMF, detention ponds and WQCP using applicable Canadian Council of Ministers of the Environment (CCME) guidelines.

Furthermore, the Agency notes that there are insufficient details in Chapter 7 and the response to TW(1)-02 regarding measures to mitigate the effects of contaminants on furbearers and waterfowl or to discourage use of the TMF, detention ponds and WQCP by waterfowl and furbearers.

This information is important for the Agency to understand the effects on migratory birds and the current use of lands and resources for traditional purposes.

Specific Question/ Request for Information:

A. Assess potential effects of exposure to TMF, detention ponds and WQCP water quality on migratory birds and species of interest to Indigenous groups that may access these open water areas using applicable CCME guidelines;

B. Describe mitigation measures that will be implemented to deter migratory birds and other wildlife from accessing the TMF, WQCP and detention ponds should contamination levels in these waterbodies exceed applicable CCME guidelines;

C. Characterize residual effects, if any, after the mitigation measures have been implemented;

D. Reassess the significance assessment, if necessary, taking responses from Questions A to C into account.

30.2 Prodigy Response

30.2.1 Response to CEAA Comment Part A

Table 30-1 below provides a comparison of maximum expected parameter concentrations in the TMF pond and in the WQCP with Canadian Environmental Quality Guidelines (CEQG) for livestock protection. The TMF and WQCP data are from SLR (2016). CEQG for livestock protection are designed for long-term exposure protection. None of the parameters assessed in water from the TMF pond exceed CEQG for livestock protection.

Tailings containing cyanide from gold extraction could be of potential concern to wildlife if cyanide levels are elevated. Donato et al. (2007) considered weak acid dissociable (WAD) cyanide concentrations of <50 mg/L to be safe for wildlife exposure. This same threshold has been adopted as being protective of birds, other wildlife and livestock by the International Cyanide Management Institute (2018) as part of the International Cyanide Management Code (standard of Practice 4.4). The rationale for the 50 mg/L WAD cyanide threshold is that ingested cyanide from water sources is readily metabolized to less toxic thiocyanate, which is then excreted in the urine.

Based on the data presented in Table 30-1, and the discussion of WAD cyanide presented above, expected maximum water quality parameter concentrations in the TMF and WQCP (and other site detention ponds) are not expected to have an adverse effect on avian or mammalian wildlife, if such wildlife should be exposed to these ponds for extended periods of time.

30.2.2 Response to CEAA Comment Part B

Mitigation measures to deter migratory birds and other wildlife from accessing the TMF, WQCP and detention ponds, are not anticipated to be required, as protection guidelines are not expected to be exceeded. The primary mitigation measure for the protection of wildlife from cyanide exposure is use of the SO2/Air cyanide destruction circuit to treat processing plant tailings before they are discharged to the TMF.

30.2.3 Response to CEAA Comment Part C

No residual effects are expected after the mitigation measures have been implemented.

30.2.4 Response to CEAA Comment Part D

A reassessment of significance is not required.

Donato, D.B., O. Nichols, H. Possingham, M. Moore, P.F. Ricci and B.N. Noller. 2007. A Critical Review of the Effects of Gold Cyanide-bearing Tailings Solutions on Wildlife. Environment International. Vol. 33, Issue 7, October 2007. Pages 974-984.

International Cyanide Management Institute (2018). Implementation Guidance for the International Cyanide Management Code.

Table 30-1: TMF, WQCP and Detention Pond Water Quality Values – Potential Toxicity to Wildlife (concentrations in mg/L)

Parameter	CEQG – Livestock (mg/L)	TMF Pond Maximum Concentration (mg/L)	WQCP Maximum Concentration (mg/L)
pH	-	7.7	7.8
Nitrate + Nitrite (N)	100	4.3	16.3
Ammonia (N)	-	3.0	3.2
Chloride	-	40.5	27
Cyanide-T	-	7.02	0.01
Cyanide-WAD	-	4.70	0.008
Sulphate	-	5,552	2,816
Aluminum	5.0	0.23	0.14
Arsenic	0.025	0.019	0.012
Boron	5.0	0.09	0.08
Cadmium	0.080	0.0009	0.0007
Calcium	1,000	602	338
Chromium (III)	0.050	0.005	0.004
Cobalt	1	0.038	0.019
Copper	0.50 – 5.0	0.47	0.234
Iron	-	0.29	0.13
Lead	0.100	0.0019	0.0013
Manganese	-	0.14	0.076
Molybdenum	0.500	0.009	0.036
Nickel	1.0	0.009	0.006
Phosphorus	-	0.47	0.26
Selenium	0.050	0.005	0.004
Silver	-	0.008	0.004
Thallium	-	0.0005	0.0006
Vanadium	0.100	0.051	0.026
Zinc	50.0	0.009	0.007

31.0 CEAA-FD80 / TW(2)-05: ABORIGINAL PHYSICAL AND CULTURAL HERITAGE / CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES – MOOSE

Reference to EIS:

- Chapter 7, Section 7.4.4

31.1 Context and Information Required for a Complete Response

Chapter 12 Section 3.5.3 of the EIS, as well as Appendix 1, indicate that moose are hunted by Indigenous groups in the PSA, LSA, and/or RSA, specifically by MCFN and MNO. Chapter 7, Section 7.7.2.5.2 of the EIS states "Diversion of moose away from the PSA may result in an increased density in the LSA, but no effects are anticipated on moose populations in the long-term" and "Although the PSA is not highly valued as a hunting area, the development of the Project will displace the potential for hunting in the PSA."

The response to TW(1)-05 (CEAA-FD80), specifically the statement "No changes in moose populations or habitat use are expected," seems to contradict the information above. It also does not take into account the effects on Indigenous land users from these changes. Whether changes to moose populations or habitat are small in area or short in duration, an effects assessment must still be completed on how these changes could impact Indigenous groups, specifically the groups that identified big-game hunting, historically or currently, in the PSA, LSA, and RSA.

Specific Question/ Request for Information:

A. Describe the effects that these changes to moose populations and habitat may have on the ability of Indigenous people to hunt moose;

B. Incorporate the information in this response into other IR responses, notably IE(02)-01 and IE(2)-02, keeping in mind that effects to hunting may result in socio-economic impacts in addition to impacts to current use of lands and resources for traditional purposes;

C. If the conclusions to the assessment of current use of lands and resources for traditional purposes changes, provide the following:

- updated description of the mitigation measures to prevent adverse effects on current use of lands and resources for traditional purposes;
- characterization of the residual effects, if any, after the mitigation measures have been implemented;
- reassessment of the significance determination for current use of lands and resources for traditional purposes, if necessary;
- updated description of the follow-up program for potential effects to current use of lands and resources for traditional purposes, 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. Clarify if and how input received from Indigenous groups will be included in the design and implementation of any follow-up program. Specify if a role may be played by Indigenous groups in the follow-up program.

31.2 Prodigy Response

31.2.1 Response to CEAA Comment Part A

There is not expected to be any significant changes in moose populations or habitat as a result of the project. This reflects both the small scale of the project, and the relatively small number of moose directly affected by the project. Although the EIS suggested that the "Diversion of moose away from the PSA may result in an increased density in the LSA" (7.5.2.5.1), movement of moose from the PSA to elsewhere within the LSA would not affect the density at the LSA level. The EIS is correct in stating that "the removal of the forest within the PSA will deflect mammals into the surrounding watersheds during mine construction and operation" (7.4.6.8.2), but this will not increase densities at the LSA or RSA level.

The EIS did not directly estimate the quality or quantity of general moose habitat available and/or lost beyond that for specific habitat values such as potential moose aquatic feeding areas and potential moose calving sites. Thus there was not a direct estimate of the potential loss of moose habitat as a result of the project. However, the size of moose populations in northern Ontario is not limited by habitat so much as by factors that impact population such as predation, hunting, parasites and disease. The loss of a small amount of general moose habitat in the PSA, estimated on average to represent five moose , is not anticipated to have a measureable impact on the moose population (TW(1)-05 Moose Aquatic Feeding). It would have even less impact on Indigenous moose hunting as it does not appear to be a significant activity in the vicinity of the proposed Magino mine, and only a small proportion of the total population is harvested annually. As noted in the EIS, "Animals will return to the site as it is re-vegetated in the post-closure phase" (7.5.2.5.1)

Prodigy also provided additional detail on moose hunting by Aboriginal groups in the project vicinity in the responses to earlier Information Requests, in particular IE(1)-B07 (Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area; , p. 147 of 204 in Appendix C 'Compilation of Aboriginal Interest IR Responses'). "Moose hunting does not appear to be a significant activity in the vicinity of the proposed Magino mine. One large game hunting site for the Missanabie Cree First Nation (MCFN), presumably used for moose, was identified "on the south-eastern boundary of the Magino site". All other identified MCFN sites are farther east of the site, in the RSA and beyond (EIS 4.6.5.2.1). The Métis Nation of Ontario (MNO) identified several large game kill sites to the north and southwest of the Magino site (EIS 4.6.5.3.1) in the RSA and beyond."

Section 4 of IE(1)-B07provides additional information regarding the harvesting (including hunting,) uses of the PSA, LSA and RSA by Aboriginal groups. The Missanabie Cree First Nation (MCFN) identified some hunting in the PSA, LSA and RSA (only 1 site identified in the PSA; much of MCFN traditional harvesting uses occur beyond the RSA). The Métis Nation of Ontario (MNO) identified non site-specific hunting in the PSA, LSA and RSA – with no kill sites in the PSA or LSA. The Michipicoten First Nation (MFN), Red Sky Métis Independent Nation (RSMIN), and Garden River First Nation (GRFN) did not identify specific current hunting activities in the PSA, LSA or RSA. The Batchewana First Nation (BFN) identified a broad hunting area that includes the PSA, LSA and RSA but extends far beyond. These conclusions are also consistent with the results reported in both the response to IE(1)-03 Part A (Updated Assessment of Current Use of Lands/Resources for Traditional Purposes by Aboriginal Peoples, p. 16 of 204 in Appendix C 'Compilation of Aboriginal Interest IR Responses'), as well as Table IE(1)-06-1 'Summary of Assessment of Impacts to Aboriginal and Treaty Rights' included in IE(1)-06 (Assessment of Impact on Aboriginal and Treaty Rights, p. 98 of 204 in Appendix C 'Compilation of Aboriginal Interest IR Responses').

In summary, as noted in the response to IE(1)-B07:

> *As stated in the EIS, the project area has been industrialized for almost 100 years (Section 3.1 of the EIS, p. 3.1); for this reason, the TK/TLUS indicate that uses are now focused on*

other lands. As documented in the EIS and further elaborated upon in the responses to various IRs, the TKS/TLUS and other reports provided by Aboriginal groups indicate that while there are some traditional uses of lands and resources in the PSA, LSA and RSA, the uses of several groups are more dense in the area beyond the RSA. Compared to the broader regional area, with respect to various traditional uses of lands and resources, the number of uses in the PSA or LSA is few, their density is low, and there is often little or no commentary in the reports about the importance of the lands/resources in the PSA or LSA. Those groups that currently use the PSA or LSA (MCFN and MNO) also reported uses in the RSA or beyond. Prodigy has concluded that the effects of the Project on traditional use of lands and resources are not significant... Prodigy has further concluded that Aboriginal groups not currently using the PSA or LSA for traditional activities are not reasonably expected to begin or resume uses even in the absence of the Project…

The reader is also referred to the response to IE(2)-06 'Aboriginal and Treaty Rights', which summarizes potential effects on traditional uses/practices and impacts on Aboriginal and Treaty rights for each Aboriginal group, and corresponding mitigation measures.

In conclusion, the changes in moose populations and habitat from the project will not have significant adverse effects on hunting of moose by Aboriginal groups.

31.2.2 Response to CEAA Comment Part B

The response to IE(2)-01 explains that the traditional uses cited by CEAA in the 'context and rationale' for IE(2)-01 (including hunting by MNO, MCFN and other groups) are not "places where people are most likely to spend an extended period of time engaged in a particular activity", and therefore are not defined as 'receptors' in the EIS, as clarified in that response. However, the potential effects of the Project on hunting by Aboriginal groups were carried forward to both E(1)-03 Part A Clarification and Further Information on Discrepancies and IE(1)-06 Assessment of Impact on Aboriginal and Treaty Rights.

The conclusion in Part A above, will not result in an updated assessment as part of the response to IE(2)-03 (Updated Assessment of the Potential Project-Related Effects & Applicable Mitigation Measures).

It is noted that in the March 20, 2018 Revised Responses to Information Requirement #1, the response to IE(1)-02 'Effects of Changes to the Environment on Aboriginal Peoples Socio-Economic Conditions' confirmed that the conclusion that the Project will not result in Aboriginal people having to spend more income on store-bought alternatives to game, fish or plants currently harvested in the PSA, LSA or RSA remains unchanged.

31.2.3 Response to CEAA Comment Part C

As noted in Part B above, the conclusion reached in Part A will not result in an updated assessment as part of the response to IE(2)-03 (Updated Assessment of the Potential Project-Related Effects & Applicable Mitigation Measures).

Mitigation measures for moose habitat suggested during Indigenous engagement included:

- design of transmission lines to avoid moose interference;
- potential use of islands in the mine site to be protected as possible calving habitat;
- limiting access to the area for hunting moose to only First Nations and Métis,
- no worker harvest unless local residents, and

- the use of laser beams on mine roads to reduce moose interactions with mine vehicles (MNO TK report) (EIS chapter 12, pg. 12.13).

However, the reader is also referred to the response to IE(2)-06 'Aboriginal and Treaty Rights', which summarizes potential effects on traditional uses/practices (including hunting) and impacts on Aboriginal and Treaty rights for each Aboriginal group, and corresponding mitigation measures.

31.2.4 Response to CEAA Comment Part D

As stated in the response to IE(1)-10 (BFN Follow-up Program):

> *A follow-up program that would be used to ensure that any changes in traditional use patterns and updated traditional knowledge information would be used in design and operations can be developed and implemented via some or all of the following mechanisms:*
>
> - *Implementation of the terms and conditions of bilateral agreements negotiated with Aboriginal groups;*
> - *Ongoing engagement with identified land users;*
> - *Aboriginal groups' participation in the Environmental Monitoring Committee;*
> - *Adaptive management plans; and*
> - *Consideration as part of the planning process for the final Closure Plan.*

The reader is also referred to the response to IE(2)-06 'Aboriginal and Treaty Rights', which summarizes potential effects on traditional uses/practices and impacts on Aboriginal and Treaty rights for each Aboriginal group, and corresponding mitigation measures.

32.0 CEAA-FD81 / TW(2)-06: ABORIGINAL PHYSICAL AND CULTURAL HERITAGE / CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES – EAGLES

Reference to EIS:

- Chapter 7, Section 7.4.4
- Chapter 12, Section 3.5.3

32.1 Context and Information Required for a Complete Response

Chapter 12 Section 3.5.3 of the EIS, and the response to TW(1)-06 states "effects on habitat of species of special concern (e.g., eagles) were seldom if ever explicitly raised by participants." This statement is imprecise. Clarity is needed on whether eagles were commented on by Indigenous groups and the nature of the comment.

Section 7.0 of Appendix R states "…Aboriginal groups did not identify locations, traditional uses, cultural activities or special places specifically related to eagles in the PSA, LSA, RSA or beyond." Eagles may be a valued species without having a specific location attached to that value. Also, Chapter 12 Section 3.5.3 of the EIS states "some raptor species (e.g. eagles) have cultural importance for Aboriginal people." This seems like a general statement. Clarification is needed on whether eagles were identified as a species of cultural significance during engagement, or through TK/TLUs.

Specific Question/ Request for Information:

A. Clarify whether eagles were identified by Indigenous groups as a valued species, either through engagement or in TK/TLUs;

B. If eagles were identified as a valued species, update the assessment of effects to Aboriginal Physical and Cultural Heritage to include consideration of effects of changes to the environment on Bald eagles. Describe any mitigation measures, residual effects and significance determinations applicable.

32.2 Prodigy Response

32.2.1 Response to CEAA Comment Part A

Aboriginal groups have not identified bald eagles as a valued species. Appendix R (Bald Eagle Foraging Habitat) of the January IR#1 submission included a discussion about bald eagles and Aboriginal interests. Further clarification is provided below.

Chapter 12 of the EIS ('Aboriginal Engagement') notes that:

> *…effects on habitat of species of special concern (e.g., eagles) were seldom if ever raised by participants; however, Prodigy understands that minimizing and mitigating potential adverse effects on significant habitat contributes to the overall general need to protect the environment, which was a priority identified during Aboriginal engagement.* (p. 12.19).

Prodigy gained insight during engagement into the importance of potential effects of the Project with respect to migratory and breeding birds and their habitat. Comments were either focused on waterfowl/hunting or birds more generally, rather than raptors including eagles:

> *This is of interest to Aboriginal people, primarily in the context of waterfowl hunting and biological diversity. This informed the identification/verification of the Migratory and Breeding Birds VC and indicators. Comments were related to prevention of birds from interacting with the tailings management area or other Project components, and the potential risks of consuming waterfowl that may interact with the Project. For example, MNO and RSMIN asked if there would be studies conducted on the effect blasting has on birds. MFN, MCFN, MNO and RSMIN were concerned about how birds and wildlife will be prevented from interacting with the site (e.g., at the tailings pond).* ***Some raptor species (e.g. eagles) have cultural importance for Aboriginal people****. MNO and RSMIN asked if there would be bioaccumulation effects from the Project that would affect flora and fauna.* (p. 12.19). (emphasis added)

Appendix R concluded that the Project will not have potential effects on cultural activities of Aboriginal people in terms of impacts on eagles in the LSA.

The statement in Chapter 12 "Some raptor species (e.g. eagles) have cultural importance for Aboriginal people" is a general one. As also noted in Appendix R, the Traditional Knowledge Studies/Traditional Land Use Studies (TKS/TLUS) and other reports provided to Prodigy by Aboriginal groups did not identify specific locations, traditional uses, cultural activities or special places specifically related to eagles in the PSA, LSA, RSA or beyond. Further, Aboriginal groups did not suggest that a specific VC or indicator related to eagles /cultural activities be used in the environmental assessment (see Chapter 12 of the EIS (Aboriginal Engagement), Section 3.2 of IRC-2 Response 'Choice of Valued Components', p. 12.7-12.11, for a summary of Aboriginal groups' input to the identification of VCs and indicators). A review of the comments on the EIS submitted by Aboriginal groups to CEAA in September 2017 shows that they did not specifically mention eagles, with the exception of a comment by the Batchewana First Nation (p.47) regarding the designation status of eagles as a species at risk rather than a species of concern. Aboriginal groups did not comment on potential effects on eagles or their habitat in the context of potential effects on Aboriginal Physical and Cultural Heritage.

32.2.2 Response to CEAA Comment Part B

As eagles were not identified as a valued species in a project-specific context either in the TKS/TLUS and other reports (i.e., Aboriginal groups did not identify specific locations, traditional uses, cultural activities or special places specifically related to eagles in the PSA, LSA, RSA or beyond), or during engagement, and because Aboriginal groups did not suggest a specific VC or indicator related to eagles and cultural activities, the assessment of effects to Aboriginal Physical and Cultural Heritage has not been updated.

33.0 CEAA-FD82 / TW(2)-07: REGULATORY PERMITS / AUTHORIZATIONS – SAR

Reference to EIS:

- Chapter 7, Section 7.4.7.6
- Chapter 7, Table 7-156

33.1 Context and Information Required for a Complete Response

Part 2, Section 6.2.4 of the EIS Guidelines requires the proponent to consider "the potential effects of the project on provincially and federally listed species at risk (flora and fauna) and their critical habitat"

The proponent notes that two, federally-listed SAR mammals - Little Brown Myotis and Northern Myotis - have been detected at the project site, and that destruction of critical habitat (i.e., the historical mine adit) will be unavoidable.

In the EIS, Chapter 7, Table 7-156 provides possible mitigation measures, and in the revised response to TW(1)-07 (CEAA-FD82), further details on these mitigation measures are described, however the timeline for implementation and firm commitments are not provided.

Part 2, Section 6.3 of the EIS Guidelines states that the EIS will describe mitigation measures that are specific to each environmental effect identified. Measures will be written as specific commitments that clearly describe how the proponent intends to implement them. Where mitigation measures have been identified in relation to species and/or critical habitat listed under the Species at Risk Act, the mitigation measures will be consistent with any applicable recovery strategy and action plans.

Furthermore, the environmental impact statement will also present an assessment of the effectiveness of the proposed technically and economically feasible mitigation measures.

Specific Question/ Request for Information:

A. Describe the mitigation measures Prodigy Gold plans to implement to prevent adverse effect on Little Brown Myotis and Northern Myotis due to the loss of critical habitat, and how these measures are consistent with the applicable recovery and action plans. Ensure the mitigation measures for Little Brown Myotis and Northern Myotis described within the response to TW(2)-01 (CEAA-FD76) and TW(2)-07 are consistent;

B. Provide a timeline for the implementation of mitigation measures. Clarify how the timeline will ensure implemented mitigation measures are functional prior to the removal of the existing critical habitat (mine adit);

C. Describe the "specific, achievable, measurable and verifiable" design criteria for the proposed mitigation measures, and how they will be evaluated;

D. Describe the technical effectiveness and uncertainties of the mitigation measures, and how alternative mitigation measures discussed in the response to TW(1)-07 would be implemented if design and success criteria are not met.

33.2 Prodigy Response

33.2.1 Response to CEAA Comment Part A

The proposed mitigation measures are described in the revised response to TW(1)-07 (CEAA-FD82). The recovery strategy does not include site specific mitigation measures (Environment Canada 2015) and no action plan has been released to data.

Alternative mitigation described under D (below), would consist of proving funding for research on potential treatments and mitigation measures for WNS.

33.2.2 Response to CEAA Comment Part B

Mitigation measures will be initiated upon approval of the Environmental Assessment and following consultation with MNRF regarding any mitigation arising from permits that may be required under the provincial *Endangered Species Act*.

33.2.3 Response to CEAA Comment Part C

Mitigation will be successful when temperature, humidity, and other environmental parameters in remediated or created hibernacula are suitable for use by hibernating bats. These will be evaluated using temperature and humidity recorders in alternate hibernacula.

33.2.4 Response to CEAA Comment Part D

There is a high level of uncertainty about the effectiveness of the proposed mitigation measures related to (i) the effectiveness of the proposed measures, which are largely untested or unproven; (ii) possible time lag for bats to occupy a remediated or created hibernaculum; and (iii) whether recovery is even possible for Little Brown Myotis and Northern Myotis in Canada (Environment Canada 2015).

As an alternative to hibernaculum remediation or creation, Prodigy could provide funding for research on White Nose syndrome in Canada. Funding would be provided to the Canadian Wildlife Health Cooperative, a university researcher, or other agency to develop treatments or decontamination protocols, coordinate monitoring efforts, identify data gaps, or other research.

Environment Canada. 2015. Recovery Strategy for Little Brown Myotis (*Myotis lucifugus*), Northern Myotis (*Myotis septentrionalis*), and Tri-colored Bat (*Perimyotis subflavus*) in Canada [Proposed]. Species at Risk Act Recovery Strategy Series. Environment Canada, Ottawa. ix + 110 pp.

34.0 CEAA-FD84 / TW(2)-09 – REGULATORY PERMITS / AUTHORIZATIONS – MIGRATORY BIRDS

Reference to EIS:

- Chapter 4, Section 4.3.10
- Chapter 11, Section 11.5.3.7
- TSD 17, Sections 3.2.3-3.2.9, 4.2.3.4
- Chapter 7, Section 7.4.7.5.2

34.1 Context and Information Required for a Complete Response

The proponent has reported that one Chimney Swift was observed at the disturbed old mine site in 2013 and the effort made to locate the Chimney Swift nest in 2014 consisted of a single survey in mid-June. This level of effort to determine possible Chimney Swift breeding or roosting sites is inconsistent with the Ontario SwiftWatch Monitoring Protocol from Bird Studies Canada, which provides a comprehensive method for surveying for Chimney Swift and their nests. Under this protocol, surveys are performed at least once a week during the following stages of the Chimney Swifts life cycle: Spring Migration May 14th – May 26th; Nesting June 9th- June 25th; Roosting July 7th – July 23rd; and Fall Migration August 4th – August 18th.

This information is important for the Agency to understand as the residual effects in question may result in potential effects to Chimney swift which is a migratory bird species as well as a species at risk.

Specific Question/ Request for Information:

A. Provide the rationale for using a single survey for locating the Chimney Swift nest, and no surveys for locating Chimney Swift individuals, to determine the species' use of the site;

B. Describe the level of uncertainty associated with the survey methodology used, and how this uncertainty will be managed during the project.

34.1.1 Response to CEAA Comment Part A

The project site is in Ecodistrict 3E-5, at the periphery of Chimney Swift range. The only other known recent (since 1973) records in the ecodistrict are at Wawa, about 45 km to the south (Cadman et al. 2007, eBird 2018).

A crepuscular survey for Chimney Swifts was conducted on June 20 2017 by adapting Bird Studies Canada's (BSC 2017) SwiftWatch protocol. This entailed visual and auditory surveys for swifts in the early evening. Encounter surveys in 2016 and 2017 also failed to find any swifts (Foster 2017).

All available data suggests that although Chimney Swifts may occasionally forage above the Project site, it is unlikely that they breed there due to the lack of suitable nesting habitat such as chimneys or (less likely) large-diameter cavity trees.

The survey methods and level of effort were appropriate given the absence of Chimney Swift nesting habitat at the site and position at the periphery of the range.

34.1.2 Response to CEAA Comment Part B

Given the absence of Chimney Swift nesting habitat at the site and position at the periphery of the range, the project is highly unlikely to have any negative impacts on the species. If evidence of Chimney Swift

nesting is encountered during construction or operations, mitigation consistent with the recovery strategy (or equivalent direction) will be applied.

Cadman, M.D., D.A. Sutherland, G.G. Beck, D. Lepage, and A.R. Couturier [eds.]. 2007. Atlas of the Breeding Birds of Ontario, 2001-2005. Bird Studies Canada, Environment Canada, Ontario Field Ornithologists, Ontario Ministry of Natural Resources, and Ontario Nature, Toronto, xxii + 706 pp.

Foster, R.F. 2017. Magino Mine Project 2017 Species at Risk Surveys. Unpublished report.

35.0 CEAA-FD86 / EA(2)-01A: REGULATORY PERMITS / AUTHORIZATIONS – FEDERAL APPROVALS

Reference to EIS:

- Chapter 4, Section 4.3.7.2, Table 4-67
- Chapter 7, Section 7.4.4.6.2, Table 7-129, Section 7.6.1.5.7
- Chapter 15, Section 15.1.6
- TSD 17
- Response to IR-1 Appendix 8

35.1 Context and Information Required for a Complete Response

The response to EA(1)-01a does not carry through complete assessments of the effects of changes to the environment resulting from a federal decision, act or exercise of power. The impacts to fish and fish habitat will require authorization under the Fisheries Act due to the construction of the effluent discharge structure at Otto Lake, the construction of the tailings management facility (TMF) and the mine rock management facility (MRMF) including the associated reductions in flows and levels at Spring Lake (see FFH(2)-05 and FFH(2)-32). These project components and activities will be enabled by federal authorizations and therefore potential changes to the environment, other than those referred to in section 5, (1)(a) and (b), and any effect to socio-economic conditions other than those referred to in section 5(1)(c) of CEAA 2012 must be assessed.

Chapter 7, Section 7.6.1.5.7 of the EIS states that "There are a few small lakes and wetlands that will be drained or overprinted by the Project that are considered potential baitfish sources. In addition, much of the PSA will no longer be accessible for baitfish purposes." However, the assessment of losses to bait harvesting resources is incomplete as there is no information provided about the potential socio-economic effects of the loss of these resources. This should include specific mitigation measures and a significance determination of any residual effects.

Based on maps in Appendix 8 of the response to IR-1 and TSD 17, the construction of the TMF, MRMF, open pit, water quality control pond, overburden stockpiles, mill area and crusher stockpile will cause the direct loss of wetlands and amphibian breeding habitat due to overprinting. Additional losses or alterations of wetlands may occur from changes in water quantity, and the creation of a diversion channel between Spring Lake and McVeigh Creek. With respect to effects to wetlands and amphibian breeding habitat, it is unclear if the assessment of effects to wetlands has taken into account the effects of losses of water at Spring Lake, Waterbody 10, and the creation of a diversion channel from Spring Lake to McVeigh Creek.

The Agency also notes there is contradictory information in the EIS about the loss of amphibian breeding habitat, making it difficult to review the assessment and the significance determination. Chapter 4, Section 4.3.7.2, Table 4-67 states that "ten significant Amphibian Breeding Habitats (Wetlands) are present in the LSA", while Table 4-68 states that 18 ha of Amphibian Breeding Habitat exists in the LSA, of which 17 ha are in the PSA (i.e.: 94% of the breeding habitat in the LSA is in the PSA). However, Chapter 7, Section 7.4.4.6.2, Table 7-129 states that 17 ha of Amphibian Breeding Area will be lost to the Project, which amounts to 35% of the area present in the PSA (18% and 11% of the area present in the LSA and RSA, respectively). It is not clear how the percentages in Chapter 7 were derived, and if the significance determination of effects to amphibian breeding habitat is accurate.

More detail is required to understand how the terrestrial and wetland rehabilitation program will prevent adverse effects to organic/peat accumulating wetlands (see TW(2)-01)). Peatlands take thousands of years

to develop naturally, and as a result, are considered difficult to construct or reclaim (Clymo 1983). Peatland reclamation requires an understanding of the hydrogeological setting of the area to be reclaimed and the ability to manage the storage properties of the watershed and the water budget (Ketcheson et al. 2016). Currently, peatland reclamation post-mining requires either peat salvaging within the project footprint prior to construction and storage in the appropriate hydrogeological setting to ensure viability post-closure or transferring of peat from a donor site to the reclaimed location.

The Agency requires this information to understand effects linked to Section 5(2) of CEAA 2012.

Specific Question/ Request for Information:

A. Provide an assessment of effects to socio-economic conditions resulting from the loss of bait harvesting resources due to the construction of the TMF/MRMF, which requires authorizations under the Fisheries Act. Describe any mitigation measures, residual effects, significance determination and any follow-up programs necessary;

B. Clarify if the assessment of effects to wetlands has taken into account the effects of losses of water at Spring Lake, Waterbody 10, and the creation of a diversion channel from Spring Lake to McVeigh Creek. If it has not, update the effects assessment to take these changes into account, including any changes to residual effects and significance determinations;

C. Clarify the contradictory information on the effects to amphibian breeding habitat;

D. Provide an updated assessment on amphibians using the correct information on the loss of amphibian breeding habitat due to the Project, specifically the construction of the TMF, MRMF, open pit, water quality control pond, overburden stockpiles, mill area and crusher stockpile. Describe any mitigation measures required to reduced or prevent residual effects, describe residual effects as applicable, determine the significance of residual effects, and describe any follow-up and monitoring programs required to verify EA predictions and the efficacy of mitigation measures;

E. Provide additional information as required in TW(2)-01 on the aspects of the rehabilitation program that will mitigate the losses of organic/peat accumulating wetlands due to the project. Update the residual effects and significance determination as necessary if the mitigation measures described are no longer feasible, or provide alternative mitigation measures and describe any follow-up and monitoring programs required to verify EA predictions and the efficacy of mitigation measures (this information can be provided directly in the response to TW(2)-01, and reference here).

35.2 Prodigy Response

35.2.1 Response to CEAA Comment Part A

Baitfish are included in the fisheries impact assessment as part of the Commercial, Aboriginal or Recreational fishery definition and as such the physical habitat compensation is fully accounted for in the Draft compensation Plan (TDS-20-14). As per chapter 7, Section 7.6.1.5.7 ('Effect on Other Land Uses', a single commercial operator has several baitfish licences that cover much of the PSA and the LSA; a second operator has a licence that includes the east end of Goudreau Lake. There are a few small lakes and wetlands that will be drained or overprinted by the Project that are considered potential baitfish sources. In addition, much of the PSA will no longer be accessible for baitfish purposes.. The residual effect of the loss of access to baitfish resources in the PSA was determined to be not significant. In terms of other socio-economic conditions, we are not aware of any commercial enterprises that are solely reliant on the specific waterbodies that will be impacted by the Project. As noted in the response to IE(1)-B08 commercial baitfish

harvesting activities were not identified in the PSA, LSA or RSA by Aboriginal groups in their Traditional Knowledge Studies/Traditional Land Use Studies (TKS/TLUS) and other reports, or during engagement. Notwithstanding the lack of identified use of the specific waterbodies for commercial baitfish harvest, baitfish communities are common and widespread in the LSA, the RSA and the region in general, such that numerous alternative waterbodies are available for baitfish harvesting opportunities. Also, the compensation and offsetting measures proposed in the draft compensation plan will in part promote replacement baitfish harvest opportunities.

