

**Valentine Gold Project: Country  
Foods Follow-up Monitoring  
Program**



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## Abbreviations

CEAA 2012	<i>Canadian Environmental Assessment Act, 2012</i>
CFFMP	Country Foods Follow-up Monitoring Program
EA	Environmental Assessment
EIS	Environmental Impact Statement
HHRA	Human Health Risk Assessment
IAAC	Impact Assessment Agency of Canada
km	Kilometer
LAA	Local Assessment Area
NLDECC	Newfoundland and Labrador Department of Environment of Climate Change
RAA	Regional Assessment Area
VC	Value Component

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## 1.0 INTRODUCTION

An Environmental Impact Statement (EIS) for the Valentine Gold Project (the Project) was submitted to the Impact Assessment Agency of Canada (IAAC) on September 29, 2020 and to the Environmental Assessment (EA) Division of the Newfoundland and Labrador of Environment and Climate Change (NLDECC) on November 3, 2020 by Marathon Gold Corporation (Marathon). The Project has been approved with conditions by IAAC and NLDECC.

The purpose of this Country Foods Follow-up Monitoring Program (CFFMP) is to outline the follow-up and monitoring activities that will be undertaken to verify predictions and commitments made in Chapter 14.5.2 (Change in Physical Health Conditions) of the EIS and the Human Health Risk Assessment (HHRA; Stantec 2021) for the Valentine Gold Project (the Project). Country foods includes terrestrial (plants, small and large mammals) and aquatic (fish) country foods that may be harvested from the Local Assessment Area (LAA). This document describes follow-up and monitoring activities for the construction, operation, and decommissioning/closure phases of the Project, based on regulatory compliance requirements and Project approvals and authorizations. This is a living document that will be reviewed, updated and improved upon based on policy and technology changes as the Project progresses through permitting, construction, operation and decommissioning of the Project.

The construction and operation of the Project are governed by an Environmental and Social Management System, which includes tools such as the corporate environmental and social policies, construction and operational environmental protection plans (EPPs), environmental management plans, and follow-up and monitoring programs, which will be updated as applicable throughout the life of the Project. An EPP for the construction phase of the Project has been approved by the NL Minister of Environment and Climate Change. The Construction EPP outlines protection and response measures associated with potential environmental effects related to Project construction activities, providing general environmental protection procedures related to Project construction activities and infrastructure such as air and greenhouse gas emissions, erosion and sedimentation control, rock and soils management, and traffic management, as well as specific protection procedures for caribou, avifauna, and other wildlife including bats and American marten; fish and fish habitat; historic resources; and the Victoria Dam.

The EPP is closely linked to the follow-up monitoring programs as it describes practical procedures to reduce or eliminate potential adverse environmental effects, as well as instructions for addressing planned and unplanned activities/events associated with Project construction. A process for the communication to Indigenous groups of potential adverse effects of planned Project activities upon the use of land and resources by Indigenous persons (including hunting, trapping, fishing and gathering, and access to lands and resources) is provided in the Current Use of Lands and Resources for Traditional Purposes Indigenous Communications Plan. Response measures in the event of an accidental event are described in Section 4 of the Accidents and Malfunctions Prevention and Response Plan (AMPRP). Additionally, communications and reporting requirements are provided in the Section 5 of the AMPRP as well as Appendix A with respect to communication specific to Indigenous groups.

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Marathon has developed a grievance mechanism to afford a process for addressing grievances on the part of non-Indigenous and Indigenous groups or Indigenous persons resulting from the effects of the Project to these users, such as effects to land and resource use, health, socio-economic conditions and heritage resources. In the event that grievances are received, these will be logged and investigated.

The follow-up monitoring program presented herein will be implemented throughout Project construction and operation and has been developed to meet the associated requirements identified during the environmental assessment process. The monitoring program is subject to refinements based on consultation with regulators, Indigenous groups, and conditions of authorization.