Taking this into account, we do not anticipate any additional impacts or mitigation to baitfish habitat or potential harvest opportunities beyond what has been identified previously in association with the draft fisheries compensation plan and within the EIS, which includes: ongoing engagement with the commercial outfitters, trappers, and individuals with bear management areas and baitfish licences that will have portions of their resources displaced, or otherwise affected by the Project. This will assist with an understanding of their use of the area, the nature of the effects that will be experienced, and potential impact management measures (e.g., mitigation, monitoring, possible compensation where appropriate) (as per Table 7-241, p. 7.509 of June 2017 EIS "Project Interactions with Land Use and Tourism')."

35.2.2 Response to CEAA Comment Part B

The wetland (fen) at the west end of Spring Lake has been accounted for in the previous effects assessment, as it was determined that the fen "will be largely removed to enable the restoration of a historical drainage pathway to McVeigh Creek" (Chapter 7 Table 7-227). The other wetland habitats associated with Spring lake north of the public bypass road have been accounted for as "removals" as per section 7.4.3.4.1 of Chapter 7 of the EIS which states "The assumed area of disturbance (defined as "removals") within the PSA was conservatively defined to include all areas within the public bypass road (i.e., the rerouted Goudreau Road). Any remaining wetland areas associated with Spring lake, will be retained to the extent possible through the design of the new channel through the historic drainage pathway. The new outlet channel from the lake, and the channel through the fen can be engineered to maintain water levels through the lake and contacting wetlands to promote preservation of the remaining wetland areas.

With respect to the Waterbody 10, the wetland areas to the north that will be contacted by the pit and associated infrastructure will be lost and have been accounted for in the wetland removals balance. The majority of the wetlands contacting the waterbody to the south west will be retained through design of the new lake outlet channel to Goudreau Lake. The outlet channel can be designed, monitored and modified if necessary to establish water levels in the nearshore wetlands consistent with existing conditions to help preserve the current wetland areas and functions.

35.2.3 Response to CEAA Comment Parts C and D

Section 4.3.7.2 of the EIS discusses significant wildlife habitat in the local study area. Table 4-67 documents the occurrence in the LSA numbering 10 locations of Amphibian Breeding Habitat and the text below the table (Table 4-67) notes that it totals 18ha.

Chapter 7, Section 7.4.4.6.2, Table 7-129) correctly identified 17 ha that was anticipated to be removed. But there appears to have been a typographical error in reporting the percentages by study area.

Assessment of Significant Wildlife Habitat for Amphibian Wetland Breeding areas was undertaken to confirm that it occurs within the Project Area. Detailed surveys of Significant Wildlife Habitat, including Amphibian Breeding areas, were not undertake in the LSA or RSA simply because of the size of these areas and the scale of study that would need to be undertaken in areas largely unaffected by the Project. Therefore to place the effects on Amphibian Breeding Areas in a broader regional context, the table below

provides data regarding all wetlands in the LSA and RSA (and not just those portions considered to be Amphibian Wetland Breeding area) If these areas are substituted for the potential for SWH to occur, the revised analysis appear as:

Correction to Table 7-129: Effects on Amphibian Breeding Areas	PSA	LSA	RSA
Percentage (%) amphibian breeding areas removed in the context of amphibian breeding areas present within the LSA, PSA, and RSA. (Revised)	6%	3%	1%
Total Wetland Area (ha) from Vegetation Mapping	320	531	1542

The percentages were derived by calculating the area of Significant Amphibian Breeding Habitat removed compared to the total area of the wetlands within each of the three study areas. While we acknowledge that 17ha of the 320ha of wetlands surveyed in the PSA supported complex amphibian breeding habitat, and that the majority of that habitat will be removed. The data show that this scale of removal of SWH in the LSA and the RSA remains a low magnitude of effect. When these data are examined in the context of Table 7-132 Significance of Residual Effects on SWWH, the overall assessment of significance remains "Not Significant".

Although the effects are considered "Not Significant", in response to Information Requests (IRs) from various reviewers of the Draft EIS (2017) including First Nations, Prodigy has identified opportunities for creation of wetlands at the entrance of the spillway and other areas of the tailings facility, along water collection and diversion channels and other disturbed areas of the site. Prodigy has committed ongoing engagement regarding environmental monitoring and adaptive management, including Aboriginal groups' participation in the Environmental Monitoring Committee and in the planning process for the final Closure Plan.

35.2.4 Response to CEAA Comment Part E

In the response to CEAA FD76, it is indicted that it will likely be possible to rehabilitate 30 to 50 ha of wetlands within the PSA at closure, and that this compares to approximately 199 ha of organic/peat wetlands and 16 ha of mineral wetlands that are expected to be removed by Project development. It is further stated in the response to CEAA FD76 that additional wetland development opportunities will occur in association with fish habitat offset development.

In Table 7-124 of the EIS effects assessment, it is stated that the "Effect is reversible but requires management by creating wetlands or restoring natural flows to retained wetlands".

It is recognized, as per the Agency reviewer's comments that the development of organic peat wetlands often takes thousands of years to develop, and that such wetlands cannot simply be created in a short time span. The critical aspect from an ecological perspective, however, is wetland function. Wetlands among other aspects serve to:

- Provide habitat for plants and animals, including fish;
- Moderate surface water flow;
- Provide a sink for excess nutrients;
- Provide cation exchange properties;
- Provide an environment for methanogenesis; and
- Accumulate carbon.

While the exact functional performance of the original wetlands may be difficult (or impossible) to duplicate, the general wetland functions listed above can be duplicated through the development of new or restored wetlands. Also, for deeper organic peat deposits, it is only the upper approximately 0.5 m of the organic profile, and its associated plant community, that provides habitat for wildlife. The middle and deeper peat layers become increasingly amorphous with depth, and while still providing a water holding function, are less important in terms of the provision of habitat functions.

The intent is therefore to restore a measure of wetland function through the development of wetlands in association with fish habitat offsets (areal extent to be defined), and through direct wetland creation or restoration at closure. Therefore while there will not be a full reversibility of wetland habitat and wetland function in the post-closure condition, there will be a substantive restoration of function over several years of wetland development. Taking this aspect into consideration and the fact that wetland habitats are common and widespread in the LSA and the RSA, the overall residual effects and significance determination of non-significance is still considered valid. Also, during more detailed closure planning, if it should turn out through consultations with the Closure Working Group that a greater focus should be directed to wetland development at closure, then there may be opportunities to further this objective.

36.0 CEAA-FD88 / EA(2)-01: ACCIDENTS AND MALFUNCTIONS – DAM BREAK SCENARIO

Reference to EIS:

- Chapter 8

36.1 Context and Information Required for a Complete Response

The potential environmental effects of a worst-case TMF embankment failure scenario are not provided in sufficient detail in the response to EA(1)-02, or in the referenced EIS sections.

Section 6.2.7 of the EIS Guidelines, Effects of potential accidents or malfunctions, state that: "… The proponent will identify […] the plausible worst case scenarios and the effects of these scenarios. This assessment will include an identification of the magnitude of an accident and/or malfunction, including the quantity, mechanism, rate, form and characteristics of contaminants and other materials likely to be released into the environment during the accident and malfunction events." This has not been done.

While the TMF embankment failure is described in section 8.1.4.2 including a reference to the "Worst Case Dam Failure Assessment" in TSD 6, the potential environmental effects of this accident are only outlined in broad terms such as "resulting in serious harm to fish and fish habitat," "indirect consequences for the users of these resources," and "water quality effects could extend down to the Magpie River." Information on type of contamination, magnitude, spatial and temporal components, direct and indirect effects are not elaborated upon.

In addition, the effects of this accident scenario on the current use of lands and resources for traditional purposes have not been discussed.

Specific Question/ Request for Information:

A. Describe a worst-case TMF embankment failure scenario, prior to the application of mitigation measures and emergency procedures. Include the source, quantity, mechanism, rate, form and characteristics of contaminants and other materials (e.g. sediments) likely to be released to the surrounding environment during the accident, including in the near-term as well as mid-term; and in the near-lying water bodies as well as the Whitefish Lake and Steep Hill Generating Station Reservoirs;

B. Describe in more detail (i.e. magnitude, extent, duration) the change to the receiving environment, e.g. effect on water quality, water quantity, sediment quality;

C. Describe in more detail (i.e. magnitude, extent, duration) the resulting effects to wetlands, sensitive habitats, wildlife (including SAR), fish and fish habitat, aquatic species, migratory birds;

D. Describe the resulting effects to current use of lands and resources for traditional purposes.

36.2 Prodigy Response

Please see the complete response included as Appendix 4.

37.0 CEAA-FD92 / CE(2)-01: CUMULATIVE ENVIRONMENTAL EFFECTS

Reference to EIS:

- Chapter 4, Section 4.6.5
- Chapter 11, Section 11.4.3.1.2.2

37.1 Context and Information Required for a Complete Response

Chapter 4, Section 4.6.5 of the EIS and Appendix 1 of the response to IR-1 identifies current uses within the PSA/LSA/RSA, including hunting, fishing between Goudreau and Bearpaw Lakes. There is no consideration given in Chapter 11 to the potential interaction between the loss of vegetation in the RSA from forestry activities, with lost habitat for species of interest to Indigenous groups and degraded visual landscapes, which could have potential cumulative effects to hunting, trapping, gathering or cultural activities (at Goudreau and Bearpaw Lakes and Manitou Mountain, for example). It is insufficient to exclude this pathway of effect due a determination of "no significant effect" on terrestrial vegetation. The residual effect should be carried forward for consideration as it affects other VCs.

The rationale given in Chapter 11, Section 11.4.3.1.2.2 and in the response to CE(1)-01 for not carrying out a cumulative effects assessment on the current use of lands and resources for traditional purposes is that no significant residual adverse effects will result from the Magino Project, and that "proponents of … future activities are expected to continue to engage with Aboriginal groups to avoid significant effects on VCs of Aboriginal Interest." This should not exclude the VCs for assessment, as residual effects need to be considered in a cumulative effects assessment, whether or not they are significant. Two or more non-significant residual effects can interact to create a greater residual effect.

Furthermore, there is no discussion of the potential for multiple pathways of effects on a particular VC. For example, noise may alter quality of experience for fishing at Goudreau Lake as far as Bearpaw Lake, despite being below provincial thresholds for effects to human health. In addition, an increase in the use of water at Island Gold Mine in the future may also have a potential effect to fishing activities at Goudreau and Bearpaw Lakes. These interactions do not seem to have been considered when assessing cumulative effects to the current use of lands and resources for traditional purposes, and Aboriginal physical and cultural heritage.

This information is required to understand the potential cumulative effects to the current use of lands and resources for traditional purposes, and Aboriginal physical and cultural heritage.

Specific Question/ Request for Information:

A. Provide an assessment of the cumulative effects on the current use of lands and resources for traditional purposes, and Aboriginal physical and cultural heritage that would occur from:

- the loss of habitat for species of interest to Indigenous Peoples, including plant species used in gathering activities;
- the potential interactions with Island Gold Mine (see CE(1)-03);
- the interactions between multiple pathways of effects on a single activity, including from a change in quality of experience (e.g.: noise disturbance and changes in water quantity on fishing; loss of forest cover and change in the visual landscape from visibility of the mine on the practice of a cultural activity);

B. Define and apply significance criteria to residual effects, and describe any additional mitigation measures that may be required to ensure no significant adverse residual cumulative effects.

37.2 Prodigy Response

37.2.1 Response to CEAA Comment Part A

This response is based on the cumulative effects assessment described in Chapter 11 of the EIS, the January 2018 IR#1 submission, the March 2018 Completeness Review (CE(1)-02), and new information provided in the responses to CE(2)-03 (re: Island Gold) and CE(2)-07 (re: Cumulative Effects - Terrestrial Vegetation). Prodigy notes that a summary of potential effects of the Magino project on traditional uses/practices and impacts on Aboriginal and Treaty rights for each Aboriginal group is provided in the response to IE(2)-06 'Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group'. Please refer to that response for further detail.

The federal and provincial agencies have identified seven Aboriginal groups (First Nations and Métis) that may have interests in or potentially be affected by the proposed Project:

- Michipicoten First Nation (MFN);
- Missanabie Cree First Nation (MCFN);
- Métis Nation of Ontario (MNO);
- Batchewana First Nation (BFN) ;
- Red Sky Métis Independent Nation (RSMIN);
- Garden River First Nation (GRFN) ; and
- Pic Mobert First Nation (PMFN).

The Valued Components (VCs) and indicators used in the effects assessment in Sections 7.7.2 'Traditional Use of Lands and Resources' and 7.7.3 'Aboriginal Cultural Activities and Special Places' of the EIS are:

- Traditional Use of Lands and Resources:
    - Hunting
    - Fishing
    - Trapping
    - Gathering
- Aboriginal Cultural Activities and Special Places:
    - Aboriginal Cultural Activities;
    - Spiritual Sites;
    - Trails and Camps; and
    - Archaeological Sites.

The ongoing effects of past and current projects and activities are captured in the baseline conditions described in Chapter 4.6 of the EIS, the effects assessment in Chapter 7.7 and as further clarified in the January 2018 response to IR#1, Appendix C (Compilation of Aboriginal Interest IR Responses).

The current and future activities that may have the potential for interaction and cumulative effects on 'Traditional Use of Lands and Resources' and 'Aboriginal Cultural Activities and Special Places' VCs/indicators are identified in Table 11-16 (Current and Future Activities Relevant for Cumulative Effects) of the EIS; those relevant to Aboriginal Interests include:

- The Island Gold Mine (located immediately east of the Magino site in the LSA) – see EIS Section 11.5.1.2 'Current and Ongoing Activities', and additional information provided in the response to CE(2)-03 (Island Gold); and
- Planned forestry operations in the Magpie and Algoma Forest Management Units (see Section 11.5.1.3 'Future Activities', and additional information provided in the responses to CE(1)-01 and to CE(2)-07 (Cumulative Effects - Terrestrial Vegetation).

Cumulative Effects with Proposed Expansion of Island Gold Mine

The response to CE(2)-03 concludes the following with respect to the proposed expansion of the Island Gold mine:

> *…taking all of the above aspects into consideration, there are no evident overlapping potential cumulative effects to the natural environment, or to the potential health of local Indigenous peoples, that have not already been considered in the baseline condition, or that could reasonably be expected to occur as a cumulative effect of the Magino Project acting in concert with proposed expansion plans for the Island Gold Mine.*

As such, there will be no cumulative effects from the proposed expansion of the Island Gold mine with the potential effects of the Magino project on 'Traditional Use of Lands and Resources' or Aboriginal Cultural Activities and Special Places'.

Summary of Cumulative Effects – Other VCs

Section 11.6, Step 4 (Significance of Cumulative Effects, p.11.123) in Chapter 11 of the EIS concludes:

> *All other projects and activities will contribute to GHG emissions in combination with the Magino Gold Project. However, based on the activities likely to occur in the Algoma District over the temporal boundaries of this assessment (21 years), their contribution to Provincial, Canadian or global annual emissions will be negligible. The cumulative effect is NOT SIGNIFICANT.*
>
> *The cumulative effects on the Biological Environment VCs are NOT SIGNIFICANT largely because the cumulative removal of terrestrial vegetation (upland forests, rock barrens and wetlands) from past, existing and identified future projects and activities represents approximately 20% of the total area within the RSA.*
>
> *Cumulative effects on Significant Wildlife Habitat, Migratory and Breeding Birds, Mammals and Species at Risk resulting from the additional habitats lost across the RSA (as measured by loss of vegetation coverage) are not likely to be measurable. Furthermore, as site rehabilitation is completed, the native vegetation recovers and effects are temporary in nature.*
>
> *The significance of identified potential cumulative effects is summarized in Table 11-44. All potential cumulative effects identified are deemed to be NOT SIGNICANT.*

Table 11-45 Significance of Cumulative Effects for Current and Future Activities in the EIS provides a summary of residual effects, measurable parameters, requirement for mitigation, and significance for terrestrial vegetation, wetlands, significant wildlife habitat, migratory and breeding birds. Additional clarification is provided in the response to CE(2)-07 Cumulative Effects - Terrestrial Vegetation.

Cumulative Effects - Traditional Use of Lands and Resources

The biological environment study areas also used in the assessment of effects on Aboriginal Interests are shown in EIS Figure 11-2, p. 11.42). The residual effects of the Project on Aboriginal Traditional Use of Lands and Resources (hunting, fishing, trapping, and gathering) in the Local Study Area (LSA) and Regional Study Area (RSA) are not significant, as described in EIS Section 7.7.2, and further clarified in the January 2018 response to IR#1, Appendix C (Compilation of Aboriginal Interest IR Responses). While there is additional detail/clarification provided as a result of the various IR responses, there is no change to the overall conclusion on p. 7.407 of the EIS: "In summary, there will be no significant adverse effects of the Project on the Traditional Use of Lands and Resources (hunting, fishing, trapping, or gathering) in the PSA, LSA or RSA."

Loss of Habitat for Species of Interest to Indigenous Peoples

The past and current activities/ projects (the latter include the existing Island Gold mine) have altered the Biophysical and Biological Environments to some extent in their immediate vicinity.

As concluded in Section 11.6, Step 4 (Significance of Cumulative Effects) in Chapter 11 of the EIS (see above), the cumulative effects on the Biological Environment VCs are determined to be not significant. Cumulative effects on Significant Wildlife Habitat, Migratory and Breeding Birds, Mammals and Species at Risk resulting from the additional habitats lost across the RSA (as measured by loss of vegetation coverage) are not likely to be measurable. Furthermore, as site rehabilitation is completed, the native vegetation recovers and effects are temporary in nature.

With respect to "The loss of habitat for species of interest to Indigenous Peoples, including plant species used in gathering activities", the response to IE(1)-03 (Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance) Part A summarizes potential effects of the Magino project on harvesting, including gathering, based on additional detail in other responses. Additional detail on the species of edible and medicinal plants of importance to Aboriginal groups, and locations where they are harvested, is provided in IE(1)-B06. The conclusion that there will be no significant adverse effects of the Project on the Traditional Use of Lands and Resources – specifically reduced quality of berry harvest activity in the Summit Lake area, and Goudreau Road north of the PSA – as stated on p. 7.406 - 7.407 of the EIS document remains unchanged. IE(1)-B13 addresses the abundance/regional distribution of medicinal and edible plants. The response concludes that none of the edible or medicinal plants identified by/harvested by Aboriginal groups in the PSA, LSA or RSA are regionally rare or unusual.

The response to IE(1)-03 summarizes potential effects on harvesting, including loss of habitat as it relates to hunting and trapping, based on additional detail in other responses (i.e., IE(1)-B12 (Waterfowl Habitat and the Potential Effects on Traditional Use /Aboriginal &Treaty Rights) and IE(2)-B14 Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting, Removal of Beaver Lodges / Furbearer Habitat in the PSA and Trapping /Hunting Activities, and Removal of Black Bear Foraging Area – Hunting). The assessment of effects on hunting in Section 7.7.2.5.2 of the EIS is focused on moose and waterfowl; however, IE(1)-03 notes that the general conclusions in that section with respect to hunting also applies to rabbit/other small game. The conclusion that there will be no significant adverse effects of the Project on the Traditional Use of Lands and Resources (including those related to habitat loss) as stated on p. 7.406 - 7.407 of the EIS document remains unchanged. Additional details regarding trapping in the PSA, LSA and RSA, and the trapping uses by each Aboriginal group, are provided in IE(1)-B07. Consideration was given to the removal of beaver lodges/furbearer habitat from the PSA, and the potential for wildlife – vehicle collisions involving mammals. The conclusion that there will be no significant adverse effects of the Project

on the Traditional Use of Lands and Resources – specifically trapping by Aboriginal people – as stated on p. 7.407 of the EIS document remains unchanged.

There are no cumulative effects predicted from loss of habitat for species of interest to Aboriginal groups, in the context of traditional use of lands and resources in the LSA or RSA, as a result of the proposed expansion of the Island Gold mine, or planned forestry activities.

Cumulative Effects on Quality of User Experience - Traditional Use of Lands and Resources

A summary of potential effects on traditional uses/practices and impacts on Aboriginal and Treaty rights for each Aboriginal group is provided in the response to IE(2)-06 'Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group'. These tables include information about the potential change in user experience in the 'Residual Effects' column. There are no cumulative effects predicted to change in user experience related to traditional use of lands and resources in the LSA or RSA as a result of the proposed expansion of the Island Gold mine, or planned forestry activities.

Cumulative Effects - Aboriginal Cultural Activities and Special Places

The residual effects of the Project on Aboriginal Cultural Activities and Special Places (Aboriginal cultural activities, spiritual sites, trails and camps) in the LSA and RSA are not significant, as described in Section 7.7.3 and further clarified in the January 2018 response to IR#1, Appendix C (Compilation of Aboriginal Interest IR Responses). The response to IE(1)-03 (Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance) Part B summarizes potential effects of the Magino project on 'Aboriginal Cultural Activities and Special Places', based on additional detail in other responses.

Cumulative Effects on Quality of User Experience - Aboriginal Cultural Activities and Special Places

A summary of potential effects on traditional uses/practices and impacts on Aboriginal and Treaty rights for each Aboriginal group is provided in the response to IE(2)-06 ''Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group'. These tables include a summary of the change in user experience in the 'Residual Effects' column.

There are no cumulative effects predicted to change in user experience related to Aboriginal cultural activities or special places in the LSA or RSA as a result of the proposed expansion of the Island Gold mine, or planned forestry activities.

37.2.2 Response to CEAA Comment Part B

Assessment of Significance of Cumulative Effects on Current Use of Lands and Resources for Traditional Purposes, and Aboriginal Physical and Cultural Heritage

It has been determined that there will not be potential adverse cumulative effects on the Traditional Use of Lands and Resources VC, and the Aboriginal Cultural Activities and Special Places VC. This determination has been made based on the conclusions stated above that:

- The proposed expansion of the Island Gold mine will not have overlapping cumulative effects with the proposed Magino project;
- The cumulative effects on the Biological Environment VCs are not significant, largely because the cumulative removal of terrestrial vegetation (upland forests, rock barrens and wetlands) from past, existing and identified future projects and activities represents approximately 20% of the total area within the RSA;

- The cumulative effects on Significant Wildlife Habitat, Migratory and Breeding Birds, Mammals and Species at Risk resulting from the additional habitats lost across the RSA (as measured by loss of vegetation coverage) are not likely to be measurable. Furthermore, as site rehabilitation is completed, the native vegetation recovers and effects are temporary in nature;
- There are no cumulative effects predicted from loss of habitat for species of interest to Aboriginal groups, in the context of traditional use of lands and resources in the LSA or RSA, as a result of the proposed expansion of the Island Gold mine, or planned forestry activities; and
- There are no cumulative effects predicted to change in user experience related to traditional use of lands and resources or Aboriginal cultural activities and special places in the LSA or RSA as a result of the proposed expansion of the Island Gold mine, or planned forestry activities.

As a result, there has not been an assessment of the significance of potential cumulative effects.

Additional Mitigation Measures

As there are no predicted potential adverse cumulative effects on the 'Traditional Use of Lands and Resources', and the 'Aboriginal Cultural Activities and Special Places', Prodigy has not proposed specific additional mitigation related to potential cumulative effects on current use of lands and resources/Aboriginal physical and cultural heritage. However, the proposed Environmental Monitoring Committee (EMC) will provide a forum for the discussion of potential cumulative effects, should they arise in the future. (Refer to the Commitments Table in Appendix A of the January 2018 IR(1) submission package).

The management of any potential cumulative effects (including mitigation and follow-up) involves multiple parties – not only Prodigy – for example, the proponents of other projects, regulators, and Aboriginal groups. As noted in Section 11.6.3 of the EIS ('Aboriginal Interest', (p. 11.123), "Aboriginal groups, including First Nations and Métis in Canada, have Constitutionally-protected Aboriginal and Treaty rights. Proponents of future development activities have an obligation to consult with Aboriginal groups concerned. Appropriate mitigation measures are developed in consultation with these Aboriginal groups." Proponents of future development activities will also have an obligation to consult with Aboriginal groups that may be affected.

The EMC will be consulted to ensure that changes in traditional use patterns and updated traditional knowledge information can be used in design and operations and can be developed and implemented via some or all of the following mechanisms:

- Implementation of the terms and conditions of bilateral agreements negotiated with Aboriginal groups;
- Ongoing engagement with identified land users;
- Aboriginal groups' participation in the EMC;
- Adaptive management plans; and
- Consideration as part of the planning process for the final Closure Plan.

Prodigy notes that the mitigation measures (including the EMC) related to effects on traditional uses / practices for each Aboriginal group are summarized in the response to IE(2)-06 'Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group'. Additional detail on potential effects and mitigation is also provided in various other IR#1 responses (see the Appendix A Commitments Table included in the January 2018 IR(1) submission package as well as the tables in Appendix 1: 'Traditional Uses in the PSA, LSA, and RSA and Concordance Tables' prepared and submitted March 20, 2018 to CEAA as part of the IR(1) completeness review package).

Bilateral agreements have been signed between Prodigy Gold and MCFN, MNO and RSMIN. Additionally, agreements are either under negotiation or contemplated with the other Aboriginal groups associated with the project. A variety of accommodation and/or compensation mechanisms has been provided through the entire suite of terms and conditions of the agreements. A summary of uses within the PSA, LSA and RSA is provided in the response to IE(02)-06 'Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group'. Where a use that will be directly impacted by the project development could not be avoided, Prodigy has or will be compensating Aboriginal groups according to the terms and conditions of agreements with groups. Prodigy has completed agreements that have adequately mitigated or accommodated potential effects on the respective Aboriginal groups' traditional uses, cultural activities or special places and potential impacts on Aboriginal and/or Treaty rights. In particular, the environmental protection, cultural awareness, financial and implementation aspects of the agreements address specific effects. The specific details of these agreements remain confidential.

38.0 CEAA-93 / CE(2)-03: CUMULATIVE ENVIRONMENTAL EFFECTS – ISLAND GOLD MINE

Reference to EIS:

- Chapter 11

38.1 Context and Information Required for a Complete Response

Context and Rationale:
The response to CE(1)-02 states that "few details are available" on the proposed expansion of Island Gold Mine, and that "the underground mining activities do not overlap with the VCs identified for the Magino Project."

Documentation available on the proponent for Island Gold Mine's website (https://www.alamosgold.com/mines-and-projects/producing-mine/island-gold-canada/default.aspx) describes the potential interactions that Island Gold Mine could have with the Goudreau Lake watershed (through effluent discharge and removal of water further upstream at Maskinonge Lake, for example).

Potential cumulative effects to the air and watersheds could reasonably be expected and could have potential cumulative effects on fish and fish habitat, human health, and current use of lands and resources.

Specific Question/ Request for Information:

A. Provide an assessment of the potential cumulative effects of the project's interactions with Island Gold Mine on air quality, water quality and quantity, and the effects of changes to these environmental components to the health of Indigenous Peoples, fish and fish habitat;

B. Identify any mitigation measures that may be required for any potential effects identified as a result of the response to A;

C. Describe any follow-up programs that would be necessary to verify EA predictions and the effectiveness of mitigation measures, including contingency plans that may be required.

38.2 Prodigy Response

38.2.1 Response to CEAA Comment Part A

Based on publicly available information, the following is a summary as we understand, of the Island Gold Mine expansion:

The Island Gold Mine is an underground gold mine and ore processing facility located just to the northeast of the Magino Project. The mine and processing plant was originally operated by Canamax Resources Inc. from 1988 to 1990 (as the Kremzar Mine), before being shut down for a number of years. Production was re-initiated in 2007 by Island Gold, and subsequently by Richmont Mines Inc. In 2017 the property was acquired by Alamos Gold Inc.

Ore is mined by way of a portal (the Lochalsh portal) and underground ramp with ore being trucked approximately 0.8 km to the Kremzar ore processing plant (Richmont Mines Inc. 2017). Ore processing involves a conventional crushing, grinding, carbon-in-pulp cyanide leach, carbon strip and electrowinning gold recovery process. Tailings are discharged to the tailings management facility (TMF) which consists of

a tailings storage and primary retention pond area, and a secondary polishing pond. Mine water is also directed to the primary tailings retention pond. TMF and mine waters are recirculated back to the ore processing plant, from the primary retention pond, for reuse. The ore and mine rock are not acid generating. Excess effluent not required for ore processing is discharged from the primary tailings pond to the secondary polishing pond, and from there via a small drainage to the receiver (Goudreau Lake). Cyanide and metals are removed in the system through use of natural degradation.

The initial processing plant ore throughput capacity in 1988 was 650 tpd. This capacity was subsequently increased to 850 tpd in 2010 and to 900 tpd in 2015 (Alamos Gold Inc. 2018). Alamos Gold is planning to further expand the processing plant capacity by approximately 20% to 1,100 tpd later in 2018. This latter proposed increase is the proposed expansion referenced in the context and rationale related to information request Part A.

The mine site portal area is quite small occupying a circular area with a diameter of about 200 m. There are no substantive mine rock stockpiles on surface, as the majority of the mine rock produced at the Island Gold Mine is returned underground as mine backfill. A portion of the mine rock has been and continuous to be used for mine site construction, primarily for tailings dam lift construction.

With regard to the potential for the expansion of the Island Gold Mine interactions and cumulative effects relating to the proposed Magino Project, the following aspects are of note:

- The Island Gold Mine has been in recent operation since 2007, and the proposed expansion in processing plant throughput from the existing processing rate of 900 tpd to a new rate of 1,100 tpd is quite modest;
- No changes are proposed to operation of the TMF or to its final effluent criteria;
- The slight increase in ore throughput tonnage will generate slightly more annual tailings void space, which will result in a slight overall reduction in excess effluent discharge from the Island Gold Mine to the environment;
- The majority of mine rock at the Island Gold Mine will continue to be returned underground as backfill, with excess mine rock continuing to be used for tailings dam raises, such that there will be no appreciable increase to the volume of the temporary mine rock stockpile on surface adjacent to the Lochalsh portal; and
- Excess effluent discharge to the environment is to Goudreau Lake which drains via Goudreau Creek south to Manitowik and Whitefish Lakes to the Michipicten River system. This is a completely separate effluent flow path from the proposed Magino Project effluent management and discharge system, which will discharge effluent north by way of the Herman Creek system to the Magpie River system.

With respect to air quality the proposed slight increase in the Island Gold Mine ore processing throughput of about 20%, is not expected to materially change the local air quality background condition, from that which has already been used to determine Magino Project effects on air quality. The major source of air emissions from mines is blasting in open pits and dust emissions associated with ore and mine rock stockpiling and hauling operations. The Island Gold Mine is an underground mine with almost no mine rock on surface and therefore has a very low overall air emissions profile.

With respect to water quality and quantity, the Island Gold Mine discharges its final effluent to a completely different receiver (Goudreau Lake), from that which will be used in connection with the Magino Project (which will discharge all site contact water to Otto Lake, with subsequent flow via Herman Lake to Herman Creek and the Magpie River system). The Magino Project will draw groundwater from the same

groundwater aquifer (bedrock) system as does the Island Gold Mine; but Alamos Gold is already drawing water from this aquifer, such that the continued operation and slight expansion of the Island Gold processing facility is unlikely to change the baseline groundwater condition that was used to assess Magino Project potential adverse effects to surface or groundwater quantity.

In the post-closure condition the Magino Mine open pit is planned to be connected to Goudreau Lake, so at that time there will be a water discharge from the Magino site to Goudreau Lake. However, such a discharge is projected to occur at a point from 43 to 50 years post operation of the Magino Mine, and there is no expectation, or evidence to support, a continued discharge from the Island Gold Mine to Goudreau Lake that far out into the future.

Similarly with regard to fish and fish habitat, there are no known plans to expand the Island Gold Mine that we are aware, such that it would impact on additional fish habitat, either directly or indirectly, beyond that which has already occurred and continues to occur with the current mine operation.

Therefore, taking all of the above aspects into consideration, there are no evident overlapping potential cumulative effects to the natural environment, or to the potential health of local Indigenous peoples, that have not already been considered in the baseline condition, or that could reasonably be expected to occur as a cumulative effect of the Magino Project acting in concert with proposed expansion plans for the Island Gold Mine.

38.2.2 Response to CEAA Comment Part B

No cumulative effects have been identified in association with the Magino Project, that relate to the modest planned processing plant throughput expansion for the nearby Island Gold Mine. There are consequently no additional planned mitigation measures in this regard.

38.2.3 Response to CEAA Comment Part C

No additional follow-up programs are required as a result of the consideration of possible cumulative effects relating to the planned processing plant throughput expansion for the nearby Island Gold Mine.

Alamos Gold Inc. 2018. Annual Information Form [40-F Annual Report] for the Year Ended December 31, 2017.

Richmont Mines Inc. 2017. Island Gold Mine Technical Report and Expansion Case Preliminary Economic Assessment, Dubreuilville, Ontario, Canada. Technical Report according to National instrument 43-101 and Form 43-101F1.

39.0 CEAA-96 / CE(2)-07: CUMULATIVE ENVIRONMENTAL EFFECTS – LOSS OF FOREST COVERAGE

Reference to EIS:

- Chapter 11, Table 11-27, 11-28 and 11-29
- Chapter 11, Section 11.5.4.2.4.4

39.1 Context and Information Required for a Complete Response

The response to CE(1)-06 states that "The combined loss of forest coverage (Magino + Magpie Forest Management Unit) is expected to reach 25% as stated in the table [11-29 in Chapter 11]." This value is used to justify a "low" magnitude of effect to terrestrial vegetation.

The cumulative effects assessment (Chapter 11) states that the "area of the RSA to be disturbed by human activity into the foreseeable future is estimated to be 2975 ha, which represents 25% of the surface area of the RSA retained for the cumulative effects assessment (RSA is 110 km2 or 11,000 ha)." However, 2975 ha represents 27% of the total RSA area. Furthermore, the magnitude of effects criteria as defined in Chapter 11, Table 11-28 consider vegetation removals as a percentage of the total vegetation, rather than the total area in the watersheds (the RSA is delineated by watersheds). Therefore, the removal of 2975 ha should be compared to the total vegetated area in the RSA, or 7802 ha (see table 11-27) and represents 38% of the vegetation in the RSA. A loss of 38% represents a Medium magnitude of effect (note: 27% would also represent a Medium magnitude of effect as defined in Chapter 11).

The geographic extent and duration of effects criteria are similarly not applied correctly. Based on the definitions in table 11-28 both should be considered High. It is unclear how the proponent's significance determination is justified using these criteria, and whether there should be additional mitigation measures considered for this potential cumulative effect.

The cumulative effects assessment does not provide a complete assessment of the effects that removal of vegetation from forestry activities would have on migratory birds, species of interest to Indigenous groups and to the current use of lands and resources for traditional purposes.

The rationale provided in Chapter 11, Section 11.5.4.2.4.4 is that forestry management plans incorporate measures for the protection of significant wildlife habitat. However, significant wildlife habitat has a specific definition for the Ontario Ministry of Natural Resources and Forestry. It is unclear how the goal of protecting these habitats in a forest management area (as stated in the rationale in Chapter 11) will prevent cumulative effects to migratory birds or to species of interest to Indigenous groups in the Magino Project's Regional Study Area. There is no application of significance criteria to the potential residual cumulative effects to migratory birds or to species of interest to Indigenous groups.

This information is required to understand the potential for cumulative effects to migratory birds and to the current use of lands and resources for traditional purposes.

Specific Question/ Request for Information:

A. Carry forward the loss of 38% of the vegetation in the RSA to the assessment of cumulative effects on migratory birds (including on Eastern Whip-poor-will, Common Nighthawk, Olive-sided Flycatcher and Chimney Swift) and species of interest to Indigenous groups (see CE(2)-07), and to the current use of lands and resources for traditional purposes (see CE(2)-01);

B. Describe any mitigation measures applicable to the loss of vegetation as relevant to reduce or prevent adverse effects to migratory birds, species of interest to Indigenous groups and the current use of lands and resources for traditional purposes;

C. Define and apply significance criteria to residual effects, and describe any additional mitigation measures that may be required to ensure no significant adverse residual cumulative effects;

D. Describe any follow-up and monitoring programs required to verify EA predictions and the efficacy of mitigation measures.

39.2 Prodigy Response

39.2.1 Response to CEAA Comment Part A

The cumulative effects of the project and other disturbances will result in a temporary loss of about 2975 ha of vegetation cover. Of this, about 1070 ha will be disturbed by the project study area and about 949 ha by forest harvesting. Disturbance from historical logging and mining activity in the RSA totals about 1076 ha. The exact areas are difficult to estimate due to uncertainty about future operations by the the forest industry and overlap between historical and proposed vegetation removal.

The geographical extent of the effect was incorrectly applied as “Low” in Table 11-29 because although the project itself is confined to the PSA, activity by the forest industry will occur elsewhere in the RSA. The duration of the cumulative effects was also was incorrectly ranked as “Low” in Table 11-29 because the restoration of boreal forest vegetation requires a minimum of several decades. Both of these effects should therefore be scored as “High”.

39.2.2 Response to CEAA Comment Part B

Progressive rehabilitation will be implemented with a goal of restoring vegetation similar to what was previously present. If this is not possible, the goal will be another ecologically appropriate ecosite. This approach will minimize the adverse effects on migratory birds and other species. While restoration of the site to mature upland forest conditions will require decades at a minimum, the establishment of communities capable of developing into representative, healthy, boreal forest and wetlands will be used as a restoration target. Forest and wetland restoration methods will be developed on a site by site basis based on the best techniques appropriate for each site. Techniques such as tree planting and seeding of conifer species will be considered as a means of rapidly establishing young forest stands, beginning the process of forest succession and facilitating colonization of other native species.

Where a site cannot be reasonably returned to its former condition, the most ecologically appropriate ecosite will be used as the new restoration objective. For example, where a deep soil site has been converted to a shallow soil site, due to removal of overburden, establishment of a jack pine stand would be the most ecologically appropriate site goal, likely to result in a healthy, functioning boreal forest, representative of nearby forest stands, and capable of supporting native species and functioning as wildlife habitat.

While a site cannot be perfectly restored in a short period of time, rapid establishment of native tree species will promote forest succession and the establishment of ecologically relevant, and healthy forest and wetland communities.

39.2.3 Response to CEAA Comment Part C

Despite the miscalculation of the disturbance area and misclassification of the geographical extent and duration, the overall assessment of significance of the cumulative effects remains "Not Significant" for the reasons discussed below.

- Vegetation removed by the project will be replaced with similar habitat (although the proportions of habitat types may change) (see response B, above)
- Similarly, forest management in the Magpie Forest is conducted in compliance with the Crown Forest Sustainability Act and no significant cumulative loss of forest cover is expected (Dubreuil Forest Products Limited 2008). The forest age class distribution, disturbance patterns, forest community composition, and habitat availability are expected to be similar to the natural condition (Dubreuil Forest Products Limited 2008).
- When expressed as a percentage of the RSA, the magnitude of the vegetation loss is inflated due to the small size (110 km2) of the RSA. In comparison, the Rainy River Resources project used an RSA over six times larger (690 km2).
- Parts of the PSA were previously disturbed by historical mining and forest management activity, therefore cumulative impacts may be overestimated.
- Populations of migratory birds and other wildlife species in the boreal forest have evolved with vegetation disturbance resulting from natural disturbance such as wild fire, insect infestation, or blowdown. Habitat for these species is undergoing continuous disturbance and renewal on a 50 to 100 year cycle (Thompson 2000). Fires greater covering 1,000 to 10,000 ha occur regularly in Ecoregion 3E (Li 2000)
- Species such as Common Nighthawk use early successional vegetation and will be able to reoccupy disturbed sites before forest has regenerated.

In conclusion, the magnitude, geographical extent, and duration of the cumulative effects of terrestrial vegetation impacts are within the range of natural variability in the boreal forest, to which wildlife populations are adapted. Although there will be a lag period between disturbance and forest regeneration, no significant residual effects are expected.

39.2.4 Response to CEAA Comment Part D

As part of the progressive rehabilitation plan, sites will be monitored for success, allowing intervention where regeneration has failed, and the improvement of restoration techniques over time.

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APPENDIX 1

CEAA-FD6 / IE(02)-06
CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES
(Potentially Impacted Aboriginal and Treaty Rights
& Mitigation for Each Indigenous Group)

PRODIGY
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CEAA-FD6 / IE(02)-06: CURRENT USE OF LANDS AND RESOURCES FOR TRADITIONAL PURPOSES (Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group)

Contents

Introduction / Context

Prodigy's response is organized as follows:

- A discussion of the context for the response, to provide clarity and specificity; and
- A series of six tables (and introduction) of mitigation measures for potentially impacted Aboriginal and treaty rights: one for each of the six Aboriginal groups participating in the environmental assessment process (Michipicoten First Nation [MFN], Missanabie Cree First Nation [MCFN], Batchewana First Nation [BFN], the Métis Nation of Ontario [MNO], the Red Sky Métis Independent Nation [RSMIN], and the Garden River First Nation [GRFN]). A table has not been prepared for Pic Mobert First Nation (PMFN), as explained below.

Definition of Mitigation Used in This Response

As this response has been developed with a specific focus on mitigation, the term has been clearly defined. As per the draft *Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes under the Canadian Environmental Assessment Act, 2012* (CEAA, December 2015, p.19), "mitigation of environmental effects can take two forms:

- Elimination, reduction or control of a designated project's environmental effects is preferred.
- Where this is not possible, restitution for any damage to the environment caused by the environmental effects should be considered (e.g., replacement, restoration, compensation)."

The draft *Technical Guidance* document stresses the need to consider the views of affected Aboriginal groups on mitigation to "assist in ensuring that the environmental effects on the current use of land and resources for traditional purposes are at an acceptable level for the community." The guidance document also stresses that "[e]ngaging Aboriginal groups is particularly important when practitioners are considering alternate sites as a form of mitigation."

It is to be noted that the mitigation measures identified by CEAA in its *Technical Guidance for Assessing the Current Use of Lands and Resources for Traditional Purposes under the Canadian Environmental Assessment Act, 2012* include forward-looking commitments as a form of mitigation. Prodigy's response therefore includes commitments in its listing of mitigation measures for potentially impacted Aboriginal and treaty rights.

Examples provided in the *Technical Guidance* document, p.18, include:

Change in the Environment	**Potential Effect on the Current Use of Lands and Resources for Traditional Purposes**	**Mitigation Measures**
Destruction of wetlands supporting moose and migratory birds.	Reduced harvest of meat for food, and increased travel due to changes in moose and migratory bird abundance and distribution.	Requiring selection and design of wetland compensation sites to take into account opportunities to provide for current use activities.

Change in the Environment	Potential Effect on the Current Use of Lands and Resources for Traditional Purposes	Mitigation Measures
Loss of land due to project footprint.	Loss of ceremonial/sacred sites for transmittal of culture through teachings and storytelling.	Adjustment of the designated project footprint (or parts of it) to avoid sensitive areas such as those which are known to be used for ceremonial purposes by Aboriginal peoples.
Construction of a hydro-electric dam.	Loss of access to an Aboriginal fishery.	Developing a fish habitat compensation plan for Aboriginal fisheries that includes: fish passage restoration, enhancement of tributaries through barrier removal, riparian planting and upgrading of a hatchery.

Components of Mitigation Measures Used in This Response

For the purposes of this response, the term "mitigation measures" includes the following components:

- Third-Party Review Process (mitigation measures reviewed and also identified by Aboriginal groups)
- Environmental Management System
- Closure and Reclamation Planning
- Follow-up (testing accuracy of effect/impact prediction) and Monitoring (of project effects)
- Bilateral Agreements / Compensation

Each of these is briefly described below.

Third-Party Review Process

Soon after the release of the EIS in January of 2017, Prodigy Gold proactively supported independent third-party reviews of the EIS. A third-party technical review process was undertaken by four First Nations (MFN, MCFN, BFN and GRFN), and included their retaining technical subject matter experts to review the EIS on the groups' behalf. Prodigy held bilateral meetings with First Nations (MFN, BFN, GRFN) and their advisors to respond to all technical EIS review comments and questions submitted to CEAA. Prodigy also supported a bilateral technical review of the EIS through meetings with the MNO and their technical advisors.

Environmental Management System

The Environmental Management System for the Magino Project will be designed to ensure that all relevant company commitments to Aboriginal groups, Federal EA conditions, Provincial Permit conditions and other Company commitments are properly tracked and implemented at all project phases. Regular meetings with the Environmental Monitoring Committee (EMC) that will include each of the Aboriginal groups will be the key forum for free flow of information demonstrating both compliance with company commitments and permits. The EMC meetings will also identify where the Company may need to amend or update plans to better suit field conditions or any new information that an Aboriginal group may share in the future that becomes operationally relevant.

Adaptive management is an integral part of the Environmental Management System. As per p.7-407 of the EIS, adaptive management will be based on periodic reporting of indicators related to Traditional Use of Lands and Resources for the Project, and ongoing engagement with Aboriginal groups.

Closure and Reclamation Planning
As per Chapter 6 of the EIS (p.6.76), "Progressive rehabilitation will be conducted to the extent possible. It will focus on features that are completed during the construction and operations phases, such as construction access roads and laydown areas, portions of the MRMF, the overburden management facilities, and some of the ore and mine rock haul roads." As noted in Chapters 2 and 6, an important component of the "mitigation by design" approach is the minimization of the long-term legacy of the Project. The implementation of the rehabilitation plans for the mine site following its operation will be achieved through the implementation of a Certified Closure plan (p. 7.103 of the EIS). "A preliminary Closure Plan has been developed that describes measures for permanent closure." (p. 7.138 of the EIS). This is provided as Technical Support Document 19.

Follow-up and Monitoring
Throughout the environmental assessment process, Aboriginal groups have stated their strong support for monitoring and follow-up as an integral part of the project, to ensure the effectiveness of mitigation, changes to the environment as a result of the project, the accuracy of the prediction of effects, and compliance.

Aboriginal groups that have been involved in the Project's environmental assessment process will be invited to participate in the Environmental Monitoring Committee (EMC), which will review mitigation and monitoring plans, and review monitoring results (source: extract from Table 7-243, p. 7.513 of June 2017 EIS 'Project Interactions with Traditional Use of Land and Resources'). The EMC will have responsibilities related to how traditional use and traditional knowledge information is conveyed, updated and used in the design and operation of the project; review of the EEM program and regulatory permit applications; review of monitoring programs; review of environmental management plans; and development of the fish habitat Offsetting/Compensation Plan.

A follow-up program that would be used to ensure that any changes in traditional use patterns and updated traditional knowledge information would be used in design and operations can be developed and implemented via some or all of the following mechanisms:

- Implementation of the terms and conditions of bilateral agreements negotiated with Aboriginal groups;
- Ongoing engagement with identified land users;
- Aboriginal groups' participation in the EMC;
- Adaptive management plans; and
- Consideration as part of the planning process for the final Closure Plan. (IE(1)-10 (BFN Follow-up Program); Appendix A (Commitments Table)

Bilateral Agreements/Compensation

With respect to bilateral agreements with Aboriginal groups, agreements have been signed between Prodigy Gold and MCFN, MNO and RSMIN. Additionally, agreements are either under negotiation or contemplated with the other Aboriginal groups associated with the project. A variety of accommodation and/or compensation mechanisms has been provided through the entire suite of terms and conditions of the agreements. Compensation and other forms of mitigation, such as participation in an Environmental Monitoring Committee, are included in most of the agreements.

Introduction to 'Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation' Tables

Prodigy notes that at a meeting with CEAA on May 29, 2018, the company was requested to expand the scope of the response beyond the original question posed by CEAA in IE(2)-06 to summarize the effects assessment. The agreed-upon framework is reflected in the tables. The purpose of the following six tables is to summarize:

- Uses of land and resources for traditional purposes and other cultural practices (historic and current) identified by each Aboriginal group (captured in the column "Summary of Traditional Uses & Practices");
- Effects of the Project on traditional uses/practices before mitigation measures applied (refer to column "Potential Effects");
- "Mitigation Measures" proposed for effects to Aboriginal uses /practices and the exercise of Aboriginal and Treaty rights (including uses not expected to resume in the reasonably foreseeable future);
- Residual effects post mitigation, including a description of the consideration of the importance of a use or practice where that information exists (captured in the column "Residual Effects"); and
- Conclusions with respect to adverse effects on Aboriginal uses/ practices, their significance and potential impacts to Aboriginal and Treaty rights.

The summary of the effects assessment presented in this IE(2)-06 response is based on the EIS and subsequent IR responses, and includes proposed mitigation measures. This summary has considered the effects on the quality of resources, access to resources, and change in the quality of user experience.

Due to the large number of specific mitigations identified for relevant VCs and indicators, only those directly relevant to Aboriginal uses are included in the tables. For further details, the reader is referred to the mitigation measures captured in Appendix C (*Compilation of Aboriginal Interest IR Responses)* of the January 2018 Indigenous IR responses, as well as the January 2018 Appendix A *Commitments Table*.

The reader is also referred to the concordance tables produced for the IE(1)-07 completeness review response (see Appendix 1 '*Traditional Uses in the PSA, LSA, and RSA and Concordance Tables*' of March 2018 package), which provide an index for the reader to review the EIS and IR(1) information for each Aboriginal group and each potentially affected use/activity.

Prodigy notes that detail regarding the validation of mitigation measures by Aboriginal groups is provided in Part C of the response to IE(2)-03 *'Updated Assessment of the Potential Project-Related Effects & Applicable Mitigation Measures'.* Please refer to that response for further detail.

Michipicoten First Nation Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Michipicoten First Nation (MFN) is an Ojibway First Nation signatory to the Robinson-Superior Treaty (1850) and hold Aboriginal and Treaty rights to hunt, fish and trap over lands surrendered to the Crown. The MFN's Gros Cap 49 reserve is located approximately 50 km south of the project (EIS; p 4.336). Refer to Figure 4-109: Magino Mine First Nation and Community Context in Section 4.6.1 of the EIS (p.4.334) for the location of these lands. The 1850 Robinson-Superior Treaty recognized the traditional territory of the MFN. Traditionally, MFN citizens lived, hunted and trapped throughout the area surrounding the Michipicoten River and harbour. Maps that have been provided by MFN are confidential in nature and have not been included here.

Table 1: MFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
MFN Hunting **Overview:** MFN has not indicated current use of the PSA, LSA or RSA for hunting. The proposed Magino mine straddles the local height of land and the Magpie and Michipicoten water systems drain to Lake Superior (Hamilton, 2014; Figure 8). The site includes lands identified in 1849 as part of the hinterland of MFN (Hamilton, 2014; Figure 6). The Traditional Land Use and Occupancy Study (TLUOS) determined that the Magino property was likely used periodically for terrestrial hunting and gathering (Hamilton, 2014; Page 14). The TLUOS references moose and partridge as the only specific species hunted. All identified harvesting areas are located approximately 10	PSA	No MFN hunting identified.	N/A	N/A	N/A	N/A
	LSA	No MFN hunting identified.	N/A	N/A	N/A	N/A
	RSA	No MFN hunting identified.	N/A	N/A	N/A	N/A

Table 1: MFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
km or further beyond the Magino PSA.						
MFN Fishing **Overview:** MFN has not indicated current use of the PSA, LSA or RSA for fishing. MFN's TLUOS report identified fishing beyond the RSA and the Project's zone of influence. Particularly important for spring and fall fishing are Fungus Lake, Wabatong (Wabatongushi Lake), Lochalsh Lake and Dog Lake (Hamilton, 2014; Page 18). Most if not all of these lakes are located some distance east (e.g., 20+ km) of the Project. (EIS Section 4.6.5.1.2) The report also indicates MFN use of fishing rivers which drain into the Lake Superior (i.e., Magpie River, Michipicoten River) and along the shores of Lake Superior west and south of Wawa.	PSA	No MFN fishing identified	N/A	N/A	N/A	N/A
	LSA	No MFN fishing identified	N/A	N/A	N/A	N/A
	RSA	No MFN fishing identified	N/A	N/A	N/A	N/A
MFN Trapping	PSA	No MFN trapping identified	N/A	N/A	N/A	N/A

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Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
Overview: MFN trapping is beyond the Project's zone of influence (see Prodigy's responses to IRs IE(1)-B07 [*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area]* and IE(1)-B14 [*Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting*).						
	LSA	No MFN trapping identified	N/A	N/A	N/A	N/A
	RSA	No MFN trapping identified	N/A	N/A	N/A	N/A
MFN Gathering **Overview:** MFN did not identify gathering in the PSA, LSA or RSA. This is noted in the response to IR IE(1)-B06 (*Important Plant Species)*.	PSA	No MFN gathering identified	N/A	N/A	N/A	N/A
	LSA	No MFN gathering identified	N/A	N/A	N/A	N/A
	RSA	No MFN gathering identified	N/A	N/A	N/A	N/A
MFN Cultural Activities and Special Places **Overview:** MFN's TLUOS identified historic trails in the PSA and LSA (addressed in IE(1)-B01 [*Additional Information on Use of Trails (Mountain to Herman Lakes, Goudreau to Pine Lakes) & Associated Activities]*). In the RSA, MFN's TLUOS report identified an historic portage area (addressed in	PSA	**Historic Trails** MFN's TLUOS Report identified historic trails from Mountain Lake to Herman Lake (through the Magino site) and from Goudreau Lake to Pine Lake (just south and east of the site) extending into the LSA and a portion of the RSA.	**Historic Trails** EIS Section 7.7.3.5.2 'Effect on Trails and Camps' (p. 7.417) states that the development of the Project would result in loss of a portion of this historically used trail. The navigability of the water route from Mountain Lake to Otto Lake, and Dreany to Mud lakes will not be affected by the Project, as no barriers to boating are being created. MFN confirmed that historic trails are no longer used; potential future use is not foreseeable, therefore no predicted effects (see IE(1)-B01 [*Additional*	1. **<u>3rd Party Review Process and Outcomes</u>** MFN participated in the **3rd party review process** along with MCFN, BFN and GRFN. Through their participation, no additional concerns regarding project effects to cultural activities and special place and/or mitigation measures in respect of these historic uses were identified by MFN. MFN identified other general environmental management and monitoring measures with respect to their ongoing participation in the Project through the Environmental Monitoring Committee (specifically, measures address components that include water quality, fish/fish habitat, vegetation, site operations, and closure planning). Prodigy has included these measures in its *Commitments Table* (see Appendix A – IR(1) submission). 2. **<u>Environmental Management System</u>** <u>Historic Resources Management Plan</u>	**Historic Trails** EIS Section 7.7.3.7 'Residual Effects on Aboriginal Cultural Activities and Special Places' (p. 7.420) states that the development of the Project would result in loss of a portion of a trail from Mountain Lake to Herman Lake used historically by MFN. Residual effects to these trails were determined in	No significant adverse effects to MFN cultural activities and special places; no impact after mitigation to MFN rights in respect of physical or cultural heritage values.

Table 1: MFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
IE(1)-B07 [*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area*]), historic trapper's cabin (addressed in IE(1)-B09 [*Trappers Cabin – WA047*]), and historic cemetery (addressed in IE(1)-03 [*Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance*], p. 37-38).			*Information on Use of Trails (Mountain to Herman Lakes, Goudreau to Pine Lakes) & Associated Activities]* and IE(1)-03 part B).	Prodigy will prepare a Historic Resources Management Plan to identify and manage any objects or artifacts found during project development. All Aboriginal groups involved in the Project's environmental assessment process will be provided with the opportunity to review the management plan once a draft has been completed. The plan will: • Identify and manage the treatment any objects or artifacts found during project development; • Be prepared in advance of construction; • Be available for review by all Aboriginal communities; and • Will list who should be contacted in the event of an archaeological find. [Commitments Table – ID# MFN-8; BFN 7-1, 7-28; GRFN-27] **3. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] **4. <u>Bilateral Agreements</u>** Compensation provided through the terms and conditions of Impact Benefit Agreement(s) with Aboriginal groups (IE(1)-B07; source: extract from Table 7-243, p. 7.513 of June 2017 EIS "Project Interactions with Traditional Use of Land and Resources'). Prodigy is negotiating a Community Benefits Agreement with MFN to accommodate potential effects of the Project on MFN's traditional activities and Aboriginal and Treaty rights.	the EIS to be not significant. Through engagement with the MFN since 2012, including meetings and site tours as recently as fall 2017 to discuss MFN's Traditional Knowledge and Aboriginal interests in the Project area, evidence has been provided to Prodigy that the MFN does not have continued practices, traditions or customs connected to these historically used trails that traverse portions of the PSA, LSA and RSA. The trails are not currently used by MFN for recreational or traditional purposes. Generally speaking, MFN's TLUOS documented limited current ongoing land use of the Project area. It is not reasonably expected that the MFN's historic use of these trails would be likely to re-occur in the reasonably foreseeable future or that it would be likely to resume as a result of a	

Table 1: MFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
					change in external factors/conditions (see the response to IE(1)-B01).	
	LSA	See above re: historic trails in the PSA.	See above.	See above.	See above.	No significant adverse effects to MFN cultural activities and special places; no impact after mitigation to MFN rights in respect of physical or cultural heritage values.
	RSA	**Trapper's Cabin** MFN's TLUOS Report identified a trapper's cabin in the RSA associated with trapline area WA-047 to the northwest of the Project site, just south of Goudreau Road near Dreany Lake (approx. 2 km east of the ACR rail line; shown in Figure 7-10 in the EIS). **Historic Portage Area** MFN's TLUOS Report noted an historic "portage area" in the Magino Mine Project area. Page 7.417 of the EIS notes that this may indicate that MFN members crossed back over the local height of land regularly,	**Trapper's Cabin** Prodigy is confident (based on detailed re-examination of the MFN TLUOS, engagement since 2012 with MFN, and engagement with the current trapper located at WA047) that this cabin is no longer used by MFN members and has not been for approximately 30 years. (see IE(1)-B09 and IE(1)-B04 [*MFN Identified Cabins on Herman and Goudreau Lakes]* responses). *Potential effects (noise, vibration, light, visual, particulates, and travel time) on this cabin (POR 5) are described in Section 7.6.1.5 'Effect on Commercial Trapping' (p. 7. 354) and in Table 7-164 (p. 7.352). The cabin will experience a low but noticeable change in noise levels, vibration*	See above, and in addition: 1. **<u>Follow-up and Monitoring</u>** <u>Ongoing Engagement</u> Conduct ongoing engagement with the commercial outfitters, trappers, and individuals with bear management areas and baitfish licences that will have portions of their resources displaced, or otherwise affected by the Project. This will assist with an understanding of their use of the area, the nature of the effects that will be experienced, and potential impact management measures (e.g., mitigation, monitoring, possible compensation where appropriate. (IE(1)-B09)	**Historic Portage Area** Through engagement with the MFN since 2012, including meetings and site tours as recently as fall 2017 to discuss MFN's Traditional Knowledge and Aboriginal interests in the Project area, no evidence has been provided to Prodigy that the MFN have continued practices, traditions or customs connected to a portage area in the PSA, LSA or RSA. Generally speaking, MFN's TLUOS documented limited current ongoing land use of the Project area (see	No significant adverse effects to MFN cultural activities and special places; no impact after mitigation to MFN rights in respect of physical or cultural heritage values.

Table 1: MFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
		rather than being a reference to any specific route. **Historic Cemetery** MFN's TLUOS identified a cemetery north of the former settlement of Goudreau in the RSA (approx. 1 km south of the PSA boundary), but no indication whether MFN members were buried there.	*effects, a low level of light trespass and medium sky glow. The mine may be partially visible from the cabin vicinity, but the visual analysis did not take into account screening by vegetation (i.e. trees).* **Historic Portage Area** At a meeting on November 8, 2017 with the MFN member that provided the original information in the TLUOS report, Prodigy obtained clarification on the portage area identified in the report. He noted that the portage area was beyond or at the edge of the Pine Lake area in the RSA (approx. 5 km NE of the PSA boundary), and that MFN does not currently use that area; potential future use is not foreseeable (see the response to IE(1)-B07). **Historic Cemetery** Prodigy confirmed with MFN that there is no Aboriginal use of the cemetery (see IE(1)-03 response, part B., p. 37-38).		the response to IE(1)-B07). It is not reasonably expected that the MFN's use of the portage area that is given general mention in their report (and subsequently confirmed to be at or beyond Pine Lake in the RSA) would be likely to re-occur in the reasonably foreseeable future or that it would be likely to resume as a result of a change in external factors/ conditions. In any case, the Project will not affect current or future navigation of these waters (see the response to IE(1)-B07).	

Missanabie Cree First Nation Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

MCFN Aboriginal and Treaty Rights Context:

The Missanabie Cree First Nation (MCFN) is a signatory to Treaty 9 (1905). The MCFN traditional territory is centred in and around Missinaibi Lake, Dog Lake, and Wabatongushi Lake. The MCFN have filed a claim with Canada and discussions are ongoing. The MCFN does not have reserve lands; however, provincial set-aside lands at Dog and Wabatongushi Lakes, as well as a land transfer of approximately 15 miles^2 of provincial Crown land in the vicinity of Missanabie on Dog Lake, located approximately 25 km to the east of the Project. Refer to Figure 4-109: *Magino Mine First Nation and Community Context* in Section 4.6.1 of the EIS (p.4.334) for the location of these lands. The land transfer was completed in August 2014 (EIS; p. 4.343). The MCFN and the Government of Canada are also negotiating for the loss of use compensation under the Treaty Land Entitlement claim. Maps that have been provided by MCFN are confidential in nature and have not been included here.

The value and importance of the area to the east of the Project is illustrated in MCFN's TEK Report (p. 7) which states:

"The Ancestors, Ones who have passed to Spirit, and current Missanabie Cree members have relied on Wabatongushi Lake, Missinaibi Lake, Dog Lake, Murray Lake, Crooked Lake and surrounding bush, lakes, rivers, streams and creeks from time immemorial to present. They have used these areas to:

- Hunt, fish, trap, garden, gather berries and plants for food, medicine and ceremonial purposes;
- Provide for the cultural, spiritual and economic well-being of families and kin."

Table 2: MCFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
MCFN Hunting **Overview:** The PSA is understood to be not as highly valued as other areas where MCFN traditional hunting occurs. The number of sites in the LSA and RSA is few and their density is low (see IRs IE(1)-B07 (*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area)*; IE(1)-B12 (*Waterfowl Habitat and the Potential Effects on Traditional Use /Aboriginal &Treaty Rights*) and IE(1)-B14 (*Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting)* responses). MCFN's	PSA	MCFN's Traditional Ecological Knowledge (TEK) Report identified one large animal kill site in the PSA on the south-eastern boundary of the Magino site (between Webb and Goudreau lakes).	With respect to hunting in the PSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • Although the PSA is not highly valued as a hunting area, the development of the Project will displace the potential for hunting in the PSA; • With respect to waterfowl, there is no significant habitat on-site; post-closure the pit lake may be used by waterfowl, perhaps increasing the number of species due to its larger size. The following effects to hunting were clarified in the response to IE(1)-B07: • The effect of removal of Black Bear Foraging Habitat from the PSA was	**1. 3rd Party Review Process and Outcomes** MCFN participated in the **3rd party review process** along with MFN, BFN and GRFN. Through their participation, additional concerns regarding project effects to MCFN hunting and/or mitigation measures were not identified by MCFN. **2. Environmental Management System** Wildlife Habitat a. Management plans will include measures to protect moose and bear and other mammals that frequent the site. [Commitments Table – ID# MFN-11; GRFN-30] b. Clearing should occur from headwaters/upstream locations toward downstream to allow mammals associated with watercourses and wetlands to migrate to larger bodies of water downstream. [Commitments Tables – ID# BFN 7-54] **3. Closure and Reclamation Planning** Terrestrial Vegetation and Habitat Rehabilitation	Displacement of potential hunting in the PSA was determined to be not significant, as the PSA is not highly valued for hunting, moose are already concentrated south of the Magino site and there is no significant waterfowl habitat on-site. The broader area beyond the RSA and particularly to the NE includes an abundance of bird, small animal and large animal value sites. The vast majority of MCFN identified kill sites are beyond the RSA to the northeast of the Project	No significant adverse effects to MCFN hunting practices; no impacts after mitigation to MCFN rights in respect of hunting practices.