## 1.1 PROJECT OVERVIEW

Marathon proposes to develop the Valentine Gold Project (the Project), an open pit gold mine to be located in the west-central region of the Island of Newfoundland, near Valentine Lake. The Project will use standard surface mining techniques to mine gold ore from the Leprechaun and Marathon open pits. Ore material will initially be mined and processed at a nominal rate of 6,850 tonnes per day (tpd), increasing to 10,960 tpd in Year 4. Current estimates are for a total Project mine excavation of 453 million tonnes of combined ore and waste material. The total ore to be mined from the open pits is estimated to be approximately 41 million tonnes. Ore will be processed through the mill, where it will be crushed, milled and put through flotation and cyanidation processes to recover the gold. Separate stockpiles will be established for high-grade ore for priority processing and low-grade ore for processing later in the mine life. Tailings will be treated in the process plant area to remove the cyanide and subsequently deposited in an engineered tailings management facility in Years 1 to 9, then pumped to the exhausted Leprechaun open pit in Years 10 through 12. Gold will be formed into doré bars, which will be shipped from the site to refiners in secured trucks.

The construction of the Project is expected to take place over a period of approximately 20 months, followed by an estimated mine operation life of 12 years. The Project will operate 24 hours a day, seven days a week on a 12-hour shift basis. Upon cessation of mining, the operation will be closed, and the site components will be rehabilitated and monitored in accordance with applicable regulations at the time of closure.

## 1.2 GOALS AND OBJECTIVES

This document has been developed and prepared using currently available information. The objective of the CFFMP is monitor the quality of country foods harvested from within the LAA on an on-going basis to confirm that predictions are accurate and to address potential Indigenous or public concerns. This monitoring program will require updates based on further details regarding Project design, sequencing, and methods as they become available. It is anticipated that this plan will be updated during the permitting stage of Project planning (i.e., following regulatory review) and will be completed prior to the start of the monitoring program.

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### 1.3 REGULATORY SETTING

Under CEAA 2012, monitoring and follow-up is required to verify the accuracy of the conclusions of the environmental assessment and the effectiveness of the mitigation measures. In addition to CEAA 2012, this section identifies the primary regulatory requirements and policies of the federal and provincial authorities relevant to HHRA:

- Guidance for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment (Health Canada 2019)
- Guidance for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment: Air Quality (Health Canada 2017a)
- Guidance for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment: Country Foods (Health Canada 2017b)
- Guidance for Evaluating Human Health Impacts in Environmental Assessment: Human Health Risk Assessment: Drinking and Recreational Water Quality (Health Canada 2016a)

The HHRA guidance applicable to federal contaminated sites in Canada was also considered where applicable, including:

- Federal Contaminated Sites Risk Assessment in Canada: Guidance on Human Health Risk Preliminary Quantitative Risk Assessment (PQRA), version 3.0 (Health Canada 2021a)
- Federal Contaminated Sites Risk Assessment in Canada: Health Canada Toxicological Reference Values (TRVs), version 3.0 (Health Canada 2021b)
- Guidance Manual for the Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment, Volumes 1 to 4 (CCME 2016)
- Federal Contaminated Sites Risk Assessment in Canada, Part V: Guidance on Complex Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRA<sub>CHEM</sub>) (Health Canada 2010a)
- Federal Contaminated Site Risk Assessment in Canada: Supplemental Guidance on Human Health Risk Assessment for Country Foods (HHRA<sub>Foods</sub>) (Health Canada 2010b)