Table 2: MCFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
TEK Report maps identified the following animal kill sites in each study area: • PSA: 1 kill site • LSA: 2 kill sites • RSA: 16 kill sites These kill sites represent large animal, bird and small animal harvesting values. The MCFN TEK report identifies "site(s) where a Missanabie Cree member has killed and received from the Creator large animals in his or her lifetime". The broader area beyond the RSA and particularly to the NE includes an abundance of bird, small animal and large animal value sites. The vast majority of MCFN identified kill sites are beyond the RSA to the northeast of the Project near Trout, Wabatongushi and Dog lakes. (As noted in IE(1)-B07; see also IE(1)-B12)			determined to be not significant; because there is limited hunting of bear by Aboriginal people in the PSA, LSA, or RSA (only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA), and there are alternative locations for bear hunting in the LSA, RSA and beyond, the subsequent effect on bear hunting by Aboriginal people due to removal of bear foraging habitat from the PSA would be negligible. Animals will return to the site as it is re-vegetated in the post-closure phase; • The effect of removal of beaver lodges/furbearer habitat from the PSA was determined to be not significant; because there is limited hunting of furbearer species by Aboriginal people in the PSA, LSA, or RSA (MCFN identified small animal values and beaver harvesting in the RSA), and there are alternative locations for furbearer hunting in the LSA, RSA and beyond, the subsequent effect on hunting of furbearer species by Aboriginal people would be negligible; • The effect of potential increased mammal – vehicular collisions was determined to be not significant, and the subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible; • The potential increased exposure of mammals to contaminants in water quality ponds and from dustfall was	a. In consultation with Indigenous groups, vegetation trials will be undertaken during operations to assess best pioneer and long-term floral species to aid in natural area succession. [Commitments Tables – ID# BFN 19-7] b. Prodigy indicated that the Company would present possible options for terrestrial restoration, including reclamation objectives prior to preparation of the Closure Plan. [Commitments Table – ID# MFN-9, GRFN-28] The percentage of habitat that can be reversed will be described in the Closure Plan. [Commitments Tables – ID# GRFN-30; MFN-11] c. The planting of berry-producing species will be carried forward in the Closure Plan. [Commitments Table – ID# TW(1)-01] **4. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] **5. <u>Bilateral Agreements</u>** **Financial compensation** provided through negotiated terms and conditions of Impact Benefit Agreement(s) with MCFN is referenced in IE(1)-B07 with respect to hunting (for MCFN: 2017 bilateral Community Benefits Agreement). Prodigy completed a Community Benefits Agreement with MCFN in spring 2017. This Agreement has sufficiently accommodated any residual effects of the Project on MCFN's traditional activities and Aboriginal rights and has also developed a framework for follow-up monitoring programs.	near Trout, Wabatongushi and Dog lakes. (As noted in IE(1)-B07; see also IE(1)-B12). EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404) states that the Project will displace the potential for hunting in the PSA. With respect to waterfowl, there is no significant habitat on-site. Waterfowl would avoid the area of disturbance and vicinity during the Site Preparation, Construction, Operations, and Closure Phases of the Project in response to increased noise, vibration, light, and dust. Post-closure the filled pit lake may be used by waterfowl. As stated in the response to IE(1)-B12, the 72 ha of waterfowl habitat removed from the PSA (as per Table 7-139/page 7.272 in the June 2017 EIS document) represents 44% of the waterfowl habitat available in the PSA. This is 'not significant' waterfowl habitat.	

Table 2: MCFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
			determined to be not significant, and any subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible.		As concluded in the response to TW(2)-05, the changes in moose populations and habitat from the project will not have significant adverse effects on hunting of moose by Aboriginal groups.	
	LSA	MCFN's TEK report identified two animal kill sites in the LSA. The report indicated one rabbit value to the immediate north of the Magino site (south of Dreany Lake) and one Canada goose site in the LSA (on the north end of Goudreau Lake).	With respect to hunting in the LSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • The LSA is already experiencing disturbance from logging, fuel wood harvest, and the adjacent gold mine. Habitat removal is thought to be more critical for wildlife than noise; however, until wildlife (e.g., moose and bear) are habituated to noise, their behaviour and range patterns could be affected; • Diversion of moose away from the PSA may result in an increased density in the LSA, but no effects are anticipated on moose populations in the long-term. Hunters may find that if some moose move, hunters will follow. Moose are already more concentrated to the south of the Magino property where there is better browse due to previous disturbances (mining, forestry). Animals will return to the site as it is re-vegetated in the post-closure phase. The following effects to hunting were clarified in the response to IE(1)-B07:	See above.	The broader area beyond the RSA and particularly to the NE includes an abundance of bird, small animal and large animal value sites. The vast majority of MCFN identified kill sites are beyond the RSA to the northeast of the Project near Trout, Wabatongushi and Dog lakes. (As noted in IE(1)-B07; see also IE(1)-B12) EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404) states: • Until wildlife (e.g., moose and bear) are habituated to noise, their behaviour and range patterns could be affected in the LSA. • Diversion of moose away from the PSA may result in an increased density in the LSA, but no effects are anticipated on moose	No significant adverse effects to MCFN hunting practices; no impacts after mitigation to MCFN rights in respect of hunting practices.

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Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
			• The effect of removal of Black Bear Foraging Habitat from the PSA was determined to be not significant; because there is limited hunting of bear by Aboriginal people in the PSA, LSA, or RSA (only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA), and there are alternative locations for bear hunting in the LSA, RSA and beyond, the subsequent effect on bear hunting by Aboriginal people due to removal of bear foraging habitat from the PSA would be negligible. Animals will return to the site as it is re-vegetated in the post-closure phase; • The effect of removal of beaver lodges/furbearer habitat from the PSA was determined to be not significant; because there is limited hunting of furbearer species by Aboriginal people in the PSA, LSA, or RSA (MCFN identified small animal values and beaver harvesting in the RSA, and there are alternative locations for furbearer hunting in the LSA, RSA and beyond, the subsequent effect on hunting of furbearer species by Aboriginal people would be negligible; • The effect of potential increased mammal – vehicular collisions was determined to be not significant, and the subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible; • The potential increased exposure of mammals to contaminants in water		populations in the long-term. Animals will return to the site as it is re-vegetated in the post-closure phase. • Depending on a location in the LSA, users involved in traditional uses such as hunting may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS, Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography	

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			quality ponds and from dustfall was determined to be not significant, and any subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible.			
	RSA	MCFN's TEK Report identified a total of 16 kill sites in the RSA. These include: - 6 large animal kill sites, - 2 rabbit kill sites, - 4 beaver kill sites, - 3 Canada geese kill sites, and - 1 ptarmigan kill site These sites are concentrated in the NE RSA (around Bearpaw, Pine and Tuff lakes). MCFN also identified a hunting blind between Bearpaw and Horgan Lake.	The following effects to hunting were clarified in the response to IE(1)-B07: • The effect of removal of Black Bear Foraging Habitat from the PSA was determined to be not significant; because there is limited hunting of bear by Aboriginal people in the PSA, LSA, or RSA (only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA), and there are alternative locations for bear hunting in the LSA, RSA and beyond, the subsequent effect on bear hunting by Aboriginal people due to removal of bear foraging habitat from the PSA would be negligible. Animals will return to the site as it is re-vegetated in the post-closure phase; • The effect of removal of beaver lodges/furbearer habitat from the PSA was determined to be not significant; because there is limited hunting of furbearer species by Aboriginal people in the PSA, LSA, or RSA (MCFN identified small animal values and beaver harvesting in the RSA, and there are alternative locations for furbearer hunting in the LSA, RSA and beyond, the subsequent effect on hunting of furbearer species by Aboriginal people would be negligible;	See above.	The broader area beyond the RSA and particularly to the NE includes an abundance of bird, small animal and large animal value sites. The vast majority of MCFN identified kill sites are beyond the RSA to the northeast of the Project near Trout, Wabatongushi and Dog lakes. (As noted in IE(1)-B07 (*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area)*; see also IE(1)-B12 (*Waterfowl Habitat and the Potential Effects on Traditional Use /Aboriginal &Treaty Rights)*) Depending on a location in the RSA, users involved in traditional uses such as hunting may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS,	No significant adverse effects to MCFN hunting practices; no impacts after mitigation to MCFN rights in respect of hunting practices.

Table 2: MCFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
			• The effect of potential increased mammal – vehicular collisions was determined to be not significant, and the subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible; • The potential increased exposure of mammals to contaminants in water quality ponds and from dustfall was determined to be not significant, and any subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible;		Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography.	
MCFN Fishing **Overview:** Each fish value identified in MCFN's TEK Report is a point "where current Missanabie Cree members catch fish to eat". The following MCFN fish sites were identified in the proximity of the Project site: • PSA: 2 sites • LSA: 3 sites and fish weirs • RSA: approx. 1 dozen sites Webb, Lovell and Goudreau lakes in the PSA and LSA are understood to be not as highly valued as other areas where MCFN traditional fishing occurs. In the MCFN TEK Report, the number of mapped fishing values in the PSA or LSA is very few and their	PSA	MCFN's TEK Report identified two fish sites within the PSA. Lovell Lake is identified as containing one northern pike site and Webb Lake is identified with one walleye site. These lakes are located within the Project footprint. At a meeting on November 8, 2017 with an MCFN Elder and trapper who lives at Trout Lake, she stated that there is some fishing activity at Webb and Lovell lakes in the PSA as per the MCFN TEK report, however she was unable to identify any specific person or frequency of use.	With respect to fishing in the PSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • Webb and Lovell lakes, will be drained as part of the Project, resulting in a reduction in fish habitat (however, the TKS/TLUS and other reports indicate that these two lakes are not as highly valued as other areas where traditional fishing occurs); • The public recreation /access point at Lovell Lake (see Figure 7-14 above) will be lost. • The road crossings and realignment of the upper McVeigh Creek system on the Magino property will result in a reduction in fish habitat;	**1. 3rd Party Review Process and Outcomes:** MCFN participated in the **3rd party review process** along with MFN, BFN and GRFN. Through their participation, additional concerns regarding project effects to MCFN fishing and/or mitigation measures were not identified by MCFN. **2. Fish Offsetting/Compensation Plan:** The EIS includes a clear commitment to offset the Project-impacts to fish habitat. An **offsetting/compensation plan** will need to be developed and approved for a Fisheries Act Authorization, and an MMER Schedule 2 Amendment, such that no productive loss of fish habitat occurs. These offset plans will be prepared in consultation with DFO, ECCC, MNRF, and Aboriginal groups. [Commitments Table – ID# FFH (1)-31b] a. Upon discussion with Indigenous communities, at closure, the feasibility of **fish spawning area construction** within the pit will be assessed in order to assist with aquatic biota diversity emergence. [Commitments Table – ID# GRFN-3] b. Prodigy intends to construct a drainage channel north of Water Body 10 to enhance flow and drainage from this marshy area. This diversion will be constructed in a manner to enhance fish habitat. [Commitments Table – ID# BFN 6-15] c. The objective of the fish relocation will be to remove as many fish as possible, therefore relocation activities will include gradual dewatering and using a variety of fishing techniques, to ensure that fish are able to be caught and safely relocated. [Commitments Tables – ID# BFN 7-10]	In the PSA, fish habitat will be reduced on-site at the upper McVeigh Creek system, and at Webb and Lovell lakes (drained as part of the Project; see EIS Sec. 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404)). Any fishing at Webb and Lovell lakes in the PSA will be displaced (however the MCFN TEK report indicates that these two lakes are not as highly valued as other areas where traditional fishing occurs). Refer to the response to IE(1)-B11 (*Value/Use for Indigenous Fishing at Webb, Goudreau & Lovell Lakes)* for further clarification.	No significant adverse effects to MCFN fishing practices; no impacts after mitigation to MCFN rights in respect of fishing practices.

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Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
density is low (see IR IE(1)-B10 [*Indigenous Fishing at Dreany/Mountain Lakes]* and IE(1)-B11 [*Value/Use for Indigenous Fishing at Webb, Goudreau & Lovell Lakes*] responses). However, the significance of Wabatongushi, Dog and Trout lakes is stated (approximately 12-15 Km NE of the eastern PSA boundary), and the mapping shows a much higher number/density of fish values around those lakes. MCFN's TEK study maps identify an abundance of several dozen trout sites NE of the Project with a high concentration on Trout Lake, outside the RSA (approximately 12 Km NE of the eastern PSA boundary). There is a mix of dozens of fish sites including whitefish, walleye, trout, northern pike and lake sturgeon further east around Lochalsh and North on Wabatongushi Lake. There is also a dense concentration of dozens of fish sites on and around Dog Lake south and east of Lochalsh, which include these fish species along with bass, ling and perch.				d. The study design will be refined by the Fisheries Working Group during the permitting phase of the Project. [Commitments Table – ID# BFN TSD-1; AP-10] e. Aboriginal groups will be invited for **additional site visits** as fish habitat compensation and offsetting works are underway. [Commitments Table – ID# MNO 4.3.13] **3. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] <u>Environmental Monitoring</u> Prodigy is engaged with Aboriginal groups in ongoing discussions with respect to fisheries offset plans. [IE(1)-B11] Prodigy Gold commits to consult with the **Environmental Monitoring Committee (EMC)** to seek direct input into the development of the fish habitat offsets and compensation offset and compensation plans. [Commitments Table – ID# 4.3.3] a. A **comprehensive monitoring plan** will be developed as part of the application for the MOECC Environmental Compliance Approvals and the federal EEM program. [Commitments Table – ID# GRFN-29 & MFN-10] b. Prodigy's **Environmental Monitoring Plan** will include an Adaptive Management Plan for Surface Water as well as an associated monitoring program, once finalized. [Commitments Table – ID# GRFN-34 & MFN-15] c. The Aboriginal groups will participate in the development of the company's **surface water and ground water monitoring program**. [Commitments Table – ID# GRFN-26 & MFN-7] The groundwater monitoring plan will be finalized at the Licensing stage in discussion with the MOECC and aboriginal communities. [Commitments Table – ID# FFH(1)-02]	The vast majority of MCFN fishing is beyond the RSA and unaffected by the project.	

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				i. Site **surface runoff water** will be collected and diverted to the WQCP prior to seasonal discharge [Commitments Table – ID# GRFN-34] ii. Ground water quality discharge from the pit lake will meet the receiving water quality objectives (see TSD 7 Table 5-4: 'Results of Preliminary Pit Water Mass Balance Calculations'). If not, treatment will be required. [Commitments Table – ID# GRFN-5] d. Prodigy Gold commits to further engagement with Aboriginal groups on **sampling methods** and efforts that are used to inform the description of each waterbody. [Commitments Table – ID# MNO 4.3.2] <u>Fisheries Working Group</u> Prodigy has committed to the Department of Fisheries and Oceans Canada (DFO) to establish a **Fisheries Working Group** in January of 2018 in order to serve two main purposes: a. Provide a venue for Prodigy, the technical consultant and the DFO to interact on a regular basis to establish a shared understanding of areas that will need fisheries offsetting and compensation under the Fisheries Act. b. 2. Provide a regular venue for Aboriginal groups to participate in the development of the fisheries offsetting, compensation and subsequent monitoring plans that will be required prior to construction. [Commitments Table – ID# FFH(1)-01; FFH (1)-06a; FFH (1)-30; AP-3] <u>Ongoing Engagement</u> Conduct ongoing engagement with the commercial outfitters, trappers, and individuals with bear management areas and baitfish licences that will have portions of their resources displaced, or otherwise affected by the Project. This will assist with an understanding of their use of the area, the nature of the effects that will be experienced, and potential impact management measures (e.g., mitigation, monitoring, possible compensation where appropriate) (source: extract from Table 7-241, p. 7.509 of June 2017 EIS "Project Interactions with Land Use and Tourism'). [Commitment from IR-1 Appendix C – various IRs]		

Table 2: MCFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
				4. <u>Bilateral Agreements</u> **Financial compensation** provided through the terms and conditions of Impact Benefit Agreement(s) with Aboriginal groups is referenced in IE(1)-B11 with respect to fishing (for MCFN: 2017 bilateral Community Benefits Agreement). Prodigy completed a Community Benefits Agreement with MCFN in spring 2017 and this Agreement has accommodated potential effects of the Project on MCFN's traditional activities and Aboriginal rights. **5. <u>Other Mitigation</u>** <u>Project Design</u> The selection of the TMF location was selected based on the outcomes of engagement with Aboriginal groups on the location of the TMF footprint so as to contain the Project footprint within the historic mine footprint and to minimize potential impacts to Aboriginal fishing activities and other traditional uses.		
	LSA	MCFN's TEK Report identified three fish sites in the LSA. There is one walleye site on Goudreau Lake and two northern pike sites - one of these is on Goudreau Lake and one is on Spring Lake. There are also fish weirs between Goudreau Lake and Bearpaw/Pine lakes at the border of the LSA/RSA which are currently used for subsistence (not commercial) purposes (see Prodigy's response to IE(1)-B08 [*Validation of No Commercial Indigenous Activity*]).	With respect to fishing in the LSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • The public recreation /access points at Goudreau Lake (see Figure 7-14 above) will be lost. • The Project will have some adverse effects on fish/fish habitat or surface water quality or quantity at Otto, Herman, and Goudreau lakes. However, these effects are not considered to be significant in themselves (see the assessments for the Physical and Biological VCs elsewhere in this EIS) and are therefore not expected to affect the fishing experience of traditional users, although the fishing experience at these and other lakes near the Project may be affected by the noise or visibility of the Project;	See above.	Residual effects to fishing in the LSA are described in EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404): • The public recreation/access points at Goudreau Lake will be lost. • The Project will have some adverse effects on fish/fish habitat or surface water quality or quantity at Otto, Herman, and Goudreau lakes within the LSA. With respect to effects to Goudreau Lake, Section 7.7.2.7 of the EIS states that these effects are not considered to be significant themselves	No significant adverse effects to MCFN fishing practices; no impacts after mitigation to MCFN rights in respect of fishing practices.

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Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
			The IR(1) response provides clarification on potential effects to the MCFN fishing weirs at Goudreau Lake: • The physical operation of the weirs would not be affected by the Project, as the reduction of water levels in Goudreau Lake or its outflows due to surface water takings and pit dewatering will not be significant (see the response to EA(1)-01b).		and are therefore not expected to affect the fishing experience of traditional users, although Goudreau and other lakes near the Project will be affected by noise or visibility of the Project. • Depending on the location in the LSA, users involved in traditional uses such as fishing may experience some noise, vibration, light (sky glow, light trespass), or visual effects. The response to IR IE(1)-B11 provides the following clarification on the value/use for Indigenous fishing at Webb, Goudreau & Lovell Lakes, as well as the residual effects to the fish weirs at Goudreau Lake: • The quality of fishing experience at the weir location at Goudreau Lake will be affected by the noise or visibility of the Project, but was determined to be not significant (p. 7.406 of the EIS). Refer to IR IE-B11 (*Value/ Use for Indigenous Fishing at Webb, Goudreau & Lovell Lakes*)	

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Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
					response for further clarification.	
	RSA	MCFN's TEK Report identified approximately 1 dozen fish sites in the RSA, predominately in the NE portion of the RSA. Lakes in the RSA south of the LSA boundary contain northern pike and walleye (within approximately 2 - 4 km of the south PSA boundary); walleye are identified in Miller Lake north of the LSA boundary; trout fish sites are identified north in Mountain and Maskinonge Lakes, as well as NE in Bearpaw, Horgon and Pine Lakes.	With respect to fishing in the RSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • The access point on Mountain Lake will be unaffected by the Project; • Dreany and Mountain Lakes – popular fishing lakes in the RSA – will not be affected by the Project in terms of fish/fish habitat, or water quality. The area in the vicinity of Dreany Lake may experience a low but noticeable change in noise levels, vibration effects, a low level of light trespass and medium sky glow. The Project (the MRMF) may result in minor visual degradation of scenic quality in the area around these lakes. • Other lakes highly valued by MCFN and located some distance beyond the RSA to the east – including Dog, Trout, and Wabatongushi lakes – will not be affected by the Project although the MRMF may be visible as a subtle change on the horizon at some locations on Trout and Wabatongushi lakes.	See above.	Depending on the location in the RSA, users involved in traditional uses such as fishing may experience some noise, vibration, light (sky glow, light trespass), or visual effects. There are no other residual effects to fishing in the RSA; see EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404). Refer to the response to IE(1)-B10 (*Indigenous Fishing at Dreany/ Mountain Lakes)* for further clarification.	No significant adverse effects to MCFN fishing practices; no impacts after mitigation to MCFN rights in respect of fishing practices.
MCFN Trapping **Overview:** • PSA: no trapping • LSA: no trapping • RSA: portion of a trapping area NE of the Project intersects	PSA	No MCFN trapping identified	N/A	N/A	N/A	N/A
	LSA	No MCFN trapping identified	N/A	N/A	N/A	N/A
	RSA	An MCFN Elder and Trapper has a trapping area (WA046) located to the east of the Project; the	EIS Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.401) notes that it is not expected that trapping area	**1. <u>3rd Party Review Process and Outcomes</u>:** MCFN participated in the **3rd party review process** along with MFN, BFN and GRFN. Through their participation, additional concerns regarding	MCFN trapping is beyond the Project's zone of influence (see Prodigy's responses to IRs IE(1)-	No significant adverse effects to MCFN trapping

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with a small portion of the RSA		western portion is located in the RSA but most of it is beyond the RSA.	WA046 will experience disturbance from the Project, as its western boundary is approximately 2.5 km east of the PSA.	project effects to MCFN trapping and/or mitigation measures were not identified by MCFN. **2. <u>Environmental Management System</u>** <u>Wildlife Habitat</u> a. Clearing should occur from headwaters/upstream locations toward downstream to allow mammals associated with watercourses and wetlands to migrate to larger bodies of water downstream. [Commitments Tables – ID# BFN 7-54] **3. <u>Closure and Reclamation Planning</u>** <u>Terrestrial Vegetation and Wetlands Rehabilitation</u> a. In consultation with Indigenous groups, vegetation trials will be undertaken during operations to assess best pioneer and long-term floral species to aid in natural area succession. [Commitments Tables – ID# BFN 19-7] b. Prodigy indicated that the Company would present possible options for terrestrial restoration, including reclamation objectives prior to preparation of an update to the Closure Plan. [Commitments Table – ID# MFN-9, GRFN-28] The percentage of habitat that can be reversed will be described in the Closure Plan. [Commitments Tables – ID# GRFN-30; MFN-11] **4. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] <u>Ongoing Engagement</u> Conduct ongoing engagement with the commercial outfitters, trappers, and individuals with bear management areas and baitfish licences that will have portions of their resources displaced, or otherwise affected by the	B07 [*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area*] and IE(1)-B14 [*Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting]*).There are no residual effects to trapping in the RSA. The response to IE(1)-B14 discusses the Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting. The conclusion that there will be no significant adverse effects of the Project on the Traditional Use of Lands and Resources – specifically trapping by Aboriginal people – as stated on p. 7.407 of the EIS document remains unchanged.	practices; no impacts after mitigation to MCFN rights in respect of trapping practices.

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				Project. This will assist with an understanding of their use of the area, the nature of the effects that will be experienced, and potential impact management measures (e.g., mitigation, monitoring, possible compensation where appropriate) (source: extract from Table 7-241, p. 7.509 of June 2017 EIS "Project Interactions with Land Use and Tourism'). [Commitment from IR-1 Appendix C – various IRs]		
MCFN Gathering **Overview:** • PSA: no gathering • LSA: no gathering • RSA: 5 gathering sites The five MCFN gathering sites identified in the RSA are understood to be not as highly valued as other areas where gathering occurs to the NE of the Project. In the MCFN TEK Report, the number of mapped gathering values in the RSA is very few and their density is extremely low. MCFN's TEK mapping shows a much higher number/density of vegetation values around Trout Lake, Lochalsh and Missanabie. Refer to Prodigy's responses to IRs IE(1)-B06 [*Important Plant Species*] and IE(1)-B13 *Abundance/Regional Distribution of Medicinal and Edible Plants]*.	PSA	No MCFN gathering identified	N/A	N/A	N/A	N/A
	LSA	No MCFN gathering identified	N/A	N/A	N/A	N/A
	RSA	MCFN's TEK Report identified 5 gathering sites in the RSA. There is one berry site near the Wyso-Summit Lake area and the former Township of Goudreau (approx. 2 km south of the PSA's southern boundary); there is also a berry harvesting site identified east of Bearpaw Lake and one at Horgon Lake, within the RSA (approx. 4-6 km from the PSA); Labrador tea and firewood site are identified around Tuff and Pine lakes in the RSA (see Prodigy's responses to IRs IE(1)-B06 and IE(1)-B13).	With respect to gathering in the RSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.401) in the EIS: • There will be removal of forest during site preparation and construction on the Project footprint, and disturbance related to construction of the power line and roads. However, the Project will not result in other off-site effects on forest resources or vegetation; and • There is no indication that there will be any effect on off-site berry harvesting, although there may be increased competition with bears due to loss of habitat from the Project site. This effect would not be measurable, particularly in light of natural variation and climate change. However, those using the proposed public bypass road to access berry harvesting activities at Summit Lake would have approximately 6 minutes added to their travel time. There will be increased traffic on Goudreau Road as a result of the Project, potentially disrupting gathering	**1. <u>3rd Party Review Process and Outcomes</u>:** MCFN participated in the **3rd party review process** along with MFN, BFN and GRFN. Through their participation, additional concerns regarding project effects to MCFN gathering and/or mitigation measures were not identified by MCFN. **2. <u>Environmental Management System</u>** <u>Terrestrial Vegetation</u> a. Prodigy Gold will forward concern of herbicide use over the transmission line to the project proponent. [Commitments Table – ID# MNO 4.4.6] b. In consultation with Indigenous groups, vegetation trials will be undertaken during operations to assess best pioneer and long-term floral species to aid in natural area succession. [Commitments Table – ID# BFN 19-7] **3. <u>Closure and Reclamation Planning</u>** <u>Terrestrial Vegetation and Wetlands Rehabilitation</u> a. Prodigy indicated that the Company would present possible options for terrestrial restoration, including reclamation objectives prior to preparation of an update to the Closure Plan. [Commitments Table – ID# MFN-9, GRFN-28] The percentage of habitat that can be reversed will be described in the Closure Plan. [Commitments Tables – ID# GRFN-30; MFN-11] b. Native species will be used in the seed mix for revegetation. [Commitments Table – ID# BFN 5-1] c. The planting of berry-producing species will be carried forward in the Closure Plan. [Commitments Table – ID# TW(1)-01]	Residual effects to gathering as summarized in EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404): • There will potentially be increased competition with bears for berries due to loss of habitat from the PSA. Those using the proposed public bypass road to access berry harvesting activities at Summit Lake would have approximately 6 minutes added to their travel time. There will be increased traffic on Goudreau Road as a result of the Project, potentially disrupting gathering activities identified on the shoulders of the road to the north of the PSA. [As such, MCFN members who may be gathering berries at Summit Lake	No significant adverse effects to MCFN gathering practices; no impacts after mitigation to MCFN rights in respect of gathering practices.

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			activities identified on the shoulders of the road to the north of the PSA.	**4. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39]	may experience an increase in time used to access this site.] • Depending on a location in the RSA, users involved in traditional uses such as gathering may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS, Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography. Additional detail with respect to gathering uses by MCFN and MNO are provided in the responses to IE(1)-B06 (*Important Plant Species*) and IE(1)-B13 (*Abundance/Regional Distribution of Medicinal and Edible Plants*). The response concludes that none of the edible or medicinal plants identified by/harvested by Aboriginal groups in the PSA, LSA or	

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					RSA are regionally rare or unusual. The effects on gathering as described in Section 7.7.2.5.2 (p. 7.401) remain unchanged.	
MCFN Cultural Activities and Special Places • **PSA: no sites/practices** • **LSA: no sites/practices** • **RSA:** **MCFN Context:** MCFN's TEK Report did not report cultural activities or special places in the PSA, LSA or RSA, with the exception of a cultural site (through engagement with MCFN there is no confirmed MCFN cultural site at this location, nor any indication of its nature or potential use (see Prodigy's response to IR IE(1)-B02[*Missanabie Cree First Nation Cultural Site]*).	PSA	N/A	N/A	N/A	N/A	N/A
	LSA	MCFN's TEK Report identified a cultural site in the LSA, directly south of Lovell Lake, approximately 1 km south of the PSA boundary). MCFN provided no knowledge or clarification of the site identified in the TEK report or through subsequent engagement (see IE(1)-B02 response).	Through engagement with MCFN (see Prodigy's response to IR IE(1)-B02) there is no confirmed MCFN cultural site at this location, nor any indication of its nature or potential use. Prodigy Gold has not prepared an effects assessment for a cultural site in this area.	1. **<u>Environmental Management System</u>** <u>Historic Resources Management Plan</u> Prodigy will prepare a Historic Resources Management Plan to identify and manage any objects or artifacts found during project development. All Aboriginal groups involved in the Project's environmental assessment process will be provided with the opportunity to review the management plan once a draft has been completed. The plan will: • Identify and manage the treatment any objects or artifacts found during project development; • Be prepared in advance of construction; • Be available for review by all Aboriginal communities; and • Will list who should be contacted in the event of an archaeological find. [Commitments Table – ID# BFN 7-1, 7-28; MFN-8; GRFN-27]	Depending on a location in the LSA, users involved in traditional uses such as hunting, fishing and gathering may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS, Sec. 7.7.3.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography.	No significant adverse effects to MCFN cultural activities and special places; no impact after mitigation to MCFN rights in respect of physical or cultural heritage values.
	RSA	N/A	N/A	N/A	N/A	N/A

Batchewana First Nation Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

BFN Aboriginal and Treaty Rights Context:

Batchewana First Nation (BFN) is a signatory to the Robinson-Huron Treaty (1850). BFN is an Ojibway community, descendants of the earliest ancestors of Bawahting, the rapids of what is now referred to as Sault Ste. Marie (EIS; p. 4.346). The First Nation has four reserves, of which two, Goulais Bay and Obadjiwan are located in the Robinson-Superior Treaty area. The Obadjiwan Reserve / Batchewana Bay is located approximately 160 km south of the Project. Refer to Figure 4-109: '*Magino Mine First Nation and Community Context*' in Section 4.6.1 of the EIS (p.4.334) for the location of these lands.

As stated by BFN in their September, 2017 submission to CEAA: As a part of the published Batchewana First Nation Notice of Assertions it should be noted that "BFN maintains and asserts its rights to resources, resource-sharing and resource management within its traditional territory. These resources are fish, including the commercial fishery and management of the BFN fishery, wildlife and biosphere resource management, mines and minerals, waters and watersheds, wind and the environment."

BFN assert rights over a traditional territory that extends "from the area around Bawahting and up the coast of Lake Superior as far as what is now Pukaskwa National Park, including islands in the lake, and to the north and northeast beyond the height of land. In 1849 this territory was confirmed when two government agents, Vidal and Anderson, were sent to enquire into the traditional territories of the various First Nations. BFN continues to hold and to assert rights and interests in its original territory just as it did prior to any treaty with the Crown."

A 2006 map produced by MNRF shows the BFN traditional territory encompasses the Project site. The traditional territory identified on the map overlaps areas of the Robinson-Huron and Robinson-Superior treaties; it is bounded by Lakes Superior and Huron to the south, and by the northern boundaries of the Robinson-Superior and Robin-Huron treaties to the north. The shared territory extends south to Sault Ste. Marie and Batchewana, northeast to Chapleau and northwest of Michipicoten.

Table 3: BFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
BFN Hunting **Overview:** • PSA: no site-specific hunting • LSA: no site-specific hunting • RSA: no site-specific hunting	PSA	The Project is located at the extreme south boundary of an identified BFN hunting area that is approx. 4800 km^2	With respect to hunting, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • Although the PSA is not highly valued as a hunting area, the development of the Project will displace the potential for hunting in the PSA; • With respect to waterfowl, there is no significant habitat on-site; post-closure the pit lake may be used by waterfowl, perhaps increasing the number of species due to its larger size. • The LSA is already experiencing disturbance from logging, fuel wood harvest, and the adjacent gold mine.	1. **3rd Party Review Process and Outcomes** BFN participated in the **3rd party review process** along with MFN, MCFN and GRFN. Through their participation, additional concerns regarding project effects to BFN hunting in the Project area and/or mitigation measures were not identified by BFN. BFN identified other general environmental management and monitoring measures with respect to their ongoing participation in the Project through the Environmental Monitoring Committee (specifically, measures address components that include water quality, fish/fish habitat, vegetation, site operations, and closure planning). Prodigy has included these measures in its Commitment Table (see Appendix A – IR(1) submission). 2. **Environmental Management System** Wildlife Habitat a. Management plans will include measures to protect moose and bear and other mammals that frequent the site. [Commitments Table – ID# MFN-11; GRFN-30]	Displacement of potential hunting in the PSA is a residual effect that was determined to be not significant. No specific hunting sites were identified by BFN within this large hunting territory that includes the Project site. Other residual effects to hunting stated in EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404) are as follows:	No significant adverse effects to BFN hunting practices; no impacts after mitigation to BFN rights in respect of hunting practices.

Table 3: BFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
			Habitat removal is thought to be more critical for wildlife than noise; however, until wildlife (e.g., moose and bear) are habituated to noise, their behaviour and range patterns could be affected; • Diversion of moose away from the PSA may result in an increased density in the LSA, but no effects are anticipated on moose populations in the long-term. Hunters may find that if some moose move, hunters will follow. Moose are already more concentrated to the south of the Magino property where there is better browse due to previous disturbances (mining, forestry). Animals will return to the site as it is re-vegetated in the post-closure phase. The following effects to hunting were clarified in the response to IE(1)-B07: • The effect of removal of Black Bear Foraging Habitat from the PSA was determined to be not significant; because there is limited hunting of bear by Aboriginal people in the PSA, LSA, or RSA (only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA), and there are alternative locations for bear hunting in the LSA, RSA and beyond, the subsequent effect on bear hunting by Aboriginal people due to removal of bear foraging habitat from the PSA would be negligible. Animals will return to the site as it is re-vegetated in the post-closure phase;	b. Clearing should occur from headwaters/upstream locations toward downstream to allow mammals associated with watercourses and wetlands to migrate to larger bodies of water downstream. [Commitments Tables – ID# BFN 7-54] **3. <u>Closure and Reclamation Planning</u>** <u>Terrestrial Vegetation and Habitat Rehabilitation</u> d. In consultation with Indigenous groups, vegetation trials will be undertaken during operations to assess best pioneer and long-term floral species to aid in natural area succession. [Commitments Tables – ID# BFN 19-7] e. Prodigy indicated that the Company would present possible options for terrestrial restoration, including reclamation objectives prior to preparation of the Closure Plan. [Commitments Table – ID# MFN-9, GRFN-28] The percentage of habitat that can be reversed will be described in the Closure Plan. [Commitments Tables – ID# GRFN-30; MFN-11] f. Black birch and Mushkeygoosh are two species identified as important by BFN (but not identified in the PSA, LSA, RSA by BFN or others). As stated in EIS Section 12.3.6.4 (p. 12.18), the Company shall take into account measures to be taken when Black birch and mushkeygoosh are identified during construction or operation phases; these will be addressed in the Construction Environmental Protection Plan. (IE(1)-B07) g. The planting of berry-producing species will be carried forward in the Closure Plan. [Commitments Table – ID# TW(1)-01] **4. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] 5. **<u>Bilateral Agreements</u>**	• Until wildlife (e.g., moose and bear) are habituated to noise, their behaviour and range patterns could be affected in the LSA. • Diversion of moose away from the PSA may result in an increased density in the LSA, but no effects are anticipated on moose populations in the long-term. Animals will return to the site as it is re-vegetated in the post-closure phase. • With respect to waterfowl, there is no significant habitat on-site. Waterfowl would avoid the area of disturbance and vicinity during the Site Preparation, Construction, Operations, and Closure Phases of the Project in response to increased noise, vibration, light, and dust. Post-closure the filled pit lake may be used by waterfowl. As stated in the response to IE(1)-B12 (*Waterfowl Habitat and the Potential Effects on Traditional Use /Aboriginal &Treaty Rights)*, the 72 ha of	

Table 3: BFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
			• The effect of removal of beaver lodges/furbearer habitat from the PSA was determined to be not significant; because there is limited hunting of furbearer species by Aboriginal people in the PSA, LSA, or RSA (MCFN identified small animal values and beaver harvesting in the RSA; MNO did not identify specific locations in the PSA, LSA or RSA for small game harvesting), and there are alternative locations for furbearer hunting in the LSA, RSA and beyond, the subsequent effect on hunting of furbearer species by Aboriginal people would be negligible; • The effect of potential increased mammal – vehicular collisions was determined to be not significant, and the subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible; • The potential increased exposure of mammals to contaminants in water quality ponds and from dustfall was determined to be not significant, and any subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible.	Compensation provided through the terms and conditions of Impact Benefit Agreement(s) with Aboriginal groups (IE(1)-B07; source: extract from Table 7-243, p. 7.513 of June 2017 EIS "Project Interactions with Traditional Use of Land and Resources'). Prodigy is negotiating a Community Benefits Agreement with BFN to accommodate potential effects of the Project on BFN's traditional activities and Aboriginal and Treaty rights.	waterfowl habitat removed from the PSA (as per Table 7-139/page 7.272 in the June 2017 EIS document) represents 44% of the waterfowl habitat available in the PSA. This is 'not significant' waterfowl habitat. As concluded in the response to TW(2)-05 (Moose), the changes in moose populations and habitat from the project will not have significant adverse effects on hunting of moose by Aboriginal groups.	
	LSA	Broad hunting area identified that includes the LSA (the hunting area covers approximately 4,800 km^2)	See above.	See above.	See above.	See above.
	RSA	Broad hunting area identified that includes the RSA (the hunting area covers approximately 4,800 km^2)	See above.	See above.	See above.	See above.

Table 3: BFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
BFN Fishing **Overview:** • PSA: no fishing • LSA: no fishing • RSA: no fishing	PSA	No BFN fishing identified	N/A	N/A	N/A	N/A
	LSA	No BFN fishing identified	N/A	N/A	N/A	N/A
	RSA	No BFN fishing identified	N/A	N/A	N/A	N/A
BFN Trapping **Overview:** • PSA: no trapping • LSA: no trapping • RSA: no trapping	PSA	No BFN trapping identified	N/A	N/A	N/A	N/A
	LSA	No BFN trapping identified	N/A	N/A	N/A	N/A
	RSA	No BFN trapping identified	N/A	N/A	N/A	N/A
BFN Gathering **Overview:** • PSA: no gathering • LSA: no gathering • RSA: no gathering	PSA	No BFN gathering identified	N/A	N/A	N/A	N/A
	LSA	No BFN gathering identified	N/A	N/A	N/A	N/A
	RSA	No BFN gathering identified	N/A	N/A	N/A	N/A
BFN Cultural Activities and Special Places **Overview:** • PSA: no cultural activities and special places • LSA: no cultural activities and special places • RSA: 1 historic cabin	PSA	No BFN cultural activities or special places identified	N/A	N/A	N/A	N/A
	LSA	No BFN cultural activities or special places identified	N/A	N/A	N/A	N/A
	RSA	Historic Cabin between Goudreau and Pine lakes (identified in the RSA, south of Goudreau Road, approximately 2 km east of PSA boundary). Residual effects determined in EIS to be not significant.	In November 2017 BFN confirmed the cabin is no longer used; potential future use is not foreseeable (see IE(1)-B07 [*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area*]; IE(1)-03 [*Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological,*	**1. <u>Environmental Management System</u>** <u>Historic Resources Management Plan</u> Prodigy will prepare a Historic Resources Management Plan to identify and manage any objects or artifacts found during project development. All Aboriginal groups involved in the Project's environmental assessment process will be provided with the opportunity to review the management plan once a draft has been completed. The plan will: • Identify and manage the treatment any objects or artifacts found during project development; • Be prepared in advance of construction;	N/A	N/A

Table 3: BFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
			Paleontological or Architectural Significance], Part B).	• Be available for review by all Aboriginal communities; and • Will list who should be contacted in the event of an archaeological find. [Commitments Table – ID# MFN-8; BFN 7-1, 7-28; GRFN-27] **2. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39]		

Métis Nation of Ontario Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

MNO Aboriginal and Treaty Rights Context:

The Métis Nation of Ontario (MNO) was established in 1993 to represents individuals and communities that are part of the Métis Nation. Approximately 30 Chartered Community Councils exist across the province which represent Métis citizens at the local level. MNO members do not have Treaty rights.

Section 35(1) of the Constitution Act,1982 recognizes the rights of Métis as one of the "Aboriginal peoples of Canada". In R. v. Powley (2003), the Supreme Court of Canada (SCC) confirmed that Métis are a rights-bearing Aboriginal people under Section 35. Specifically, the case affirmed the traditional hunting rights of the historic Sault Ste. Marie Métis community, with broader implications for the Aboriginal rights of Métis.
In 2004, the MNO signed an Interim Harvesting Agreement with the Ministry of Natural Resources and Forestry (MNRF). The agreement recognizes the rights of MNO Harvester's Certificate holders engaged in traditional Métis harvest activities to harvest food in his or her traditional territory.

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
MNO Hunting **Overview:** The PSA is understood to be not as highly valued as other areas where MNO traditional hunting occurs. There are no specific sites in the PSA or LSA; the number of sites in the RSA are few (see IRs IE(1)-B07 (*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area)*; IE(1)-B12 (*Waterfowl Habitat and the Potential Effects on Traditional Use /Aboriginal &Treaty Rights*) and IE(1)-B14 (*Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting)* responses). MNO's TKLUS Report maps identified the following harvesting areas and animal kill sites in each study area:	PSA	MNO Traditional Knowledge and Land Use (TKLUS) Report identified no large game kill sites identified in PSA; non site-specific hunting is identified (upland gamebird, large game). The Report also identified small game harvesting in the Project area (PSA, LSA, RSA); specific locations are not identified in the PSA, LSA or RSA for small game harvesting. The majority of this small game harvesting area that encompasses the Project site is beyond the PSA, LSA and RSA (see Prodigy's responses to IRs IE(1)-03 [*Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural*	With respect to hunting in the PSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • Although the PSA is not highly valued as a hunting area, the development of the Project will displace the potential for hunting in the PSA; • With respect to waterfowl, there is no significant habitat on-site; post-closure the pit lake may be used by waterfowl, perhaps increasing the number of species due to its larger size. The following effects to hunting were clarified in the response to IE(1)-B07: • The effect of removal of Black Bear Foraging Habitat from the PSA was determined to be not significant; because there is limited hunting of bear by Aboriginal people in the PSA, LSA, or RSA (only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA,	**1. <u>EIS Review Process and Outcomes</u>** MNO undertook its own independent review of the EIS by its consultants, Shared Value Solutions (SVS) who completed the 2014 MNO TK&LUS report for the Magino Mine. Prodigy responded to separate comments received from MNO's review and met with MNO in November 2017 and February 2018 to address questions and resolve outstanding issues. An outcome of this process was the development of specific mitigation measures to address MNO concerns regarding potential Project effects. Prodigy has included these measures in its Commitment Table (see Appendix A – IR(1) submission). **2. <u>Environmental Management System</u>** a. Prodigy Gold commits to Aboriginal groups being involved in the oversight of Environmental Management Plans. [Commitments Tables – ID# MNO] b. Prodigy Gold commits that Aboriginal groups will have the opportunity to review and comment on the CEPP prior to the completion of the plan and prior to construction. [Commitments Tables – ID# MNO 4.3.11] <u>Wildlife Habitat and Vegetation</u> a. Management plans will include measures to protect moose and bear and other mammals that frequent the site. [Commitments Table – ID# MFN-11; GRFN-30] b. Clearing should occur from headwaters/upstream locations toward downstream to allow mammals associated with	EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404) states that the Project will displace the potential for hunting in the PSA. Displacement of potential hunting in the PSA was determined to be not significant, as the PSA is not highly valued for hunting, moose are already concentrated south of the Magino site and there is no significant waterfowl habitat on-site (see EIS, Sec. 7.7.2.7). Use of expansive areas beyond the Project PSA, LSA and RSA are identified for MNO harvesting of large animals, small animals and gamebirds.	No significant adverse effects to MNO hunting practices; no impacts after mitigation to MNO rights in respect of hunting practices.

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
• PSA: non site-specific hunting • LSA: non site-specific hunting • RSA: non site-specific hunting and four large game kill sites Additional detail on MNO hunting activities are provided in the responses to IE(1)-B12 (*Waterfowl Habitat and the Potential Effects on Traditional Use /Aboriginal &Treaty Rights*) and IE(1)-B14 (*Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting)*, , and TW(1)-05 (*moose*). MNO did not specifically indicate any hunting of waterfowl in the PSA, LSA or RSA.		*Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance]* and IE(1)-B07 [*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area]*). MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA. Use of expansive areas beyond the Project PSA, LSA and RSA are identified for MNO harvesting of large animals, small animals and gamebirds.	LSA or RSA), and there are alternative locations for bear hunting in the LSA, RSA and beyond, the subsequent effect on bear hunting by Aboriginal people due to removal of bear foraging habitat from the PSA would be negligible. Animals will return to the site as it is re-vegetated in the post-closure phase; • The effect of removal of beaver lodges/furbearer habitat from the PSA was determined to be not significant; because there is limited hunting of furbearer species by Aboriginal people in the PSA, LSA, or RSA (MNO did not identify specific locations in the PSA, LSA or RSA for small game harvesting), and there are alternative locations for furbearer hunting in the LSA, RSA and beyond, the subsequent effect on hunting of furbearer species by Aboriginal people would be negligible; • The effect of potential increased mammal – vehicular collisions was determined to be not significant, and the subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible; • The potential increased exposure of mammals to contaminants in water quality ponds and from dustfall was determined to be not significant, and any subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible.	watercourses and wetlands to migrate to larger bodies of water downstream. [Commitments Tables – ID# BFN 7-54] c. Parties can review the dust emissions and determine the need for a vegetation monitoring program. Prodigy and Aboriginal groups can have a dedicated meeting with the HHRA authors to clarify the effects assessment. [Commitments Table – ID# MNO 4.4.7] **3. <u>Closure and Reclamation Planning</u>** <u>Terrestrial Vegetation and Habitat Rehabilitation</u> a. In consultation with Indigenous groups, vegetation trials will be undertaken during operations to assess best pioneer and long-term floral species to aid in natural area succession. [Commitments Tables – ID# BFN 19-7] b. Prodigy indicated that the Company would present possible options for terrestrial restoration, including reclamation objectives prior to preparation of the Closure Plan. [Commitments Table – ID# MFN-9, GRFN-28] The percentage of habitat that can be reversed will be described in the Closure Plan. [Commitments Tables – ID# GRFN-30; MFN-11] c. The planting of berry-producing species will be carried forward in the Closure Plan. [Commitments Table – ID# TW(1)-01] d. Prodigy will work with Aboriginal communities on terrestrial habitat creation (including wetlands) during the closure phase. [Commitments Tables – ID# MNO 4.4.3] **4. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] **5. <u>Bilateral Agreements</u>**	**Waterfowl Harvesting** EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404) states that with respect to waterfowl, there is no significant habitat on-site. Waterfowl would avoid the area of disturbance and vicinity during the Site Preparation, Construction, Operations, and Closure Phases of the Project in response to increased noise, vibration, light, and dust. Post-closure the filled pit lake may be used by waterfowl. As stated in the response to IE(1)-B12, the 72 ha of waterfowl habitat removed from the PSA (as per Table 7-139/page 7.272 in the June 2017 EIS document) represents 44% of the waterfowl habitat available in the PSA. This is 'not significant' waterfowl habitat. **Moose Harvesting** As concluded in the response to TW(2)-05, the changes in moose populations and habitat from the project will not have significant adverse	

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
				Compensation provided through the terms and conditions of Impact Benefit Agreement(s) with Aboriginal groups (source: extract from Table 7-243, p. 7.513 of June 2017 EIS "Project Interactions with Traditional Use of Land and Resources'). Prodigy completed a Community Engagement Agreement with MNO in Spring 2018 that has adequately mitigated or accommodated potential effects on MNO's traditional activities, cultural activities or special places, and Aboriginal rights. As noted in the MNO's May 30, 2018 letter to CEAA, "*This agreement is designed to address the concerns that the MNO had raised in relation to the Project and to ensure that the MNO and its rights-bearing communities are effectively engaged and consulted throughout the life of the Project… The MNO is of the opinion that all land uses and associated potential effects of the Project identified in our Traditional Knowledge and Land Use Study ("TKLUS") for the Project and consequently the concerns raised by way of the Agency's Information Requirements (IE(1)-03 and IE(1)-06) have been adequately considered and appropriately addressed by Prodigy.*"	effects on hunting of moose by Aboriginal groups. **Bear Harvesting** As noted in response to IE(1)-B14, the effect of removal of Black Bear Foraging Habitat from the PSA was determined to be not significant; because there is limited hunting of bear by Aboriginal people in the PSA, LSA, or RSA (only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA), and there are alternative locations for bear hunting in the LSA, RSA and beyond, the subsequent effect on bear hunting by Aboriginal people due to removal of bear foraging habitat from the PSA would be negligible. Animals will return to the site as it is re-vegetated in the post-closure phase.	
	LSA	MNO's TKLUS Report identified no large game kill sites in the LSA; non site-specific hunting (upland gamebird, large game, and small game harvesting) were identified	With respect to hunting in the LSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • The LSA is already experiencing disturbance from logging, fuel wood	See above.	EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404) states: • Until wildlife (e.g., moose and bear) are	No significant adverse effects to MNO hunting practices; no impacts after mitigation to MNO rights in

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
		in the Project area (PSA, LSA, RSA) and broader surrounding region (see Prodigy's responses to IRs IE(1)-03 and IE(1)-B07).	harvest, and the adjacent gold mine. Habitat removal is thought to be more critical for wildlife than noise; however, until wildlife (e.g., moose and bear) are habituated to noise, their behaviour and range patterns could be affected; • Diversion of moose away from the PSA may result in an increased density in the LSA, but no effects are anticipated on moose populations in the long-term. Hunters may find that if some moose move, hunters will follow. Moose are already more concentrated to the south of the Magino property where there is better browse due to previous disturbances (mining, forestry). Animals will return to the site as it is re-vegetated in the post-closure phase. The following effects to hunting were clarified in the response to IE(1)-B07: • The effect of removal of Black Bear Foraging Habitat from the PSA was determined to be not significant; because there is limited hunting of bear by Aboriginal people in the PSA, LSA, or RSA (only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA), and there are alternative locations for bear hunting in the LSA, RSA and beyond, the subsequent effect on bear hunting by Aboriginal people due to removal of bear foraging habitat from the PSA would be negligible. Animals will return to the site as it is re-vegetated in the post-closure phase;		habituated to noise, their behaviour and range patterns could be affected in the LSA. • Diversion of moose away from the PSA may result in an increased density in the LSA, but no effects are anticipated on moose populations in the long-term. Animals will return to the site as it is re-vegetated in the post-closure phase. Depending on a location in the LSA, users involved in traditional uses such as hunting may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS, Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography	respect of hunting practices.

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Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
			• The effect of removal of beaver lodges/furbearer habitat from the PSA was determined to be not significant; because there is limited hunting of furbearer species by Aboriginal people in the PSA, LSA, or RSA (MNO did not identify specific locations in the PSA, LSA or RSA for small game harvesting), and there are alternative locations for furbearer hunting in the LSA, RSA and beyond, the subsequent effect on hunting of furbearer species by Aboriginal people would be negligible; • The effect of potential increased mammal – vehicular collisions was determined to be not significant, and the subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible; • The potential increased exposure of mammals to contaminants in water quality ponds and from dustfall was determined to be not significant, and any subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible.			
	RSA	MNO's TKLUS Report identified non site-specific hunting (upland gamebird, large game, and small game harvesting) in the RSA and broader surrounding region. Specific hunting of large game (four kill sites) were identified at Dreany and Mountain lakes and the former settlement of	The following effects to hunting were clarified in the response to IE(1)-B07: • The effect of removal of Black Bear Foraging Habitat from the PSA was determined to be not significant; because there is limited hunting of bear by Aboriginal people in the PSA, LSA, or RSA (only MNO specifically noted bear harvesting in the Project area, but did not specify where that activity occurs relative to the PSA, LSA or RSA), and there are alternative locations for bear hunting	See above.	Depending on a location in the RSA, users involved in traditional uses such as hunting may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS,	No significant adverse effects to MNO hunting practices; no impacts after mitigation to MNO rights in respect of hunting practices.

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		Goudreau near Summit Lake (see Prodigy's responses to IRs IE(1)-03 and IE(1)-B07).	in the LSA, RSA and beyond, the subsequent effect on bear hunting by Aboriginal people due to removal of bear foraging habitat from the PSA would be negligible. Animals will return to the site as it is re-vegetated in the post-closure phase; • The effect of removal of beaver lodges/furbearer habitat from the PSA was determined to be not significant; because there is limited hunting of furbearer species by Aboriginal people in the PSA, LSA, or RSA (MNO did not identify specific locations in the PSA, LSA or RSA for small game harvesting), and there are alternative locations for furbearer hunting in the LSA, RSA and beyond, the subsequent effect on hunting of furbearer species by Aboriginal people would be negligible; • The effect of potential increased mammal – vehicular collisions was determined to be not significant, and the subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible; • The potential increased exposure of mammals to contaminants in water quality ponds and from dustfall was determined to be not significant, and any subsequent effect on hunting by Aboriginal people in the PSA, LSA, or RSA would be negligible;		Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography.	
MNO Fishing **Overview:** With the exception of Dreany and Mountain Lakes (in the	PSA	MNO did not identify specific fishing uses in the PSA (e.g., Webb or Lovell lakes) or in Goudreau Lake (IE(1)-B11). Non	With respect to fishing in the PSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS:	**1. <u>EIS Review Process and Outcomes</u>** MNO undertook its own independent review of the EIS by its consultants, Shared Value Solutions (SVS) who completed the 2014 MNO TK&LUS report for the Magino Mine. Prodigy responded to separate comments received from MNO's review and met with MNO in November 2017 and	In the PSA, fish habitat will be reduced on-site at the upper McVeigh Creek system, and at Webb and Lovell lakes (drained as	No significant adverse effects to MNO fishing practices; no impacts after

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RSA) which are identified as distinct non-commercial harvesting areas, no specific areas or relative use of the waterbodies encompassed within MNO fish harvesting areas are identified in the PSA, LSA or RSA. The MNO's TKLUS identified non-commercial fishing areas that include the Magino Project site and surrounding area. These non-commercial fishing areas extend from north of Dubreuilville, east to the Horgon and Cradle lakes area, south to Porphyry Lake and west toward the Magpie River (see Prodigy's responses to IRs IE(1)-03 [*Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance],* IE(1)-B07 [*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area]*, B08 [*Validation of No Commercial Indigenous Activity]*, B10 *Indigenous Fishing at Dreany/Mountain Lakes]*, and B11 [*Value/Use for Indigenous Fishing at Webb, Goudreau & Lovell Lakes]*).		site-specific non-commercial fishing were identified in the MNO TKLUS Report generally in the PSA and beyond. MNO's TKLUS Report identified a commercial baitfish harvesting area that covers the PSA, but the MNO have not been operating it since the 1990s and current licenced baitfish operators do not self-identify as Aboriginal (see IE(1)-02 [*Aboriginal Peoples Socio-Economic Conditions]*).	• Webb and Lovell lakes, will be drained as part of the Project, resulting in a reduction in fish habitat (however, the TKS/TLUS and other reports indicate that these two lakes are not as highly valued as other areas where traditional fishing occurs); • The public recreation /access point at Lovell Lake (see Figure 7-14 above) will be lost. • The road crossings and realignment of the upper McVeigh Creek system on the Magino property will result in a reduction in fish habitat;	February 2018 to address questions and resolve outstanding issues. An outcome of this process was the development of specific mitigation measures to address MNO concerns regarding potential Project effects. Prodigy has included these measures in its Commitment Table (see Appendix A – IR(1) submission). **2. <u>Environmental Management System</u>** a. Prodigy Gold commits to Aboriginal groups being involved in the oversight of Environmental Management Plans. [Commitments Tables – ID# MNO] b. Prodigy Gold commits that Aboriginal groups will have the opportunity to review and comment on the CEPP prior to the completion of the plan and prior to construction. [Commitments Tables – ID# MNO 4.3.11] c. Prodigy Gold commits to consult with Indigenous communities on the management of the Webb Lake sediments. [Commitments Tables – ID# MNO 4.3.6] d. Prodigy will consider if turbidity should be part of the effluent parameter monitoring regime as the monitoring program is developed. [Commitments Tables – ID# MNO 4.1.6] e. Prodigy Gold commits to further engagement with Aboriginal groups on sampling methods and efforts that are used to inform the description of each waterbody. [Commitments Tables – ID# MNO 4.3.2] f. Prodigy Gold commits that the EMC will have the opportunity to review the EEM, federal and provincial permit applications. [Commitments Tables – ID# MNO 4.3.7] **3. <u>Fish Offsetting/Compensation Plan:</u>** The EIS includes a clear commitment to offset the Project-impacts to fish habitat. An **offsetting/compensation plan** will need to be developed and approved for a Fisheries Act Authorization, and an MMER Schedule 2 Amendment, such that no productive loss of fish habitat occurs. These offset plans will be prepared in consultation with DFO, ECCC, MNRF, and Aboriginal groups. [Commitments Table – ID# FFH (1)-31b] a. Upon discussion with Indigenous communities, at closure, the feasibility of fish spawning area construction within the pit will be assessed in order to assist with aquatic biota diversity emergence. [Commitments Table – ID# GRFN-3]	part of the Project; see EIS Sec. 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404)). Any fishing at these lakes in the PSA will be displaced (however the MNO did not indicate specific use of these two lakes). Refer to the response to IE(1)-B11 for further clarification. MNO identified large non-commercial areas and specific fishing sites beyond the PSA and LSA.	mitigation to MNO rights in respect of fishing practices.

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MNO's TKLUS Report maps identified the following commercial and non-commercial fish harvest areas in each study area: • PSA: non site-specific non-commercial fishing; historic commercial harvesting • LSA: non site-specific non-commercial fishing ; historic commercial harvesting • RSA: non site-specific non-commercial fishing; specific non-commercial harvesting at Dreany and Mountain lakes; historic commercial harvesting				b. Prodigy intends to construct a drainage channel north of Water Body 10 to enhance flow and drainage from this marshy area. This diversion will be constructed in a manner to enhance fish habitat. [Commitments Table – ID# BFN 6-15] c. The objective of the fish relocation will be to remove as many fish as possible, therefore relocation activities will include gradual dewatering and using a variety of fishing techniques, to ensure that fish are able to be caught and safely relocated. [Commitments Tables – ID# BFN 7-10] d. The study design will be refined by the Fisheries Working Group during the permitting phase of the Project. [Commitments Table – ID# BFN TSD-1; AP-10] e. Aboriginal groups will be invited for additional site visits as fish habitat compensation and offsetting works are underway. [Commitments Table – ID# MNO 4.3.13] **4. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] <u>Environmental Monitoring</u> Prodigy is engaged with Aboriginal groups in ongoing discussions with respect to fisheries offset plans. [IE(1)-B11] Prodigy Gold commits to consult with the **Environmental Monitoring Committee (EMC)** to seek direct input into the development of the fish habitat offsets and compensation offset and compensation plans. [Commitments Table – ID# MNO 4.3.3] a. A comprehensive monitoring plan will be developed as part of the application for the MOECC Environmental Compliance Approvals and the federal EEM program. [Commitments Table – ID# GRFN-29 & MFN-10]		

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				b. Prodigy's Environmental Monitoring Plan will include an Adaptive Management Plan for Surface Water as well as an associated monitoring program, once finalized. [Commitments Table – ID# GRFN-34 & MFN-15] c. A groundwater monitoring program will be established prior to construction and continue into the closure phase of the Project. [Commitments Tables – ID# MNO 4.2.2] Prodigy Gold commits that the EMC will review the groundwater monitoring program prior to its commencement during operations and closure. [Commitments Tables – ID# MNO 4.2.1] d. The Aboriginal groups will participate in the development of the company's surface water and ground water monitoring program. [Commitments Table – ID# GRFN-26 & MFN-7] The groundwater monitoring plan will be finalized at the Licensing stage in discussion with the MOECC and aboriginal communities. [Commitments Table – ID# FFH(1)-02] i. Site surface runoff water will be collected and diverted to the WQCP prior to seasonal discharge [Commitments Table – ID# GRFN-34] ii. Ground water quality discharge from the pit lake will meet the receiving water quality objectives (see TSD 7 Table 5-4: 'Results of Preliminary Pit Water Mass Balance Calculations'). If not, treatment will be required. [Commitments Table – ID# GRFN-5] e. Prodigy Gold commits to further engagement with Aboriginal groups on sampling methods and efforts that are used to inform the description of each waterbody. [Commitments Table – ID# MNO 4.3.2] <u>Fisheries Working Group</u> Prodigy has committed to the Department of Fisheries and Oceans Canada (DFO) to establish a **Fisheries Working Group** in January of 2018 in order to serve two main purposes: a. Provide a venue for Prodigy, the technical consultant and the DFO to interact on a regular basis to establish a shared understanding of areas that will need fisheries offsetting and compensation under the Fisheries Act.		

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				b. 2. Provide a regular venue for Aboriginal groups to participate in the development of the fisheries offsetting, compensation and subsequent monitoring plans that will be required prior to construction. [Commitments Table – ID# FFH(1)-01; FFH (1)-06a; FFH (1)-30; AP-3] <u>Ongoing Engagement</u> Conduct ongoing engagement with the commercial outfitters, trappers, and individuals with bear management areas and baitfish licences that will have portions of their resources displaced, or otherwise affected by the Project. This will assist with an understanding of their use of the area, the nature of the effects that will be experienced, and potential impact management measures (e.g., mitigation, monitoring, possible compensation where appropriate) (source: extract from Table 7-241, p. 7.509 of June 2017 EIS "Project Interactions with Land Use and Tourism'). [Commitment from IR-1 Appendix C – various IRs] **5. <u>Bilateral Agreements</u>** Compensation provided through the terms and conditions of Impact Benefit Agreement(s) with Aboriginal groups (source: extract from Table 7-243, p. 7.513 of June 2017 EIS "Project Interactions with Traditional Use of Land and Resources'). Prodigy completed a Community Engagement Agreement with MNO in Spring 2018 that has adequately mitigated or accommodated potential effects on MNO's traditional activities, cultural activities or special places, and Aboriginal rights. As noted in the MNO's May 30, 2018 letter to CEAA, "*This agreement is designed to address the concerns that the MNO had raised in relation to the Project and to ensure that the MNO and its rights-bearing communities are effectively engaged and consulted throughout the life of the Project… The MNO is of the opinion that all land uses and associated potential effects of the Project identified in our Traditional Knowledge and Land Use Study ("TKLUS") for the Project and consequently the concerns raised by way of the Agency's Information Requirements (IE(1)-03 and IE(1)-06) have been adequately considered and appropriately addressed by Prodigy.*" **6. <u>Other Mitigation</u>** <u>Project Design</u> The selection of the TMF location was selected based on the outcomes of engagement with Aboriginal groups on the location of the TMF		

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				footprint so as to contain the Project footprint within the historic mine footprint and to minimize potential impacts to Aboriginal fishing activities and other traditional uses.		
	LSA	MNO's TKLUS Report identified non site-specific fishing generally in the LSA and beyond. MNO did not identify fishing uses of Goudreau Lake in the LSA (see Prodigy's responses IRs IE(1)-03, IE(1)-B07, B10, and B11). A commercial baitfish harvesting area covers most of the LSA, but the MNO have not been operating it since the 1990s and current licenced baitfish operators do not self-identify as Aboriginal (see IE(1)-02 [*Aboriginal Peoples Socio-Economic Conditions]*).	With respect to fishing in the LSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • The public recreation /access points at Goudreau Lake (see Figure 7-14 above) will be lost. • The Project will have some adverse effects on fish/fish habitat or surface water quality or quantity at Otto, Herman, and Goudreau lakes. However, these effects are not considered to be significant in themselves (see the assessments for the Physical and Biological VCs elsewhere in this EIS) and are therefore not expected to affect the fishing experience of traditional users, although the fishing experience at these and other lakes near the Project may be affected by the noise or visibility of the Project;	See above.	Residual effects to fishing in the LSA are described in EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404): • The public recreation/access points at Goudreau Lake will be lost. • The Project will have some adverse effects on fish/fish habitat or surface water quality or quantity at Otto, Herman, and Goudreau lakes within the LSA. With respect to effects to Goudreau Lake, Section 7.7.2.7 of the EIS states that these effects are not considered to be significant themselves and are therefore not expected to affect the fishing experience of traditional users, although Goudreau and other lakes near the Project will be affected by noise or visibility of the Project. Depending on the location in the LSA, users involved	No significant adverse effects to MNO fishing practices; no impacts after mitigation to MNO rights in respect of fishing practices.

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					in traditional uses such as fishing may experience some noise, vibration, light (sky glow, light trespass), or visual effects. Depending on a location in the LSA, users involved in traditional uses such as fishing may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS, Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography.	
	RSA	Non site-specific fishing is identified generally in the RSA and beyond (see Prodigy's responses to IRs IE(1)-03 IE(1)-B07, B10, and B11). IE(1)-B10 notes that Chapter 7.7.2.5.1 (Summary of Aboriginal Fishing Uses) states "Mountain Lake (approximately 1 km north of the Project, in the RSA) is also used by MNO members; it is known for its trout fishing. MNO also indicated a fish harvesting	With respect to fishing in the RSA, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.400) in the EIS: • The access point on Mountain Lake will be unaffected by the Project; • Dreany and Mountain Lakes – popular fishing lakes in the RSA – will not be affected by the Project in terms of fish/fish habitat, or water quality. The area in the vicinity of Dreany Lake may experience a low but noticeable change in noise levels, vibration effects, a low level of light trespass and medium sky glow. The Project (the MRMF) may result in	See above.	Depending on the location in the RSA, users involved in traditional uses such as fishing may experience some noise, vibration, light (sky glow, light trespass), or visual effects. There are no other residual effects to fishing in the RSA; see EIS Section 7.7.2.7 'Residual Effects on Traditional Use of Lands and Resources' (p. 7.404).	No significant adverse effects to MNO fishing practices; no impacts after mitigation to MNO rights in respect of fishing practices.

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		area at Dreany Lake in the RSA (approximately 2 km north of the Project)". MNO's TKLUS Report identified a commercial baitfish harvesting area that covers some water bodies in the RSA, but the MNO have not been operating it since the 1990s and current licenced baitfish operators do not self-identify as Aboriginal (see IE(1)-02 [*Aboriginal Peoples Socio-Economic Conditions]*).	minor visual degradation of scenic quality in the area around these lakes. • Other lakes highly valued by Aboriginal groups and located some distance beyond the RSA to the east – including Dog, Trout, and Wabatongushi lakes – will not be affected by the Project although the MRMF may be visible as a subtle change on the horizon at some locations on Trout and Wabatongushi lakes.		Refer to the response to IE(1)-B10 for further clarification.	
MNO Trapping **Overview** The MNO's TKLUS shows a trapline area (WA047) that includes part of the Magino site/PSA and extends to the north. As described in more detail in the response to IE(1)-B07 [, Prodigy has been engaging with the operator of trap line WA047 for several years, and as noted in the EIS on page 7.417, the operator has not self-identified as Aboriginal (see Prodigy's responses to IE(1)-B07 [*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area]* and B14 [*Linkage*	PSA	The MNO's TKLUS shows a trapline area (WA047) that includes part of the Magino site/PSA and extends to the north.	The operator of the trapline has not self-identified as Aboriginal (see Prodigy's responses to IE(1)-B07 and B14).	1. **<u>EIS Review Process and Outcomes</u>** MNO undertook its own independent review of the EIS by its consultants, Shared Value Solutions (SVS) who completed the 2014 MNO TK&LUS report for the Magino Mine. Prodigy responded to separate comments received from MNO's review and met with MNO in November 2017 and February 2018 to address questions and resolve outstanding issues. An outcome of this process was the development of specific mitigation measures to address MNO concerns regarding potential Project effects. Prodigy has included these measures in its Commitment Table (see Appendix A – IR(1) submission). 2. **<u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: e. Ongoing engagement with identified land users; f. Aboriginal groups' participation in the Environmental Monitoring Committee; g. Adaptive management plans, and h. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39]	Effects on the trapping area WA047 that is referenced by MNO's TKLUS Report is described in Section 7.6.1.5.5 ('Effect on Commercial Trapping'). The assessment of effects remains unchanged (IE(1)-B07). The response to IE(1)-B14 discusses the Linkage Between Effects on Mammals and Effects on Indigenous Trapping & Hunting. The conclusion that there will be no significant adverse effects of the Project on the Traditional Use of Lands and Resources –	N/A

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Between Effects on Mammals and Effects on Indigenous Trapping & Hunting]). As noted in Prodigy's response to IE(1)-B07, Prodigy will negotiate directly with the operation of trapline area WA047 to address the loss of a portion of trapline area WA047.				<u>Ongoing Engagement</u> Conduct ongoing engagement with the commercial outfitters, trappers, and individuals with bear management areas and baitfish licences that will have portions of their resources displaced, or otherwise affected by the Project. This will assist with an understanding of their use of the area, the nature of the effects that will be experienced, and potential impact management measures (e.g., mitigation, monitoring, possible compensation where appropriate) (source: extract from Table 7-241, p. 7.509 of June 2017 EIS "Project Interactions with Land Use and Tourism'). [Commitment from IR-1 Appendix C – various IRs]	specifically trapping by Aboriginal people – as stated on p. 7.407 of the EIS document remains unchanged.	
	LSA	See above	See above	See above	See above	N/A
	RSA	See above	See above	See above	See above	N/A
MNO Gathering **Overview:** MNO's TKLUS Report maps identified the following gathering areas in each study area: • PSA: non site-specific gathering • LSA: non site-specific gathering and specific gathering areas along Goudreau Road • RSA: non site-specific gathering and specific gathering at Dreany and Mountain lakes MNO's TKLUS Report identified a large area for plant harvesting and an area for natural materials harvesting that cover portions of the PSA, LSA and RSA and extend	PSA	MNO's TKLUS Report identified non site-specific gathering in the PSA; a few specific gathering areas intersect the PSA (see Prodigy's responses IRs IE(1)-03 [*Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance]*, IE(1)-B07 [*Assessment of Indigenous Land Use: Trapping, Harvesting, Portage Area]*, B06 [*Important Plant Species]* and B13 [*Abundance/Regional Distribution of Medicinal and Edible Plants]*).	With respect to gathering, the following effects are described in Section 7.7.2.5.2 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.401) in the EIS: • There will be removal of forest during site preparation and construction on the Project footprint, and disturbance related to construction of the power line and roads. However, the Project will not result in other off-site effects on forest resources or vegetation; and • There is no indication that there will be any effect on off-site berry harvesting, although there may be increased competition with bears due to loss of habitat from the Project site. This effect would not be measurable, particularly in light of natural variation and climate change. However, those using the proposed public bypass road to access berry harvesting activities at Summit Lake would have approximately 6 minutes added to	1. **<u>EIS Review Process and Outcomes</u>** MNO undertook its own independent review of the EIS by its consultants, Shared Value Solutions (SVS) who completed the 2014 MNO TK&LUS report for the Magino Mine. Prodigy responded to separate comments received from MNO's review and met with MNO in November 2017 and February 2018 to address questions and resolve outstanding issues. An outcome of this process was the development of specific mitigation measures to address MNO concerns regarding potential Project effects. Prodigy has included these measures in its Commitment Table (see Appendix A – IR(1) submission). 2. **<u>Environmental Management System</u>** a. Prodigy Gold commits to Aboriginal groups being involved in the oversight of Environmental Management Plans. [Commitments Tables – ID# MNO] b. Prodigy Gold commits that Aboriginal groups will have the opportunity to review and comment on the CEPP prior to the completion of the plan and prior to construction. [Commitments Tables – ID# MNO 4.3.11] <u>Terrestrial Vegetation</u> a. Prodigy Gold will forward concern of herbicide use over the transmission line to the project proponent. [Commitments Table – ID# MNO 4.4.6]	Potential gathering in the PSA will be displaced during Project construction and operations. The majority o the large areas of plant and natural materials harvesting identified in MNO's TKLUS Report that cover portions of the PSA, LSA and RSA and extend beyond the borders of the RSA will be unaffected. Additional detail with respect to gathering uses by MNO are provided in the responses to IE(1)-B06 (*Important Plant Specie*s) and IE(1)-B13 (*Abundance/Regional Distribution of Medicinal and Edible Plants*). The response concludes that none of the edible or	No significant adverse effects to MNO gathering practices; no impacts after mitigation to MNO rights in respect of gathering practices.

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
beyond the borders of the RSA. MNO reported that harvesting of plant materials specifically occurs along the Goudreau Road, to the north of the PSA into the LSA, RSA and beyond (species gathered in these areas were not identified). MNO also indicated plant harvesting areas beyond the RSA (west of Dubreuilville, and at Trout Lake), but did not identify the species. In their TKLUS Report, MNO did not comment on the rarity of any of the medicinal and edible plant species they identified in the PSA, or harvested in the LSA or RSA. (IE(1)-B13 [*Abundance/Regional Distribution of Medicinal and Edible Plants]*)		The MNO reported that medicinal and edible plants (listed in EIS Section 4.6.5.3.4 'Gathering' have been identified in the PSA (but did not specify whether they were harvested).	their travel time. There will be increased traffic on Goudreau Road as a result of the Project, potentially disrupting gathering activities identified on the shoulders of the road to the north of the PSA.	b. Parties can review the dust emissions and determine the need for a vegetation monitoring program. Prodigy and Aboriginal groups can have a dedicated meeting with the HHRA authors to clarify the effects assessment. [Commitments Table – ID# MNO 4.4.7] c. In consultation with Indigenous groups, vegetation trials will be undertaken during operations to assess best pioneer and long-term floral species to aid in natural area succession. [Commitments Table – ID# BFN 19-7] 3. **<u>Closure and Reclamation Planning</u>** <u>Terrestrial Vegetation and Wetlands Rehabilitation</u> a. Prodigy indicated that the Company would present possible options for terrestrial restoration, including reclamation objectives prior to preparation of an update to the Closure Plan. [Commitments Table – ID# MFN-9, GRFN-28] The percentage of habitat that can be reversed will be described in the Closure Plan. [Commitments Tables – ID# GRFN-30; MFN-11] b. Prodigy indicated that the Company would present possible options for terrestrial restoration, including reclamation objectives prior to preparation of an update to the Closure Plan. [Commitments Table – ID# MFN-9, MNO-28] The percentage of habitat that can be reversed will be described in the Closure Plan. [Commitments Tables – ID# MNO-30; MFN-11] c. Native species will be used in the seed mix for revegetation. [Commitments Table – ID# BFN 5-1] d. As a precautionary measure, plantings of Artemisia campestris could be included in the seed mix used in restoration of the site. (IE(1)-B06 – MNO request) e. The planting of berry-producing species will be carried forward in the Closure Plan. [Commitments Table – ID# TW(1)-01] f. Prodigy will work with Aboriginal communities on terrestrial habitat creation (including wetlands) during the closure phase. [Commitments Table – ID# MNO 4.4.3] Prodigy can work with Indigenous communities to develop a wetland mosaic, within the tailings management area and other disturbed locations. [Commitments Table – ID# BFN 7-31] 4. **<u>Follow-up and Monitoring</u>**	medicinal plants identified by/harvested by Aboriginal groups in the PSA, LSA or RSA are regionally rare or unusual. The effects on gathering as described in Section 7.7.2.5.2 (p. 7.401) remain unchanged.	

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
				A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] 5. **<u>Bilateral Agreements</u>** Compensation provided through the terms and conditions of Impact Benefit Agreement(s) with Aboriginal groups (source: extract from Table 7-243, p. 7.513 of June 2017 EIS "Project Interactions with Traditional Use of Land and Resources'). Prodigy completed a Community Engagement Benefits Agreement with MNO in Spring 2018 that has adequately mitigated or accommodated potential effects on MNO's traditional activities, cultural activities or special places, and Aboriginal rights. As noted in the MNO's May 30, 2018 letter to CEAA, "*This agreement is designed to address the concerns that the MNO had raised in relation to the Project and to ensure that the MNO and its rights-bearing communities are effectively engaged and consulted throughout the life of the Project… The MNO is of the opinion that all land uses and associated potential effects of the Project identified in our Traditional Knowledge and Land Use Study ("TKLUS") for the Project and consequently the concerns raised by way of the Agency's Information Requirements (IE(1)-03 and IE(1)-06) have been adequately considered and appropriately addressed by Prodigy.*"		
	LSA	Non site-specific gathering identified; specific MNO plant harvesting areas are predominately outside the LSA and RSA, though five smaller areas intersect (or may intersect) the northern portions of the LSA (along Goudreau Rd.).	See above.	See above.	There will be increased traffic on Goudreau Road as a result of the Project, potentially disrupting gathering activities identified on the shoulders of the road to the north of the PSA. This is stated in Section 7.7.2.7 of the EIS, '"Residual Effects on Traditional Use of Lands	No significant adverse effects to MNO gathering practices; no impacts after mitigation to MNO rights in respect of gathering practices.

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
					and Resources"'. [As such, any MNO members who may be gathering in this area may experience a disruption in access.] Depending on a location in the LSA, users involved in traditional uses such as gathering may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS, Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography.	
	RSA	Non site-specific gathering identified; specific gathering areas at Dreany and Mountain lakes and predominately beyond RSA.	See above.	See above.	With respect to residual effects to gathering, there will potentially be increased competition with bears for berries due to loss of habitat from the PSA. Those using the proposed public bypass road to access berry harvesting activities at Summit Lake would have approximately 6 minutes added to their travel time. [As such, any MNO members who may be gathering berries at Summit Lake may	No significant adverse effects to MNO gathering practices; no impacts after mitigation to MNO rights in respect of gathering practices.

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
					experience an increase in time used to access this site.] This is stated in Section 7.7.2.7 of the EIS, "'Residual Effects on Traditional Use of Lands and Resources"'. Depending on a location in the RSA, users involved in traditional uses such as gathering may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS, Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography. Additional detail with respect to gathering uses by MCFN and MNO are provided in the responses to IE(1)-B06 (*Important Plant Species*) and IE(1)-B13 (*Abundance/Regional Distribution of Medicinal and Edible Plants*). The response concludes that none of the edible or medicinal plants identified by/harvested by Aboriginal groups in the PSA, LSA or	

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
					RSA are regionally rare or unusual. The effects on gathering as described in Section 7.7.2.5.2 (p. 7.401) remain unchanged.	
MNO Cultural Activities and Special Places **Overview:** MNO's TKLUS Report maps identified the following cultural sites in each study area: • PSA: no sites/practices • LSA: trails • RSA: an historic trapper's cabin, a bush camp, and trails	PSA	No MNO cultural activities or special paces identified	N/A	N/A	N/A	N/A
	LSA	**Trails** The MNO's TKLUS Report indicates use of local roads (e.g., the Goudreau and Northern Bypass/Lochalsh roads) and the Algoma Central Railway (ACR) line. Water routes are shown from Mountain Lake to Otto Lake (in the RSA/LSA, respectively), and from Dreany Lake to Mud Lake (both in the RSA).	**Trails** Section 7.7.3 of the EIS 'Aboriginal Cultural Activities and Special Places' notes that MNO local access to portions of roads (e.g., the Goudreau and Norther Bypass/Lochalsh roads) and the Algoma Central Railway (ACR) line will not be affected by the Project. The navigability of the water route from Mountain Lake to Otto Lake, and Dreany to Mud lakes will not be affected by the Project, as no barriers to boating are being created. There are no residual effects to trails identified by MNO.	See below.	N/A	No significant adverse effects to MNO cultural activities and special places; no impact after mitigation to MNO rights in respect of physical or cultural heritage values.
	RSA	**Use of Local Roads** The MNO's Traditional Knowledge and Land Use Study (TK&LUS) report indicates use of local roads (e.g., the Goudreau and Northern Bypass/Lochalsh roads) and the Algoma Central Railway (ACR) line. **Trapper's Cabin** MNO's TKLUS Report identified a trapper's cabin north of the Magino site (in the RSA, approximately 2 km east of the ACR rail line, west of Dreany Lake).	**Use of Local Roads** EIS Section 7.7.3.5.2 'Effect on Trails and Camps' (p. 7.417) states that access to this portion of the Goudreau Road, to the Northern Bypass/Lochalsh road, and the ACR will not be affected by the Project. **Trapper's Cabin** The trapper using this area (WA047) has not self-identified to Prodigy as Aboriginal, therefore no predicted effects to MNO (see Prodigy's response to IR IE(1)-B09 [*Trappers Cabin – WA047*]). **Bush Camp** The settlement of Goudreau (POR 1, serving as a conservative indicator of the bush camp further west at the Summit Lake area), will experience	**1. <u>EIS Review Process and Outcomes</u>** MNO undertook its own independent review of the EIS by its consultants, Shared Value Solutions (SVS) who completed the 2014 MNO TK&LUS report for the Magino Mine. Prodigy responded to separate comments received from MNO's review and met with MNO in November 2017 and February 2018 to address questions and resolve outstanding issues. An outcome of this process was the development of specific mitigation measures to address MNO concerns regarding potential Project effects. Prodigy has included these measures in its Commitment Table (see Appendix A – IR(1) submission). **2. <u>Environmental Management System</u>** a. Prodigy Gold commits to Aboriginal groups being involved in the oversight of Environmental Management Plans. [Commitments Tables – ID# MNO] b. Prodigy Gold commits that Aboriginal groups will have the opportunity to review and comment on the CEPP prior to the completion of the plan and prior to construction. [Commitments Tables – ID# MNO 4.3.11]	**Trapper's Cabin** Potential effects to the cabin associated with trapping area WA047 north of the Project site near Dreany Lake are assessed in Section 7.6.1.5 of the EIS (p. 7.354). As noted, the operators of trapping area WA047 have not self-identified as Aboriginal. The predicted effects (noise, vibration, light, visual, particulates, and travel time) for the trapper's cabin (POR 5) are summarized in Table 7-164 of the EIS. The cabin will experience a low	No significant adverse effects to MNO cultural activities and special places; no impact after mitigation to MNO rights in respect of physical or cultural heritage values.

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
		Bush Camp MNO's TKLUS Report identified a bush camp in/around Summit Lake (in the RSA, just west of the former settlement of Goudreau, approximately 4 km SW of the PSA boundary). **Trails** See above.	adverse (but not significant) effects related to noise, vibration, light, visual and increased travel time if accessed via Goudreau Road. This may result in a less attractive experience for users located farther west/more distant from the Project at the location of the bush camp; however, the response of an individual to the effects resulting from the Project will be subjective. What is perceived as an important change in experience by one individual may be readily tolerated by another. (EIS Section 7.7.3.5.2 'Effect on Trails and Camps', p. 7.417)	<u>Historic Resources Management Plan</u> Prodigy will prepare a Historic Resources Management Plan to identify and manage any objects or artifacts found during project development. All Aboriginal groups involved in the Project's environmental assessment process will be provided with the opportunity to review the management plan once a draft has been completed. The plan will: • Identify and manage the treatment any objects or artifacts found during project development; • Be prepared in advance of construction; • Be available for review by all Aboriginal communities; and • Will list who should be contacted in the event of an archaeological find. [Commitments Table – ID# MFN-8; BFN 7-1, 7-28; GRFN-27] **3. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39] <u>Ongoing Engagement</u> Conduct ongoing engagement with the commercial outfitters, trappers, and individuals with bear management areas and baitfish licences that will have portions of their resources displaced, or otherwise affected by the Project. This will assist with an understanding of their use of the area, the nature of the effects that will be experienced, and potential impact management measures (e.g., mitigation, monitoring, possible compensation where appropriate. (IE(1)-B09) **4. <u>Bilateral Agreements</u>** Compensation provided through the terms and conditions of Impact Benefit Agreement(s) with Aboriginal groups (source: extract from Table 7-243, p. 7.513 of June 2017 EIS "Project Interactions with Traditional Use of Land and Resources'). Prodigy completed a Community Engagement Agreement with MNO in Spring 2018 that has adequately	but noticeable change in noise levels, vibration effects, a low level of light trespass and medium sky glow. The mine may be partially visible from the cabin vicinity, but the visual analysis did not take into account screening by vegetation (i.e., trees). Refer to IR IE(1)-B09 (*Trappers Cabin – WA047)* for further clarification about this trapper's cabin. **Bush Camp** Residual effects to the bush camp were determined in the EIS to be not significant. (p. 7.421): As described in Section 7.7.3.7 'Residual Effects on Aboriginal Cultural Activities and Special Places', the MNO bush camp in the vicinity of Summit Lake west of the Goudreau settlement, in the RSA, will experience a low but noticeable change in noise levels, some vibration effects, and a low level of light trespass and sky glow. The Project will not likely be visible from the bush camp location. There will be increased travel time if accessed via Goudreau Road. This will	

Table 4: MNO Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
				mitigated or accommodated potential effects on MNO's traditional activities, cultural activities or special places, and Aboriginal rights. As noted in the MNO's May 30, 2018 letter to CEAA, "*This agreement is designed to address the concerns that the MNO had raised in relation to the Project and to ensure that the MNO and its rights-bearing communities are effectively engaged and consulted throughout the life of the Project… The MNO is of the opinion that all land uses and associated potential effects of the Project identified in our Traditional Knowledge and Land Use Study ("TKLUS") for the Project and consequently the concerns raised by way of the Agency's Information Requirements (IE(1)-03 and IE(1)-06) have been adequately considered and appropriately addressed by Prodigy*."	result in a less attractive experience for users located further west at the location locations of the bush camp.	

Red Sky Métis Independent Nation Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

RSMIN Aboriginal and Treaty Rights Context:

The Red Sky Métis Independent Nation (RSMIN) are the descendants of the 84 "half breeds" who were recognized by the Crown as beneficiaries and annuitants under the Robinson Superior Treaty (1850). The RSMIN has indicated that their traditional and modern-day territory exists of lands contained within the area delineated by the Robinson-Superior Treaty (EIS; p. 4.352).

In their 2013 Report, RSMIN described the historic use of and connection to lands in the Robinson-Superior Treaty area, and their role as environmental stewards of the land:
"The ancestors of Red Sky Métis Independent Nation citizens were some of the first permanent settlers in the Robinson Superior Treaty area arriving in the 1600's. As such, RSMIN has a vested interest in the past, present and future condition of these homelands, the Robinson Superior Treaty area. As caretakers of the land in the territory, RSMIN places high value on environmental and community responsibility through participation in projects and activities that will impact the territory and people in any way."

Table 5: RSMIN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
RSMIN Hunting **Overview:** • PSA: no hunting • LSA: no hunting • RSA: no hunting	PSA	No RSMIN hunting identified	N/A	N/A	N/A	N/A
	LSA	No RSMIN hunting identified	N/A	N/A	N/A	N/A
	RSA	No RSMIN hunting identified	N/A	N/A	N/A	N/A
RSMIN Fishing **Overview:** • PSA: no fishing • LSA: no fishing • RSA: no fishing	PSA	No RSMIN fishing identified	N/A	N/A	N/A	N/A
	LSA	No RSMIN fishing identified	N/A	N/A	N/A	N/A
	RSA	No RSMIN fishing identified	N/A	N/A	N/A	N/A
RSMIN Trapping **Overview:** • PSA: no trapping • LSA: no trapping • RSA: no trapping	PSA	No RSMIN trapping identified	N/A	N/A	N/A	N/A
	LSA	No RSMIN trapping identified	N/A	N/A	N/A	N/A
	RSA	No RSMIN trapping identified	N/A	N/A	N/A	N/A

Table 5: RSMIN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
RSMIN Gathering **Overview:** • PSA: no gathering • LSA: no gathering • RSA: 1 gathering site largely, in not entirely, beyond the eastern boundary of the RSA	PSA	No RSMIN gathering identified	N/A	N/A	N/A	N/A
	LSA	No RSMIN gathering identified	N/A	N/A	N/A	N/A
	RSA	RSMIN has identified a berry harvesting area (at the western edge of Area 6) that is largely, if not entirely, beyond the eastern boundary of the RSA. See IE(1)-04 (*Assessment of RSMIN, GRFN & PMFN (Current Use of Lands and Resources for Traditional Purposes; Physical and Cultural Heritage; Any Structure, Site or Thing that is of Historical, Archaeological, Paleontological or Architectural Significance)* for further information. In addition, the response to IE(2)-03 Part A *'RSMIN Citizen Gathering Site'* reiterates this information.	The harvest site identified by RSMIN that is largely, if not entirely, beyond the eastern boundary of the RSA corresponds with the location of berry picking identified by MCFN. There are no predicted effects to berry harvesting in this area (see Sec. 7.7.2.5.2 of the EIS, p.7.401 and the response to IE(1)-04). EIS Section 7.7.2.5.2, 'Effects Assessment – Traditional Use of Lands and Resources' (p. 7.401) states the following potential effects with respect to gathering: • There will be removal of forest during site preparation and construction on the Project footprint, and disturbance related to construction of the power line and roads. However, the Project will not result in other off-site effects on forest resources or vegetation; and • There is no indication that there will be any effect on off-site berry harvesting, although there may be increased competition with bears due to loss of habitat from the Project site. This effect would not be measurable, particularly in light of natural variation and climate change.	**1. <u>Environmental Management System</u>** <u>Terrestrial Vegetation</u> a. Prodigy Gold will forward concern of herbicide use over the transmission line to the project proponent. [Commitments Table – ID# MNO 4.4.6] b. In consultation with Indigenous groups, vegetation trials will be undertaken during operations to assess best pioneer and long-term floral species to aid in natural area succession. [Commitments Table – ID# BFN 19-7] **2. <u>Closure and Reclamation Planning</u>** <u>Terrestrial Vegetation and Wetlands Rehabilitation</u> a. Prodigy indicated that the Company would present possible options for terrestrial restoration, including reclamation objectives prior to preparation of an update to the Closure Plan. [Commitments Table – ID# MFN-9, GRFN-28] The percentage of habitat that can be reversed will be described in the Closure Plan. [Commitments Tables – ID# GRFN-30; MFN-11] b. Native species will be used in the seed mix for revegetation. [Commitments Table – ID# BFN 5-1] c. The planting of berry-producing species will be carried forward in the Closure Plan. [Commitments Table – ID# TW(1)-01] **3. <u>Follow-up and Monitoring</u>** A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms: a. Ongoing engagement with identified land users; b. Aboriginal groups' participation in the Environmental Monitoring Committee; c. Adaptive management plans, and d. Consideration as part of the planning process for the final Closure Plan. [Commitments Tables – ID# GRFN-39]	With respect to residual effects to RSMIN gathering (Section 7.7.2.7 p. 7.404), there will potentially be increased competition with bears for berries due to loss of habitat from the PSA. Depending on a location in the RSA, users involved in traditional uses such as gathering may experience some noise, vibration, light (sky glow, light trespass), or visual effects i.e., subtle change on the horizon at some locations on Trout and Wabatongushi lakes) that may result in minor visual degradation of scenic quality (see EIS, Sec. 7.7.2.7). Generally speaking, these will decrease with distance from the Project, but be influenced by topography.	No significant adverse effects to RSMIN gathering practices; no impacts after mitigation to RSMIN rights in respect of gathering practices.

Table 5: RSMIN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
				4. <u>Bilateral Agreements</u> Compensation provided through the terms and conditions of Impact Benefit Agreement(s) with Aboriginal groups (source: extract from Table 7-243, p. 7.513 of June 2017 EIS "Project Interactions with Traditional Use of Land and Resources'). RSMIN has signed an Agreement with Prodigy Gold that has mitigated RSMIN's environmental and socio-economic concerns, and recognized and protected RSMIN's Aboriginal and treaty rights. [IE(1)-B07]		
RSMIN Cultural Activities and Special Places **Overview:** • PSA: no cultural activities and special places • LSA: no cultural activities and special places • RSA: no cultural activities and special places	PSA	No RSMIN cultural activities or special paces identified		N/A	N/A	N/A
	LSA	No RSMIN cultural activities or special paces identified		N/A	N/A	N/A
	RSA	No RSMIN cultural activities or special paces identified		N/A	N/A	N/A

Garden River First Nation Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

GRFN Aboriginal and Treaty Rights Context:

Garden River First Nation (GRFN) is an Ojibway First Nation and signatory to the Robinson-Huron Treaty (1850). The GRFN reserve is located approximately 300 km south of Dubreuilville and the Project site (EIS; p. 4.352). Refer to Figure 4-109: 'Magino Mine First Nation and Community Context' in Section 4.6.1 of the EIS (p.4.334) for the location of these lands. The GRFN asserts a traditional territory that includes the areas of Sault Ste. Marie and Echo Bay[1].

Documents submitted to CEAA in May 2017 included a 2006 map produced by the Ontario Ministry of Natural Resources and Forestry (MNRF) that shows the GRFN traditional territory encompasses the Project site[2]. The traditional territory identified on the map overlaps areas of the Robinson-Huron and Robinson-Superior treaties; it is bounded by Lakes Superior and Huron to the south, and by the northern boundaries of the Robinson-Superior and Robin-Huron treaties to the north. The shared territory extends south to Sault Ste. Marie and Batchewana, northeast to Chapleau and northwest of Michipicoten.

In November 2014, GRFN was identified by Ontario MNRF as an Aboriginal group for Prodigy Gold to engage with respect to closure planning and Prodigy is continuing to engage with GRFN around the environmental assessment and closure planning. As noted in the response to IE(2)-04 (*Assessment of Effects of Changes to the Environment on GRFN*), Prodigy Gold has committed to a process of working with the GRFN to continue to address GRFN's concerns regarding the EIS and the community's interest in the project. Prodigy supports the GRFN's ongoing participation in the proposed Project. In January 2018, Prodigy committed to fund additional Traditional Knowledge work. Prodigy was subsequently advised by GRFN on May 3 of 2018 of a proposed new process between the GRFN and Prodigy that will allow the Parties to further discuss and address any environmental technical issues, Traditional Knowledge and GRFN's participation in the project. Prodigy is actively supporting the newly proposed process.

GRFN participated in the third-party review of the EIS and identified environmental management and monitoring measures with respect to their ongoing participation in the Project through the Environmental Monitoring Committee, and, in particular:

> "A follow-up program to ensure that any changes in traditional use patterns and updated traditional knowledge information that would be used in design and operations, can be developed and implemented via some or all of the following mechanisms:
> - Ongoing engagement with identified land users;
> - Aboriginal groups' participation in the Environmental Monitoring Committee;
> - Adaptive management plans, and
> - Consideration as part of the planning process for the final Closure Plan." [*Appendix A: Commitments Table* IR(1) submission – Comment ID# GRFN-39]

Other mitigation measures identified by GRFN address components that include water quality, fish/fish habitat, vegetation, site operations, and closure planning. Prodigy has included these measures in its Commitments Table (see Appendix A – IR(1) submission).

To date, based on communications, meetings, and materials provided to Prodigy, GRFN has not indicated traditional use of lands and resources in the PSA, LSA and RSA. Prodigy's review of secondary source publicly available information in both 2015 and 2018 did not provide any further understanding of any GRFN potential uses in the Magino area (PSA, LSA or RSA). This understanding is reflected in the GRFN summary of uses in Table 6 below.

Prodigy Gold will mitigate, and if necessary accommodate, any potential effects of the Project on GRFN's traditional use of lands and resources or Aboriginal cultural activities/special places, should the additional work GRFN is doing demonstrate the potential for effects, or impact on their Aboriginal rights.

[1] GRFN. "History". Online. Accessed November 23, 2017. Available: http://www.gardenriver.org/history.php.

Table 6: GRFN Summary of Traditional Use of Lands & Resources, Aboriginal Cultural Activities & Special Places in PSA, LSA, RSA & Mitigation

Traditional Use/ Practice	Area of Use / Practice (PSA, LSA, RSA)	Summary of Aboriginal Traditional Uses & Practices	Potential Effects (description of effects and/or changes to the environment before mitigation measures applied)	Mitigation Measures	Residual Effects (description of residual effects post mitigation including a description of the consideration of the importance of a use or practice where that information exists)	Summary of Adverse Effects and Impact on Rights
GRFN Hunting **Overview:** • PSA: no hunting • LSA: no hunting • RSA: no hunting	PSA	No GRFN hunting identified	N/A	N/A	N/A	N/A
	LSA	No GRFN hunting identified	N/A	N/A	N/A	N/A
	RSA	No GRFN hunting identified	N/A	N/A	N/A	N/A
GRFN Fishing **Overview:** • PSA: no fishing • LSA: no fishing • RSA: no fishing	PSA	No GRFN fishing identified	N/A	N/A	N/A	N/A
	LSA	No GRFN fishing identified	N/A	N/A	N/A	N/A
	RSA	No GRFN fishing identified	N/A	N/A	N/A	N/A
GRFN Trapping **Overview:** • PSA: no trapping • LSA: no trapping • RSA: no trapping	PSA	No GRFN trapping identified	N/A	N/A	N/A	N/A
	LSA	No GRFN trapping identified	N/A	N/A	N/A	N/A
	RSA	No GRFN trapping identified	N/A	N/A	N/A	N/A
GRFN Gathering **Overview:** • PSA: no gathering • LSA: no gathering • RSA: no gathering	PSA	No GRFN gathering identified	N/A	N/A	N/A	N/A
	LSA	No GRFN gathering identified	N/A	N/A	N/A	N/A
	RSA	No GRFN gathering identified	N/A	N/A	N/A	N/A
GRFN Cultural Activities and Special Places **Overview:** • PSA: no cultural activities and special places • LSA: no cultural activities and special places • RSA: no cultural activities and special places	PSA	No GRFN cultural activities or special paces identified	N/A	N/A	N/A	N/A
	LSA	No GRFN cultural activities or special paces identified	N/A	N/A	N/A	N/A
	RSA	No GRFN cultural activities or special paces identified	N/A	N/A	N/A	N/A

Pic Mobert First Nation

PMFN Aboriginal and Treaty Rights Context:

The Pic Mobert First Nation (PMFN) is a signatory to the Robinson-Superior Treaty and are governed by their Constitution adopted in 2016. To date, no PMFN practices or land uses have been identified within the PSA, LSA or RSA. Prodigy does not have any information regarding PMFN's use of lands and resources for traditional purposes or any other interests PMFN may have in the proposed Project and its potential effects.

Prior to 2017, PMFN had declined participation in Prodigy Gold's Magino Mine EA process, and Prodigy Gold has followed CEAA's direction and continues to advise PMFN of major milestones or key updates for the project, as requested by the First Nation. Prodigy has had limited engagement with PMFN since 2017 (see response to IE(1)-08 for additional detail); the First Nation has received participant funding from CEAA in March 2017, and the Agency held an open house at Pic Mobert in July 2017 as part of their review process. The company does not have a Traditional Knowledge study from PMFN. During meetings in 2017, no specific information relating to land uses or interests in the Project area was provided by PMFN, and as such, a table has not been prepared for PMFN.

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APPENDIX 2

ASSESSMENT OF WIND EROSION ASSOCIATED WITH THE ARGONAUT GOLD MAGINO MINE PROJECT

TECHNICAL MEMORANDUM

DATE May 24, 2018 **Project No.** 1659317

TO Kyle Stanfield, Director, Environment and Community Relations
Argonaut Gold

FROM Russell Polack **EMAIL rpolack@golder.com**

ASSESSMENT OF WIND EROSION ASSOCIATED WITH THE ARGONAUT GOLD MAGINO MINE PROJECT

1.0 BACKGROUND

The Argonaut Gold (Argonaut) Magino Mine Project Environmental Impact Statement (EIS) is currently undergoing a review which is being conducted by Canadian Environmental Assessment Agency (CEAA). As a part of this review, CEAA has provided Information Requirement (IR) CEAA-FD2(A1)-11(39.0)A, also referred to as IE(2)-19A, which requests Argonaut to:

> *Include dust from wind erosion into the air quality assessment and into the assessment of effects on human health, or provide a quantitative justification for its exclusion.*

Argonaut's initial rationale for exclusion of wind erosion in the air quality assessment is that, as per Section 2.2 of Appendix 3.III of TSD 9, wind erosion from storage areas will not be significant due to the moisture content and size of the material. To further support this rationale, Golder has prepared this technical memorandum which provides a quantitative justification to exclude wind erosion from the air quality assessment and thus addresses CEAA comment CEAA-FD2(A1)-11(39.0), also referred to as IE(2)19A.

2.0 POTENTIAL WIND EROSION OF TAILINGS

Tailings associated with the Project will be deposited in slurry form and will remain wet at all times. As such, there will be no areas within the Tailings Management Facility that will be susceptible to wind erosion.

3.0 POTENTIAL WIND EROSION OF MINE ROCK AND ORE

As per industry standard practices, emission rates associated with wind erosion are derived using the equations in Chapter 13.2.5 "*Industrial Wind Erosion*" of the US EPA AP-42: Compilation of Air Emission Factors, section dated November 2006. These equations are based on the erosion potential of the materials being stored.

The erosion potential of a material can be estimated using Equation (3) from Chapter 13.2.5. The erosion potential is a function of the friction velocity associated with a particular wind event and the threshold friction velocity associated with the material being stored. If the friction velocity, u^*, exceeds the threshold friction velocity, u_t, an emission event could occur.

Equation (1) in Chapter 13.2.5 is used to estimate the friction velocity associated with a particular wind speed, u.

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$$u^* = \frac{u \times 0.4}{\ln(\frac{z}{z_o})}$$

Where z is the height above the surface (i.e., height the wind speed is measured) and z_o is the roughness height of the material and 0.4 is the dimensionless von Karman's constant.

The maximum hourly averaged wind speed can be used to determine the worst-case wind event (i.e., a 3 second wind gust) that can occur at the Project site. Storage areas will be snow covered during the winter and wet during spring thaw, therefore for the purposes of this assessment, the maximum hourly averaged wind speed for June through October was taken from the five-year AERMOD meteorological data set used in the dispersion modelling assessment. The Durst Curve[1] is used to convert the maximum hourly averaged wind speed to a maximum 3 second wind gust.

Table 13.2.5-2 provides roughness heights for various materials. Scoria (roadbed material) is the most similar material to the mine rock and ore associated with the Project and is typically used in wind erosion calculations for mining materials.

Table 1 below summarizes the parameters used in the calculation for the maximum friction velocity.

Table 1: Friction velocity parameters for mine rock and ore

Parameter	Value	Unit	Rationale
Maximum hourly wind speed	14.4	m/s	June through October of five-year AERMOD meteorological data set for the Project site
Anemometer height	10	m	
Maximum 3 second wind gust	21.9	m/s	Using the Durst Curve for a 3 second wind gust, which is 1.52 times the maximum hourly averaged wind speed
Roughness height	0.3	cm	Table 13.2.5-2 for scoria (roadbed material)

Using the above parameters and Equation (1) in Chapter 13.2.5, the maximum friction velocity at the Project site can be estimated according to the following:

$$maximum\ friction\ velocity = \frac{21.9 \times 0.4}{\ln(\frac{10}{0.003})} = 1.08\ m/s$$

Table 13.2.5-2 of the AP-42 document provides threshold friction velocities for various types of materials. As stated above scoria (roadbed material), which has a threshold friction velocity of 1.33 m/s, is used to represent the mine rock and ore associated with the Project. As shown in Table 2 below, the maximum friction velocity calculated for the Project site does not exceed the threshold friction velocity of the mine rock and ore, therefore there is no erosion potential and emissions from wind erosion are therefore not likely to occur. For this reason, emissions associated with wind erosion from the Mine Rock Management Area and Ore Storage Pile are not considered to be significant and were not included in the air quality assessment.

[1] https://www.inti.gob.ar/cirsoc/pdf/accion_viento/2005-10-dregger.pdf

Table 2: Erosion potential of mine rock and ore

Parameter	Value	Unit	Rationale
Maximum friction velocity, u^*	1.08	m/s	As calculated above
Threshold friction velocity, u_t	1.33	m/s	Table 13.2.5-2 for scoria (roadbed material)

4.0 CONCLUSIONS

This technical memorandum was prepared to address comment CEAA-FD2(A1)-11(39.0)A, also referred to as IE(2)-19A, which requests an assessment of wind erosion from tailings, mine rock and ore storage areas associated with the Project.

The Tailings Management Facility will not be susceptible to wind erosion because the tailings will be deposited in slurry form and will remain wet at all times.

Based on the maximum hourly averaged wind speed for the Project site, the maximum friction velocity is not likely to exceed the threshold friction velocity of the mine rock and ore, therefore wind erosion from these storage areas is expected to be negligible.

5.0 CLOSURE

We trust that this technical memorandum meets your needs at this time.

Yours very truly,

GOLDER ASSOCIATES LTD.

<Original signed by>

Air Quality Specialist

<Original signed by>

Natalie Jones, P.Eng.
Associate, Senior Air Quality Specialist

RLP/NCJ/ca

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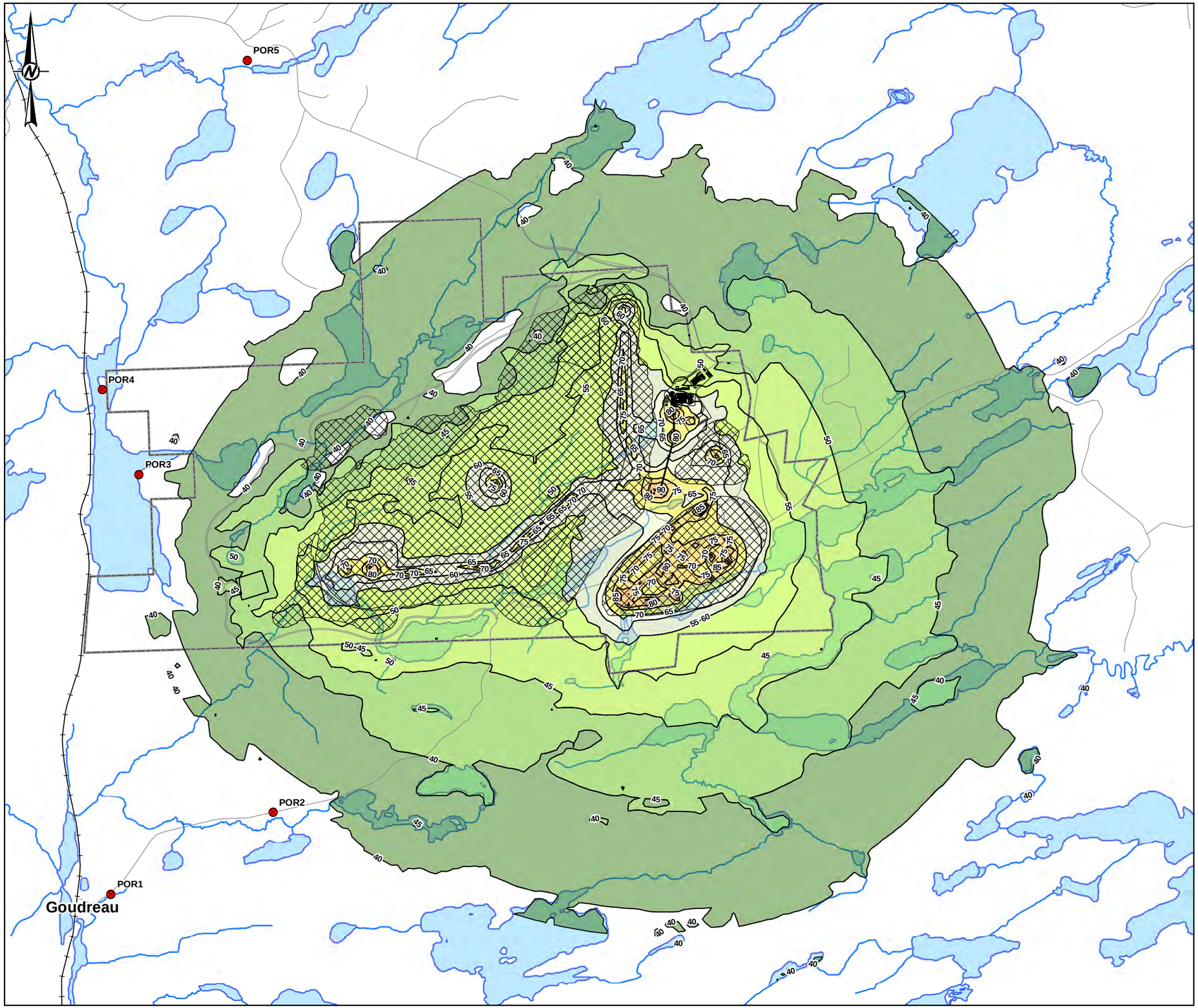
APPENDIX 3

FIGURE 5.5.2-1 – PREDICTED NOISE LEVELS, MINING AND PROCESSING PHASE, REV 2



LEGEND

- EXISTING ROAD
- RAILWAY
- WATERCOURSE
- WATERBODY
- POINT OF RECEPTION
- MINE ROAD
- INFRASTRUCTURE
- PROPERTY BOUNDARY

PREDICTED NOISE LEVELS AT 1.5M (dBA)

- 40 - 45
- 45 - 50
- 50 - 55
- 55 - 60
- 60 - 65
- 65 - 70
- 70 - 75
- 75 - 80
- 80 - 85
- 85 - 90
- 90 - 95
- 95 - 100

DRAFT

0 1 2

1:35,000 KILOMETERS

REFERENCE(S)

1. BASEDATA MNRF 2016
2. SITE LAYOUT PROVIDED BY THE CLIENT NOVEMBER 2016
3. PROJECTION: TRANSVERSE MERCATOR DATUM: NAD 83 COORDINATE SYSTEM: UTM ZONE 16N

CLIENT
ARGONAUT GOLD INC.

PROJECT
MAGINO GOLD PROJECT
NOISE TSD

TITLE
PREDICTED NOISE LEVELS MINING AND PROCESSING PHASE

CONSULTANT
Golder Associates

YYYY-MM-DD	2018-05-23
DESIGNED	SO
PREPARED	SO
REVIEWED	PN
APPROVED	AB

PROJECT NO.	CONTROL	REV.	FIGURE
1659317	0003	2	**5.2.2-1**

IF THIS MEASUREMENT DOES NOT MATCH WHAT IS SHOWN, THE SHEET SIZE HAS BEEN MODIFIED FROM: 25mm 0

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APPENDIX 4

CEAA-FD88 / EA(2)-01
Accidents And Malfunctions – Dam Break Scenario

CEAA-FD88 / EA(2)-01

ACCIDENTS AND MALFUNCTIONS – DAM BREAK ANALYSYS

A. Describe a worst-case TMF embankment failure scenario, prior to the application of mitigation measures and emergency procedures. Include the source, quantity, mechanism, rate, form and characteristics of contaminants and other materials (e.g. sediments) likely to be released to the surrounding environment during the accident, including in the near-term as well as mid-term; and in the near-lying water bodies as well as the Whitefish Lake and Steep Hill Generating Station Reservoirs;

B. Describe in more detail (i.e. magnitude, extent, duration) the change to the receiving environment, e.g. effect on water quality, water quantity, sediment quality;

C. Describe in more detail (i.e. magnitude, extent, duration) the resulting effects to wetlands, sensitive habitats, wildlife (including SAR), fish and fish habitat, aquatic species, migratory birds;

D. Describe the resulting effects to current use of lands and resources for traditional purposes.

Response A:

A dam break analysis was conducted to assess the potential impacts of a catastrophic failure of the TMF embankment on the Magpie River and the Michipicoten River under worst-case assumptions. A worst-case embankment failure is defined as a full breach of the embankment to its toe. Such a catastrophic failure is extremely unlikely and conservative analyses were prepared with the objective of providing a worst-case representation of the magnitude and extent of potential impacts.

The *HEC-RAS* hydraulic software package was used to generate the failure hydrograph resulting from failure of the TMF embankment. The final stage of the TMF embankment with a breach height of 70 m was analyzed in conjunction with a full TMF pool with a water volume of 3.25 million cubic metres (Mm^3). Breach parameters were calculated using the method published by Xu and Zhang (2009) for the breach height.

A TMF breach of the above magnitude would be expected to release an a portion of the tailings solids along with the full content (3.25 Mm^3) of tailings pool water. The maximum tailings storage volume is 150 Mt. Table 1 provides a summary expected tailings solids geochemical characteristics. Ore composition percentages are from EIS Table 4-16. Acid base accounting neutralization potential ratio (NPR) values are from EIA Table 4-17; and parameter leaching potentials are from EIS Table 4-19. Values shown for lithologic units 1 and 2 are calculated as weighted averages from EIS Table 4-17 and 4-19 values. During ore processing ore fractions are extensively blended, such that the weighted averages shown in the bottom row of Table 1 can be considered as being representative of Magino tailings solids.

Results show that the Magino tailings are expected to have a very high weighted average NPR of 32.8. NPR values in excess of 2 are considered to be non-potentially acid generating (MEND 2009, Price 1997). Exposed tailings solids therefore have no potential to generate acid rock drainage conditions. Shake flask testing did show that the tailings have some potential to leach parameters in concentrations that could exceed CCME guidelines for the protection of aquatic life for fluoride, nitrite, aluminum and copper. Fluoride is likely in soluble form. The source of nitrite is unclear and nitrite is not stable in the

environment. Aluminum is not soluble at the pH values tested, and typically shows up in colloidal form in shake flask test results. A portion of the copper may be in soluble form.

Maximum (worst case) tailings pond water quality data are available from SLR (2016). Values are shown in Table 2, where they are compared with protection of aquatic life guidelines from the federal government (CCME), Ontario (PWQO) and British Columbia (BCMOE). Criteria for hardness dependant metals are conservatively defined relative to a hardness of 50 mg/L (as $CaCO_3$). Cyanide criteria used by the three jurisdictions are for free cyanide, which in this case is conservatively compared with weak acid dissociable (WAD) cyanide. Maximum TMF concentrations of WAD cyanide, sulphate, cadmium, cobalt, copper, phosphorus and silver are all substantively above protection of aquatic life guidelines (i.e., ≥10 times guidelines), with WAD cyanide and copper being greater than 100 times higher than applicable guidelines. Predicted maximum TMF nitrate, aluminum, arsenic and selenium concentrations are modestly above applicable guidelines.

In the event of a catastrophic TMF failure, as defined above, the simulated peak discharge at the breach from the flood wave is calculated at approximately 1,350 cubic metres per second (m^3/s) and develops in about 1.5 hours following the start of the simulated failure. The flood wave will fully develop within 6 hours following the start of the simulated failure.

The *XPSWMM* software package was used to route the discharge of water from the failure hydrograph independently through the river watersheds using topography derived from available provincial Digital Elevation Models. A total of 32 cross-sections were analyzed for the Michipicoten watershed for the 39 km flow path from Spring Lake to the Whitefish Lake Reservoir. A total of 25 cross-sections were analyzed for the Magpie watershed for the 50-km flow path from Herman Lake to the Steep Hill Generating Station reservoir. The Michipicoten and Magpie watersheds are assumed to be experiencing 7Q20 low flow conditions, which are defined as the lowest 7-day average flow based on a 20-year return interval. This would result in a worst-case scenario for constituent concentrations in the receiving waterbodies. Historical flow data available from Water Survey of Canada stream flow stations was used. It is assumed that the breach will only occur in one of the watersheds and the subsequent flow being routed into that watershed only.

The simulated peak discharge entering the Whitefish Lake Reservoir along the Michipicoten River is approximately 113 m^3/s occurring in about 6 hours following the failure, and 95% of the flood wave will pass within about 30 hours. The simulated peak discharge entering the Steep Hill Generating Station Reservoir along the Magpie River is approximately 145 m^3/s occurring in about 7.5 hours following the failure, and 95% of the flood wave will pass within about 18 hours.

A survey was completed in 2014 to determine the elevation difference between existing waterbody levels and existing structures in the towns of Dubreuilville (in Magpie watershed), Goudreau, and Hawk Junction (both in Michipicoten watershed). The resulting flood wave would raise the water level in the waterbodies as it progresses through the flow path in a watershed. A total of 12 sites were surveyed and showed that structures are approximately 2 m above existing water levels in all three towns. Structures in Dubreuilville could potentially be affected by the calculated flood wave. Structures in Goudreau and Hawk Junction would be affected by the calculated flood wave.

For the Michipicoten watershed flow path, a portion of the tailings solids could potentially reach Hawk Lake, at Hawk Junction (Figure 1). However, the Michipicoten watershed flow path has a series of railroad

culverts and small lakes near Goudreau, which would dampen the flow of tailings solids. Tailings solids would not be expected to reach the Whitefish Lake Reservoir.

For the Magpie watershed flow path, the flow path starts with Herman Lake, which would be anticipated to significantly dampen the flow of tailings solids. Herman Lake has a surface area of 92.6 ha and an average depth of 12.8 m, and a consequent volume of 11.9 Mm^3. Tailings are not expected to reach the Steep Hill Generating Station reservoir. Tailings solids could potentially reach Dubreuilville located approximately 10 km downstream of the proposed TMF.

Plume dispersion and dilution calculations for 7Q20 low flow conditions were conducted for the receiving reservoirs. Mixing in the upstream waterbodies is assumed to be negligible. The flood wave volume entering the receiving waters is modelled as 3.25 Mm^3. Mixing of flood water and receiving water is assumed to occur in the upper 5 m. The residence time for the Steep Hill Generating Station reservoir is calculated to be 27 days and for the Whitefish Lake Reservoir is calculated to be 30 days.

Response Items B, C and D:

In order to move the EIS through the assessment process, Prodigy has undertaken an expanded evaluation of the effects associated with the highly unlikely scenario of a failure of the TMF. In keeping with the EIS Guidelines (CEAA, 2013), the expanded evaluation focuses on describing the "consequence" of the highly unlikely failure of the TMF. In describing the consequence of a TMF failure, the predicted effects to the environment are characterized using the following descriptors:

- Magnitude;
- Geographic Extent;
- Timing and Duration;
- Frequency;
- Degree of Irreversibility;
- Ecological Context; and
- Social Context.

Although these descriptors appear similar to the ones used for determining the significance of residual adverse effects for the Project (presented in Section 7 of the EIS), they are evaluated and applied in a different and unique manner specifically for evaluating the consequence of the highly unlikely scenario of a failure of the TMF. Use of the above specific nomenclature is to satisfy a specific request from the Agency. It should be noted that while the above listing includes "frequency" the likelihood of a catastrophic TMF failure is considered to be highly unlikely (i.e., it is not expected to happen). For each of the descriptors considered, "low", "medium" and "high" levels have been assigned as described in Table 3. For all of the other descriptors, the "high" level indicates effects of greater consequence, and a "low" level indicates effects of lesser consequence.

In Table 3, the magnitude descriptor is indicated as varying by the component of the environment considered. The approach for determining the magnitude is described below.

Magnitude

According to the Agency (CEAA, 2015), magnitude refers to "…the amount of change in a measurable parameter relative to baseline conditions or other standards, guidelines or objectives", and "…should be

expressed in measurable or quantifiable terms, whenever possible." Some of the considerations that the Agency (CEAA, 2015) suggests may influence the evaluation of the magnitude of an effect include the following:

- Natural variability, normal fluctuations, or shifts in baseline conditions;
- The scale at which magnitude is considered;
- The resiliency of the component being considered and surrounding area to change; and
- Whether the component of the environment has already been adversely affected by other physical activities or natural change.

How magnitude has been established for the various components used for describing the consequence of a TMF failure is described in Table 4.

1.0 Potential Environmental Effects

The description below is provided for an unmitigated catastrophic failure of the TMF, at the end of the mine life when the tailings dam is at its highest elevation, and where the full contents of the tailings pond are released. The release also presumes that the tailings pond water quality at the time of release is in its worst condition (i.e., highest concentrations of contaminants developed from several conservative assumption scenarios). Hence, the discussion below of potential environmental effects should be considered conservative.

1.1 Surface Water Quantity

A catastrophic failure at the end of the mine life, wherein 3.25 Mm^3 of water was released, would generate an initial release rate of 1,350 m^3/s (SLR 2014). This release could occur to either (but not both) of the Magpie or Michipicoten River systems, depending on the location of the failure. The simulated peak flow would develop in about 1.5 hours from the start of the simulated failure, and the flood wave would be fully developed within about 6 hours. The simulated peak flow would reach the Steep Hill Generating Station reservoir, on the Magpie River, in about 7.5 hrs, at which point the peak flow would be approximately 145 m^3/s. For the Michipicoten River, the peak flow would reach the Whitefish Lake reservoir in about 6 hours, and the peak flow at this point would be about 113 m^3/s.

A flood wave to the north towards Dubreuilville would follow along the Herman Creek valley until it reached the Magpie River at the town of Dubreuilville. Herman Creek is a small watershed measuring approximately 80 km2 at its confluence with the Magpie River. The model peak of the flood wave near the terminus of Herman Creek is approximately 240 m^3/s (SLR 2014). This compares with estimated single day average peak natural flows for a watershed of this size of about 10 m^3/s for a 10-year return period and 15 m^3/s for a 100-year return period. The resulting peak flow experienced by Herman Creek, lasting for just a few hours, would therefore be considerably greater than anything that might be experienced during natural conditions. The peak water level rise in Herman Creek near Dubreuilville would be about 4.8 m, again lasting for just a few hours. Once the flood wave hits the Magpie River at or just downstream of Dubreuilville, the peak flood wave would be comparable to an approximate peak one day, 100-year return period natural flood condition. And by a further approximately 5 km downstream, the peak dam breach flood wave condition would be approximately equivalent to a peak one day, 10-year return period natural

flood condition. Comparisons with natural flood conditions are based on prorated data from the Magpie River at Water Survey of Canada Station 02BD003 for the period of record dating from 1953 to 1989.

A flood wave south towards Goudreau and Hawk Junction would follow along the McVeigh Creek system until reaching Hawk Lake at Hawk Junction. McVeigh Creek at its inflow to Hawk Lake has a watershed of approximately 165 km^2. The flood wave would enter the Whitefish Lake reservoir, approximately 2.5 km downstream of Hawk Lake. The peak water level rise in McVeigh Creek near Hawk Junction would be about 3.5 m. The peak flood wave condition of 113 m^3/s at the entrance to the Whitefish Lake reservoir is greater than the calculated peak one day, 100-year return period natural flood condition of approximately 45 m^3/s calculated for a watershed of this size. However, once the peak flood wave reached the Whitefish Lake reservoir the water level rise would be less than 0.5 m, and therefore comparable to natural water level fluctuations in the reservoir.

It is stressed that the above analysis pertains to a highly unlikely event occurring at the end of the mine life, when the tailings dam is at its maximum elevation, and where the entire water pond inventory is released in a catastrophic event.

In relation to assessment criteria, the:

- Magnitude of the effect is considered to be high;
- Geographical extent is likely to extend beyond the RSA;
- Duration of the effect would be low lasting for a few hours to days;
- Frequency is considered to be highly unlikely to occur;
- Effect is reversible in that the flood wave will pass in a short period of time;
- Ecological context is potentially high; and
- Social context is likely to medium to high.

1.2 Surface Water Quality

Modelling indicates that, in the highly unlikely event of a TMF failure, there would be a degradation in water quality in either the Herman Creek / Magpie River system, or the McVeigh Creek / Michipicoten River system, depending on the exact location of the dam failure.

SRL (2014) modeled expected parameter concentrations at the Steep Hill Generating Station reservoir (on the Magpie River system) on at the Whitefish Lake reservoir (on the Michipicoten River system), after mixing. Mixing was assumed to within the upper 5 m of the reservoir water column. TMF pool water concentrations used in the mixing model, however, were taken from an earlier projection of likely maximum TMF water quality concentrations. Subsequent determinations of likely maximum TMF water quality concentrations determined in 2016 (SLR 2016) were, however, approximately 3.2 times greater than those used in the 2014 dam failure modeling. To better account for this change, downstream day-3 reservoir parameter concentrations calculated by SLR (2014) were increased by a factor of 3.2, as per Table 5. Day-3 reservoir water quality concentrations were the highest (worst case) modeled values. The 3.2 factor of increase used to update the 2014 model results is somewhat simplistic, but is considered to

be conservative because this approach also automatically also increases background water quality concentrations by this same amount.

For aquatic habitats closer to the dam breach, the receiving water quality would more closely approach the quality of waters released from the TMF.

For the two reservoirs, the parameters of the greatest concern relative to the protection of aquatic life are cyanide, silver, copper and phosphorus. For the purpose of comparison with protection of aquatic life guidelines the CEQG / PWQO value of 0.005 mg/L for free cyanide was multiplied by a factor of 4 to generate a guideline of 0.02 mg/L applicable to total cyanide. This assumes that approximately 25% of the total cyanide present occurs as free cyanide. Cyanide values shown in Table 5 are likely to be overstated because typical TMF pond cyanide values are likely to be lower than those shown in the table, and because once released to the environment cyanide is inherently unstable, and will degrade through the processes of volatilization to the atmosphere and conversion to much less toxic cyanate. The efficiency of these processes will depend on temperature and residence times.

Nevertheless, projected initial TMF concentrations of several parameters are potentially toxic in the short-term especially for cyanide, and are likely to be hazardous to aquatic life.

In relation to assessment criteria, the:

- Magnitude of the effect is likely to be high for at least some parameters, and especially for more proximal receiving waters;
- Geographical extent is likely to extend beyond the RSA, albeit with diminishing downstream effects;
- Duration of the effect will likely last from weeks to months;
- Frequency is considered to be highly unlikely to occur;
- Effect is functionally reversible in that system water quality values would be expected to return to background or near background conditions, depending on the continued release of contaminants from the neutral leaching of deposited tailings;
- Ecological context is high; and
- Social context is likely to be high.

1.3 Effects on Stream and Lake Sediments

Tailings solids runout distances were estimated from data provided by Rico et al. (2008) wherein an equation was developed based on tailings dam height related to a survey of 29 historic tailings dam failures. The estimated tailings solids runout distance is 21 km (SLR 2014). The equation is very generic and should therefore be regarded as a very rough approximation of potential worst case conditions. For the initial smaller lakes along the tailings runoff flow path it was determined that it was possible for 30 to 70% of the lake volumes to be infilled with tailings. Substantial reaches of creek and river systems downstream of the tailings breach could therefore also be infilled with tailings solids.

Tailings solids composition is dominated by lithologic units 1/2 comprising approximately 12% of the life-of-mine ore feed, and by lithologic unit 6 comprising approximately 86% of the life-of-mine ore feed (Table 1). Whole rock analysis showed that these units are contain enriched levels of the following metals for which federal or provincial sediment quality guidelines exist: arsenic, cadmium and zinc. Metals enrichment was defined as rock materials contains greater than 10 times the average crustal (basalt) concentration of metals.

Acid base accounting test work showed that the ore (tailings) is non-acid generating (NAG) with a median neutralizing potential ratio of 32.8 (Table 1). Shake flask leachate test showed that fluoride, nitrite, aluminum and copper were the only parameters which were expected to come into solution at concentrations that exceeded CCME (CEQG) (Table 1). Predicted higher concentrations of aluminum are an artifact of the rest procedure, which is based on filtered sample results. Aluminum is very frequently elevated in such tests because it occurs in colloidal form and is therefore not filtered out. Overall the potential for tailings solids to release constituents that are likely to be harmful to aquatic life is considered to be limited.

The larger and most important effect of a catastrophic TMF failure on lake and river sediments will be a smothering effect in downstream areas up to an estimated runout distance of 21 km, with most of this effect occurring to lakes and creek systems closer to the TMF.

In relation to assessment criteria, the:

- Magnitude of the effect is likely to be medium to high for at least some parameters;
- Geographical extent is likely to extend beyond the RSA, albeit at diminishing volumes;
- Duration of the effect will be essentially permanent for at least some waterbodies;
- Frequency is considered to be highly unlikely to occur;
- Effect is functionally irreversible in the sense that residual tailings sediments will persist, but will gradually become more naturalized over several decades;
- Ecological context is high; and
- Social context is likely to be medium to high.

1.4 Effects on Fish and Fish Habitat

Herman Creek and Magpie River System

The Herman and Otto Lake (Herman Creek) watershed supports Lake Whitefish, Northern Pike, Walleye, Yellow Perch, White Sucker and at least 12 forage fish species. In the unlikely event of a catastrophic TMF dam failure, with a flood wave to the Herman Creek system, it is expected that there would be substantive individual fish mortalities from the high kinetic energy associated with the release, along with suffocation from tailings solids deposition and the high suspended solids content of the flood waters. Fish would also be expected to become stranded on the Herman Creek floodplain as the flood wave waters receded. The height of the peak flood wave expected to flow down the Herman Creek system is calculated to range from about 3.1 to 4.8 m depending on location. This flood wave will have the potential to damage or

destroy plants in its path, as well as cause erosion along Herman Creek until the flood wave velocity dissipates over a few hours. The aquatic habitat in the zone affected by the higher velocity of the flood wave could be damaged or destroyed. In addition to the flood wave, the tailings solids could coat the ground surface and sections of the Herman Creek valley. Some tailings solids could also reach the Magpie River in the vicinity of Dubreuilville, but would not be expected to carry through to the upper reaches of the Steep Hill Generating Station reservoir (SLR 2014).

At Dubreuilville, Herman Creek flows into the much larger Magpie River system, at this point because of the larger profile of the Magpie River system, the peak height of the flood wave would be reduced to less than 1 m, and would further attenuate as the flood wave progressed downstream. A flood wave height of less than 1 m would not be expected to have a meaningful adverse effect on fish habitat in the Magpie River, but the transport of higher concentrations of total suspended solids through this section could have a short-term effect on fish and benthos communities.

At the maximum projected total cyanide concentration of about 1.5 mg/L entering the Steep Hill Generating Station reservoir, it is expected that there could be an extensive fish and benthos kill through Herman Creek and large portions of the Magpie River system. Exposure to higher effluent contaminant concentrations throughout the Magpie River system, to the inflow to the Steep Hill Generating Station reservoir, could extend for several days in a worst case scenario.

Prodigy has committed that, in the highly unlikely event of a TMF failure, to remove the tailings solids deposited in Herman and Otto Lakes, to the extent reasonably feasible, and also from heavily silted-in portions of Herman Creek. As the tailings solids are not potentially acid generating, such removal would not have to be undertaken immediately following a dam breach, but would be undertaken within a period of not more than three to five years.

McVeigh Creek System

The Spring Lake – Lovell Lake system supports Northern, Yellow Perch, White Sucker and at least 10 forage fish species. Walleye and other species are expected to occur further downstream in the chain of lakes and waterways comprising the McVeigh Creek system. As per the discussion above concerning the Herman Creek system, in the unlikely event of a catastrophic TMF dam failure, it is expected that there would be substantive individual fish mortalities from the high kinetic energy associated with the release, along with suffocation from tailings solids deposition and the high suspended solids content of the flood waters. Fish would also be expected to become stranded on the McVeigh Creek floodplain as the flood wave waters receded. The height of the peak flood wave expected to flow down the McVeigh Creek system is calculated to range from about 7 to 8.5 m in the creek section upstream of Goudreau, but is expected to be quite variable in the creek section between Goudreau and Hawk lake ranging from about 1 to 7 m through this section, depending on valley morphology. Once the peak flood wave hits the inflow to the Whitefish Lake reservoir area, just downstream of Hawk Junction, the peak flood wave is calculated at less than 1 m.

As with the Herman Creek system, the peak flood wave will have the potential to damage or destroy plants in its path, as well as cause erosion along the system until the flood wave velocity dissipates over a few hours. Aquatic habitat in the zone affected by the higher velocity of the flood wave could be damaged or destroyed. In addition to the flood wave, the tailings solids could coat the ground surface and sections of the McVeigh Creek valley. Some tailings solids could also reach as far down the system as

Hawk Lake, but would not be expected to carry through to the upper reaches of the Whitefish Lake reservoir (SLR 2014).

Physical damage is therefore not expected to occur in the Whitefish Lake reservoir, but at the maximum projected total cyanide concentration of about 0.9 mg/L in the reservoir, it is expected that there could be an extensive fish and benthos kill through McVeigh Creek and portions of the Whitefish Lake reservoir. Exposure to higher effluent contaminant concentrations could extend for several days.

Prodigy has committed that, in the highly unlikely event of a TMF failure, to remove the tailings solids deposited in the McVeigh Creek system, to the extent reasonably feasible, within a period of not more than three to five years.

Overall Assessment

In relation to assessment criteria, the:

- Magnitude of the effect of a catastrophic dam breach on the Herman Creek or McVeigh Creek systems, and downstream waters would be high;
- Geographical extent is likely to extend beyond the RSA;
- Duration of the effect could last from months to years depending on the system and location;
- Frequency is considered to be highly unlikely to occur;
- Effect is functionally irreversible in the sense that residual tailings sediments will persist, but will gradually become more naturalized over several decades;
- Ecological context is high; and
- Social context is high.

1.5 Effects on Wetlands

In the highly unlikely scenario of a TMF failure, with a flood wave entering Herman Lake and Herman Creek, the resulting flood wave would damage or uproot the shallow-rooted vegetation, and some of the deep-rooted vegetation in the riparian zone of Herman Creek. Herman Creek exhibits broad areas of wetland vegetation associated with existing and past beaver activity. Portions of this vegetation could also be smothered with tailings solids. There would be little or no expected damage to wetland vegetation in the Magpie River system downstream of Dubreuilville, as there are few wetland areas associated with this larger system, and as the flood wave energy would be much less downstream of Dubreuilville.

The potential for damage to wetland systems, in the event of a catastrophic flood wave release to the McVeigh Creek system is much less, as riparian wetlands show much more limited development in this system compared to the Herman Creek system.

In relation to assessment criteria, the:

- Magnitude of the effect is likely to be medium to high in the event of a catastrophic tailings breach towards Herman Lake, but would be of low magnitude for effects to the McVeigh Creek system;

- Geographical extent is likely to extend beyond the RSA;

- Duration of the effect could last from months to years depending on the system and location;

- Frequency is considered to be highly unlikely to occur;

- Effect is functionally reversible except possibly in limited areas very near to the breach, such as in Spring Lake, where some wetlands could be smothered with tailings solids;

- Ecological context is likely to be medium for the Herman Creek system and low for the McVeigh Creek system; and

- Social context is likely to be low to medium, depending on the direction of the flood wave.

1.6 Effects on Significant Wildlife Habitat

Effects on significant wildlife habitat are addressed within sections of the IR response dealing with wetlands, migratory and breeding birds, and mammals. Reptiles and amphibians are not specifically dealt with in other sections of this IR response, but their distributions are primarily associated with wetlands and can be considered within that context, with the added note that considerable localized mortality would be expected to occur to reptiles and amphibians, in the unlikely event of a catastrophic TMF failure, especially where wetlands are overprinted with tailings solids. Herman Lake is regarded as Bald Eagle habitat along with other larger lakes and rivers in the area and in the surrounding region.

1.7 Effects of Migratory and Breeding Birds

The potential effect to migratory birds is highly dependent on the time of the year the TMF failure event were to occur. The greatest effect of a TMF failure to migratory birds would be to waterfowl that nest on the ground or in low shrubs in the riparian zone of the Herman Creek system. These birds would be susceptible to the effects of the initial flood wave released by a failure of the TMF, and to sediment smothering in areas very close to the dam breach. Birds using the Magpie River and the McVeigh Creek / Michipicoten River system would be largely unaffected by a failure of the TMF. Potential toxicity effects to birds as a result of TMF effluent release would not be expected as parameter concentration levels in te TMF, including for cyanide species, are expected to be well below concentrations that would be of potential concern.

In relation to assessment criteria, the:

- Magnitude of the effect is likely to be low to medium depending on the time of year of the dam failure, and whether the flood wave were to flow to Herman Creek, or McVeigh Creek;

- Geographical extent is likely to extend into the RSA in the case of the Herman Creek system; but is likely to be more localized in the event of a flood release to the McVeigh Creek system;

- Duration of the effect is likely to last from weeks to months;

- Frequency is considered to be highly unlikely to occur;
- Effect is functionally reversible;
- Ecological context is likely to be low to medium, depending on the direction of the flood wave.; and
- Social context is likely to be low.

1.8 Effects on Mammals

Mammalian species most likely to be affected as a result of the TMF failure are beaver and other aquatic mammals (muskrat, mink and otter) within Herman Creek, in the event of a flood wave into that system. A flood wave into the McVeigh Creek system would be likely to have a lesser effect because there are fewer beaver impoundments associated with that system. In the highly unlikely event of a TMF failure, the percussive force from the flood wave would likely cause mortality for beaver and other aquatic mammals downstream of the TMF. It can also be assumed that the beaver dams and lodges within Herman Creek would be destroyed by the force of the flood wave.

In relation to assessment criteria, the:

- Magnitude of the effect is likely to be low to medium depending on whether the flood wave were to flow to Herman Creek (medium magnitude effect), or McVeigh Creek (low magnitude effect);
- Geographical extent is likely to extend into and possibly beyond the RSA;
- Duration of the effect is likely to last for years in areas most effected;
- Frequency is considered to be highly unlikely to occur;
- Effect is functionally reversible;
- Ecological context is likely to be low to medium, depending on the direction of the flood wave.; and
- Social context is likely to be low to medium as aquatic mammals such as beaver, mink, otter and muskrat are important furbearers to local trappers.

1.9 Effects of Species at Risk (Threatened and Endangered)

Threatened and endangered species at risk (SAR), as classified by the federal and/or provincial governments, and which are known to occur within the RSA include: Whip-poor-will, Common Nighthawk, Olive-sided Flycatcher, Canada Warbler, Chimney Swift, Northern Myotis and Little Brown Myotis. None of these species occupy habitats that are likely to be meaningfully affected by a catastrophic TMF failure, although it is possible that either of the two bat species (Northern Myotis and Little Brown Myotis) and the Common Nighthawk and Chimney Swift could forage over wetlands that could be adversely affected by a catastrophic dam failure.

Due to the low potential for a catastrophic TMF dam breach to affect these SAR species, an evaluation of assessment criteria is not warranted.

1.10 Effects on Traditional Use of Lands and Resources

Prodigy recognizes that Aboriginal people live, work, harvest (hunt, fish, trap, gather), and drink water throughout their lands and rely on them for individual as well as their community's overall cultural, social, spiritual, physical, and economic well-being. Continued use of lands and resources for traditional purposes is central to Aboriginal culture, community, and way of life. In the highly unlikely event of a TMF failure, potential effects to traditional use of lands and resources by Aboriginal people have been identified in relation to changes in water quality, effects on fish and fish habitat, wildlife, and effects on vegetation used for traditional purposes.

The primary effect to traditional use of lands and resources relating to a catastrophic dam failure would be to aquatic resources, mainly fish, and secondarily to aquatic furbearers and waterfowl. The effects analysis presented above indicates a potential to adversely affect fish and aquatic life both more locally and in larger downstream water systems. The principal effect to further downstream systems would be that related to short-term toxicity effects, mainly from residual cyanide. A substantial fish kill would be possible in downstream waters, and it could take a few years for fish populations to fully recover. There would also be the potential for the perception of longer-term water and fish contamination that could lead to diminished use of fisheries resources in the longer-term, irrespective of actual continuing contamination.

A catastrophic TMF failure is therefore likely to result in "effects which represent a substantial change from existing conditions"

In relation to assessment criteria, the:

- Magnitude of the effect of a catastrophic dam breach to traditional land and resource use is potentially high, mainly because of the far reaching potential for adverse effects to fisheries resources, and secondarily aquatic furbearers and waterfowl resources;
- Geographical extent is likely to extend beyond the RSA;
- Duration of the effect could last from months to years depending on the system and location, and the perception of adverse effects could be longer lasting;
- Frequency is considered to be highly unlikely to occur;
- Effect is arguably reversible to a large extent, but perhaps not fully reversible at the local level;
- Ecological context is high; and
- Social context is high.

Prodigy notes that a summary of the potential effects of the Magino project (not including 'Accidents and Malfunctions) on the current use of lands and resources for traditional purposes for each Aboriginal group participating in the EA process is provided in the response to IE(2)-06 '*Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group*'. Additional detail is also provided in

various other IR#1 responses (see the concordance tables in Appendix 1: '*Traditional Uses in the PSA, LSA, and RSA and Concordance Tables*' prepared and submitted March 20, 2018 to CEAA as part of the completeness review package).

1.11 Effects on Aboriginal Cultural Activities and Special Places/ Archaeological Sites

Based on the information in the Traditional Knowledge Studies/Traditional Land Use Studies (TKS/TLUS) and other reports that Aboriginal groups submitted to Prodigy, it is not clear as to whether there would be any direct effects from the catastrophic TMF failure on:

- Aboriginal cultural activities (distinct from those discussed above within the context of traditional use of land and resources);
- Known spiritual sites;
- Trails and camps; or
- Archaeological sites.

That being said, because of the strong spiritual connection that Aboriginal peoples hold with the land, it can be assumed that the effects of a catastrophic TMF dam failure would be perceived as an injury to the land, and in that sense the adverse effect would likely be considered to have a high consequence. This is especially the case because the effects would be realized through the flow of water which is essential to all life.

In relation to assessment criteria, the:

- Magnitude of the effect of a catastrophic dam breach to Aboriginal cultural activities and special practices is likely to be high;
- Geographical extent is likely to extend beyond the RSA;
- Duration of the effect in terms of its cultural aspect would be long-term;
- Frequency is considered to be highly unlikely to occur;
- Effect is arguably not reversible;
- Ecological context is high; and
- Social context is high.

Prodigy notes that a summary of the potential effects of the Magino project (not including 'Accidents and Malfunctions) on Aboriginal cultural activities and special places for each Aboriginal group participating in the EA process is provided in the response to IE(2)-06 '*Potentially Impacted Aboriginal and Treaty Rights & Mitigation for Each Indigenous Group*'. Additional detail is also provided in various other IR#1 responses (see the concordance tables in Appendix 1: '*Traditional Uses in the PSA, LSA, and RSA and Concordance Tables*' prepared and submitted March 20, 2018 to CEAA as part of the completeness review package).

2.0 Contingency and Emergency Response

The following emergency response and contingency procedures have been identified in the event that a TMF dam breach occurs:

- Processing plant operations would be immediately shut down;
- The seepage reclaim system would be shut down;
- The reclaim system would be re-routed to transfer water to the open pit for temporary storage if worker safety is not compromised; and
- In the event that water breaches the seepage collection system; the area would be cleaned up by removal and proper disposal of the potentially impacted material into the TMF.

After the short-term actions of the Emergency and Spill Response Management Plan (ESRMP) consultation would be initiated immediately with applicable government agencies and local Aboriginal groups, and a remediation plan would be developed. The damaged TMF embankment would be stabilized and reconstructed to ensure that containment of tailings solids and impacted water is reinstated. Released tailings and impacted natural ground are expected to be removed by excavation and deposited into the reinstated facility, to the extent reasonably feasible. Thereafter remediation efforts will be started, to support habitat recovery.

Details of the recovery strategy would be dependent on the extent and nature of the spill. Tailings solids that were released from the TMF will need to be contained, to the extent feasible, by temporary measures to limit additional spreading and damage to the surrounding environment. As a general strategy, tailings spilled on land between the TMF and the adjacent waterbodies would be cleaned up as soon as the TMF could be stabilized to receive the spilled tailings. Tailings that are spilled on land could be cleaned-up within a reasonable timeline (likely one year) using dozers, excavators, loaders and haul trucks. Spilled tailings in adjacent lakes would likely need to be dredged during the open water season and pumped to the restored TMF. The feasibility for cleaning up tailings solids that accumulate in creek and small lake systems further downstream would have to be assessed as part of a broader clean-up and recovery strategy. In the case of creek habitats tailings solids would likely need to be cleaned up mainly in winter, where the ground bordering the creeks can be frozen for improved access, and when creek flows are predictably low. Access to the creeks would likely be provided by an emergency road access, possibly including winter roads. Heavy equipment (excavators, loaders, dozers) could operate from off these emergency roads, and spilled tailings would be excavated and transferred to trucks for transport back to the TMF. Once the spilled tailings have been removed, the creek would be remediated using natural channel restoration strategies, in parallel with, or after tailings removal.

The above notwithstanding, in the highly unlikely event of a catastrophic TMF failure resulting in the release of a large quantity of tailings solids for several kilometers downstream (up to a maximum distance of about 10 km in the case of a spill towards Dubreuilville, and up to about 28 km in the case of a spill towards Hawk Junction), it will not be feasible to clean up all of the spilled tailings solids (depending on the actual quantity spilled). A portion of the tailings solids might therefore remain in aquatic habitats. As these tailings are not potentially acid generating (i.e., geochemically reactive), aquatic systems will recover naturally, but it will take several years for this process to happen. Such recoveries to productive fish habitat have been observed at serve historic tailings sites. Moreover, in circumstances where only a comparatively thin layer of tailings solids ends up being deposited in downstream water bodies (especially

those further removed from the TMF), more damage could be done to aquatic systems by trying to clean up spilled tailings, rather than by allowing systems to recover naturally. The exact nature of the response would have to be assessed at the time.

3.0 TMF Failure Follow-up Program

In the unlikely event of a TMF failure, an in-depth review will be conducted, which may warrant design changes, procedure changes, or need for additional measures.

A follow-up monitoring program would be developed to ensure that cleanup activities are effective, which is proposed to include water quality, sediments, fish tissue and vegetation monitoring. This program would be developed through discussion with Indigenous communities and government agencies.

4.0 References

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Xu and Zhang (2009).

Table 1: Geochemical Characteristics of Magino Ore (Tailings)

Lithologic Unit	Ore Composition[1] (%)	Median Sobec NPR[2]	Shake Flask Leach Test Results showing Percentage Exceedance of CCME Guidelines[3]								
			Fluoride	Nitrite	Aluminum	Arsenic	Cadmium	Copper	Iron	Selenium	Silver
1/2	12	29.73	44.1	60.2	98.9	1.1	1.1	2.1	0.0	2.2	2.2
5	0.33	1.53	29.4	17.6	35.3	0	23.5	17.6	5.9	23.5	17.6
6	86	33.60	100	20	100	0	0	30	0	0	0
7	1.8	22.66	9.7	11.3	100	0	0	27.4	0	3.2	0
Total	100.13										
Weighted Average		32.8	91.4	24.7	99.7	0.1	0.2	26.6	0.0	0.4	0.3

Data Sources: 1 – EIS Table 4-16
2 – EIS Table 4-17
3 – EIS Table 4-19

Table 2: TMF Pond Water Quality Values compared with EIS Effluent Criteria for the Protection of Aquatic Life (concentrations in mg/L)

Parameter	CCME Guideline (mg/L)	PWQO (mg/L)	BCMOE (mg/L)	TMF Pond Maximum Concentration (mg/L)
pH	6.5 – 9.0	6.5 – 8.5	6.5 – 9.0	7.7
Nitrate (N)	3	-		4.3
Ammonia (N)	-	-	-	3.0
Chloride	120	-	150	40.5
Cyanide-T	-	-	-	7.02
Cyanide-WAD	0.005	0.005	0.005	4.70
Sulphate	-	-	218	5,552
Aluminum	0.1	0.075[d]	0.05[d]	0.23
Arsenic	0.005	0.005[I]	0.005	0.019
Boron	1.5	0.20	1.2	0.09
Cadmium	0.00009	0.0001	0.00013	0.0009
Calcium	-	-	-	602
Chromium (III)	0.0089	0.0089	0.0089	0.005
Cobalt	0.001	0.0009	0.004	0.038
Copper	0.002	0.005	0.002	0.47
Iron	0.3	0.3	1.0	0.29
Lead	0.001	0.003[I]	0.0046	0.0019
Manganese	-	-	0.85	0.14
Molybdenum	0.073	0.04[I]	1	0.009
Nickel	0.025	0.025	0.025	0.009
Phosphorus		0.02 / 0.03	0.005 – 0.015	0.47
Selenium	0.001	0.1	0.002	0.005
Silver	0.00025	0.0001	0.00005	0.008
Thallium	0.0008	-	0.0008	0.0005
Vanadium	0.12	0.006	-	0.051
Zinc	0.03	0.02[I]	0.0075	0.009

Notes: Hardness influenced parameters referenced to a nominal hardness of 50 mg/L
I – Interim PWQO value
d – dissolved

	Substantively exceeds guidelines
	Modest exceedance of guidelines

Table 3: Methods for Assigning Consequence Descriptors

Descriptor	Low	Medium	High
Magnitude	Magnitude is assigned based on the component of the environment considered		
Geographic Extent (of the effect)	A measureable or noticeable effect is likely limited to within the PSA	A measureable or noticeable effect is likely to extend into the LSA	A measureable or noticeable effect is likely to extend into the RSA or beyond
Timing (of event causing the effect)	Event occurs during a period when the VC is not present, or is not particularly sensitive	Event occurs during a period when the VC is present and is somewhat sensitive	Event occurs during a period when the VC is particularly sensitive
Duration (of the effect)	Effect likely to last for a period of hours to days.	Effect likely to last for weeks to months	Effect likely to last for years, or is permanent
Frequency (of conditions causing the effect)	Occurs as a one-time event, or not at all	Occurs intermittently	Occurs frequently or continuously
Degree of Irreversibility (of the effect)	Effect is readily reversible once conditions or phenomena causing the effect cease (generally within a period of days)	Effect is reversible within a defined period of time (years or by the end of closure)	Effect is unlikely to be reversible, or can only be partially reversed by the end of mine closure
Ecological Context	Effect is not expected to measurably affect ecological integrity or function within the RSA; or types of lands and resources used are relatively abundant elsewhere in the RSA or beyond	Effect is expected to diminish the ecological integrity or function of the RSA; or types of lands and resources used are somewhat abundant elsewhere in the RSA or beyond	Effect is expected to meaningfully diminish the ecological integrity or function of the RSA; or types of lands and resources used are unique to the RSA, or beyond, with no readily accessible alternative
Social Context	Effect is not expected to measurably affect overall community well-being in the RSA; or current traditional uses or cultural values are valued, but are widely available elsewhere in the RSA	Effect is expected to diminish somewhat overall community well-being in the RSA; or current traditional uses or cultural values are valued, but are not unique to the RSA	Effect is expected to meaningfully diminish overall community well-being in the RSA; or current traditional uses or cultural values are highly valued and unique to the RSA

Table 4: Methods for Assigning Levels for Magnitude

Component	Low	Medium	High
Surface water quantity	A failure of the TMF results in lake levels, lake outflows, or stream flows that are within the range of values expected to occur within an approximate 10-year return period	A failure of the TMF results in lake levels, lake outflows, or stream flows that are within the range of values expected to occur within an approximate 100-year return period	A failure of the TMF results in lake levels, lake outflows, or stream flows that are within the range of values expected to occur at greater that a 100-year return period
Surface water quality	Surface water quality meets selected criteria for the protection of aquatic life	Surface water quality exceeds selected criteria for the protection of aquatic life, but is not expected to be acutely toxic	Surface water quality expected to be acutely toxic
Stream and lake sediments	Concentration is below the LEL where baseline is also below the LEL, or concentration above the LEL but less than the SEL where baseline concentration is also above the LEL but less that the SEL	Concentration greater that the LEL where baseline is also below the LEL, or concentration is above the SEL where baseline is greater than the LEL	Concentration greater than SEL where baseline concentration is less that the LEL
Fish and fish habitat	Average concentrations of substances in water within the receiving environment are not expected to affect fish or aquatic life such that predicted concentrations will be less than water quality criteria for the protection of aquatic life, and concentrations in sediment will be equal to or less than the LEL	Maximum concentrations of substances in water in the receiving environment are predicted to be greater than criteria for the protection of aquatic life, but less than acute toxicity thresholds for resident species, and/or concentrations in sediment are predicted to exceed the SEL	Median concentrations of substances in water in the receiving environment are predicted to be greater than guidelines and acute toxicity thresholds, and concentrations in sediment are predicted to exceed the SEL
	A failure of the TMF results in no measurable effect to commercial, recreational or Aboriginal (CRA) fish communities or populations	A failure of the TMF likely to limit or reduce some life history requirements to CRA fish communities or populations, but measurable population level effects not expected	A failure of the TMF likely to have measureable effects on one or more of the sport fish populations
Wetlands	A failure of the TMF is likely to result in a reduction in the availability or quality of wetlands in the RSA, without a reduction in the overall function of wetlands in the RSA	A failure of the TMF is likely to result in a reduction in the availability or quality of wetlands in the RSA, resulting in a reduction in the overall function of wetlands in the RSA	A failure of the TMF is likely to result in net removal of wetlands, or will reduce the availability or quality of wetlands, resulting in a reduction in the overall function of wetlands in areas beyond the RSA
Significant wildlife habitat	A failure of the TMF is likely to result in the net removal of SWH, or will reduce the availability or quality of SWH in the RSA,	A failure of the TMF is likely to result in net removal of SWH, or will reduce the availability or quality of SWH in the RSA,	A failure of the TMF is likely to result in net removal of SWH, or will reduce the availability or quality of SWH, resulting

Component	Low	Medium	High
	without a reduction in the overall function of SWH in the RSA	resulting in a reduction in the overall function of SWH in the RSA	in a reduction in the overall function of SWH in areas beyond the RSA
Migratory and breeding birds	A failure of the TMF is likely to result in the displacement of native foraging habitat for species well represented in the LSA and RSA, but with habitat functions maintained elsewhere in the RSA	A failure of the TMF is likely to result in the displacement of native foraging habitat for species well represented in the LSA and RSA, but with habitat functions maintained elsewhere in the RSA, together with the mortality of some individual migratory birds downstream of the TMF	A failure of the TMF is likely to result in the displacement of native foraging habitat for species well represented in the LSA and RSA, but with habitat functions maintained elsewhere in the RSA, together with the extensive mortality of migratory birds downstream of the TMF
Mammals	A failure of the TMF is likely to result in the loss or displacement of foraging habitat for species well represented in the LSA and RSA, but with habitat functions maintained elsewhere in the RSA	A failure of the TMF is likely to result in the loss or displacement of foraging habitat and important mating / birthing habitat for species well represented in the LSA and RSA, but with habitat functions maintained elsewhere in the RSA, together with the mortality of some individuals downstream of the TMF	A failure of the TMF is likely to result in the loss or displacement of foraging habitat and important mating / birthing habitat, and/or unique sites critical to population success; effects will change the viability of wildlife populations, and/or will result in the extensive mortality of mammals downstream of the TMF
Species at Risk (Threatened and Endangered)	Assessed as part of significant wildlife habitat	Assessed as part of significant wildlife habitat	Assessed as part of significant wildlife habitat
Tradition use of lands and resources	A TMF failure is likely to result in effects which may be noticeable and/or measureable, but represent a small change relative to existing conditions	A TMF failure is likely to result in effects which are likely to be noticeable and/or measureable, representing a moderate change relative to existing conditions	A TMF failure is likely to result in effects which represent a substantial change from existing conditions
Aboriginal cultural activities and special practices	A TMF failure is likely to result in effects which may be noticeable and/or measureable, but represent a small change relative to existing conditions	A TMF failure is likely to result in effects which are likely to be noticeable and/or measureable, representing a moderate change relative to existing conditions	A TMF failure is likely to result in effects which represent a substantial change from existing conditions

Table 5: Magino TMF Failure Receiving Water Quality Comparison with Protection of Aquatic Life Guidelines (data are expressed in mg/L)

eParameter	TMF Maximum Water Quality Concentrations based on the 2016 Site Water Balance and Quality TSD	TMF Maximum Water Quality Concentrations based on the 2014 Dam Breach Analysis Report	Factor of Difference between the 2014 and 2016 Values	Modeled Steep Hill Generating Station Reservoir Values from the 2014 Report (Day 3)	Modeled Whitefish Lake Reservoir Values from the 2014 Report (Day 3)	Steep Hill Generating Station Reservoir Values x 3.2 (Day 3)	Whitefish Lake Reservoir Values x 3.2 (Day 3)	EIS Protection of Aquatic Life Guideline[1]
Phosphorus	0.47	0.115	4.09	0.026	0.0260	0.0832	0.0832	0.02
Nitrate (N)	4.3	4.3	1.00	0.9484	0.9574	3.0348	3.0637	3
Ammonia (N)	3	2.39	1.26	0.527	0.5320	1.6864	1.7024	
Arsenic	0.019	0.0048	3.96	0.0011	0.0011	0.0035	0.0035	0.005
Cadmium	0.0009	0.00024	3.75	0.000054	0.000054	0.0002	0.0002	0.00019
Chromium (T)	0.005	0.0012	4.17	0.00027	0.0003	0.0009	0.0009	0.089
Cobalt	0.038	0.0093	4.09	0.0021	0.0021	0.0067	0.0067	0.004
Copper	0.47	0.1124	4.18	0.0248	0.0250	0.0794	0.0800	0.0229
Iron	0.29	0.235	1.23	0.052	0.0520	0.1664	0.1664	0.3
Manganese	0.14	0.122	1.15	0.027	0.0270	0.0864	0.0864	0.99
Nickel	0.009	0.0027	3.33	0.0006	0.0006	0.0019	0.0019	0.025
Silver	0.008	0.0018	4.44	0.0004	0.0004	0.0013	0.0013	0.00025
Vanadium	0.051	0.0123	4.15	0.0027	0.0027	0.0086	0.0086	0.006
Zinc	0.009	0.0043	2.09	0.0009	0.0010	0.0029	0.0032	0.0075
Lead	0.0019	0.0005	3.80	0.0001	0.0001	0.0003	0.0003	0.025
WAD Cyanide	4.7							
Total Cyanide	7.02	1.255	5.59	0.277	0.2800	0.8864	0.8960	0.02
Aluminum	0.23	0.065	3.54	0.014	0.0140	0.0448	0.0448	1.58
Boron	0.09	0.032	2.81	0.007	0.0070	0.0224	0.0224	1.5
Molybdenum	0.009	0.0043	2.09	0.001	0.0010	0.0032	0.0032	0.073
Selenium	0.005	0.0001		0.0001	0.0001	0.0003	0.0003	0.002
Chloride	40.5	10.26	3.95	2.27	2.2900	7.2640	7.3280	120
Thallium	0.0005	0.0002	2.50	0.00004	0.00004	0.0001	0.0001	0.0008
Average			3.20					

Notes: 1 – Protection of Aquatic Life Guideline from EIS Table 7-80 for Herman Lake

Exceeds guideline by greater than factor of 2 (applied only to columns 2, 7 and 8)

Exceeds guideline by greater than factor of 5 (applied only to columns 2, 7 and 8)

Exceeds guideline by greater than factor of 10 (applied only to columns 2, 7 and 8)

670000 680000 690000

5350000 5340000 5330000 5320000

Dubreuilville
Goudreau
Hawk Junction
Wawa
TMF
Inflow to Steep Hill Generating Station Reservoir
Steep Hill Generating Station Reservoir Dam
Inflow to Whitefish Lake Reservoir
Whitefish Lake Reservoir Dam
Delusion Lake
Lola Lake
Sausage Lake
Trout Lake
Goldie Lake
Soderston Ck
Iris Lake
Mountain Lake
Maskinonge Lake
Pine Lake
Davies Lake
Sutherland Lake
Troupe Lake
Herman Lake
Goudreau Lake
Goudreau Ck
Cradle Lakes
Morrison Lake
Evans Ck
Radford Lake
Godon Lake
Cawdron Lake
Reynolds Lake
Billboy Lake
Clearview Lake
Magpie River
Garbe Lake
Punk Lake
Big Lake
Manitowik Lake
West Andre Lake
Andre Lake
Pivot Lake
Goetz Lake
Josephine Creek
Scott Lake
Hawk River
Catfish Ck
Loonskin Lake
Michipicoten River
Hawk Lake
Lena Ck
Grant Lake
Whitefish Lake
Arliss Lake
Lena Lake
Lagarde Lake
Vanreek Lake
Borzoi Lake
Wawa Lake
Wawa Ck
Shikwamkwa River
Kinniwabi R
Catfish Ck

519 547 101 17

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LEGEND

- Tailing Management Facility (TMF)
- Herman Creek / Magpie River System TMF Dam Break Failure Route
- McVeigh Creek / Michipicoten River System TMF Dam Break Failure Route
- Contours (20 metre interval)

NOTES:
- Topograpgic information extracted from Land Information Ontario, MNRF.

Datum: NAD83
Projection: UTM Zone 16N

0 2.5 5 10 15 20 Kilometres

N W E S

PRODIGY GOLD INCORPORATED

wood.

MAGINO MINE

Dam Break Scenarios

PROJECT N°: TC180502 | **FIGURE: 1**

SCALE: 1:130,000 | DATE: May 2018