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## 2.0 BASELINE INFORMATION

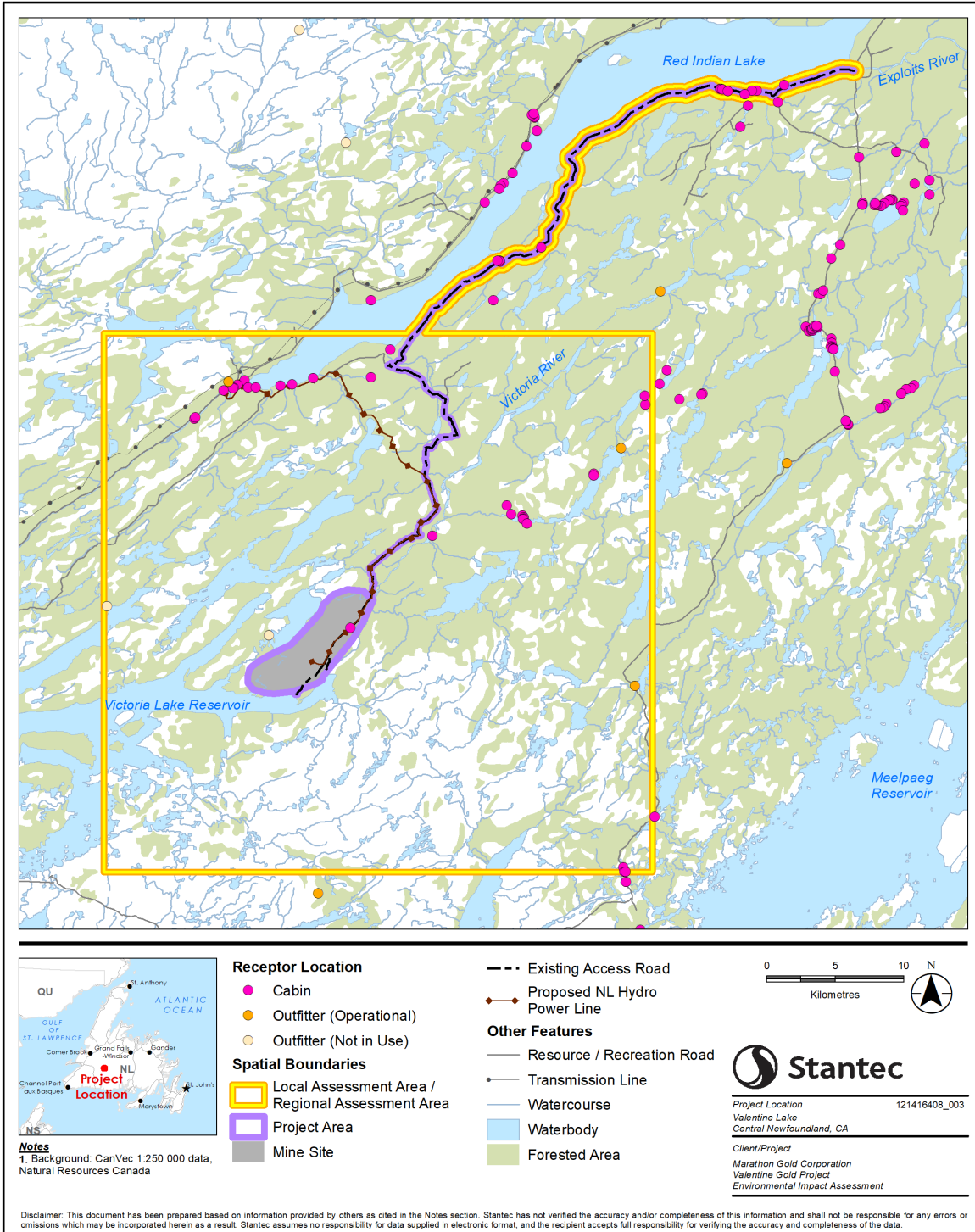
The Project is located in a rural region, with a history of mining exploration and development activities and other land and resource uses, including commercial forestry, hydroelectric developments, outfitting, and recreational land use. The mine site is accessed by an existing public access road that extends south from Millertown, approximately 88 kilometres (km) to Marathon’s existing exploration camp (Figure 2-1). Marathon will upgrade and maintain the access road from a turnoff approximately 8 km southwest of Millertown to the mine site, a distance of approximately 76 km.

The following spatial boundaries were used to assess Project effects, including residual environmental effects, on human health risk in areas surrounding the mine site and access road (Figure 2-1).

**Project Area:** The Project Area encompasses the immediate area in which Project activities and components occur and is comprised of two distinct areas: the mine site and the access road. The mine site includes the area within which Project infrastructure will be located, and the access road is the existing road to the site, plus a 20 metre (m) wide buffer on either side. The Project Area is the anticipated area of direct physical disturbance associated with the construction, operation, and decommissioning, rehabilitation and closure of the Project.

**Local Assessment Area:** The Local Assessment Area (LAA) for assessing potential changes in country food quality and physical health conditions consists of a 40 km by 40 km square area centered on the Project Area, plus a 500 m buffer on either side of the access road. This 40 km by 40 km area is the modelling domain used for dispersion modelling and includes receptors within and beyond the Project Area. As the future environmental conditions used to predict potential changes in human health risk are based on modelled future conditions from the Atmospheric Environment Valued Component (VC) (Chapter 5 of the EIS [Marathon 2020]) and the Surface Water VC (Chapter 7 of the EIS), the LAA for the HHRA employed the spatial boundaries from these VCs. The LAAs for these VCs were selected because the future conditions within these areas can be predicted or measured with a level of confidence that allows assessment of potential Project-related changes in human health risk. Areas of land and resource use that fall beyond the boundaries of the Atmospheric Environment and Surface Water LAAs will not be affected by Project activities and therefore will not contribute to potential exposures to Project-related emissions. Use of these lands and the harvesting of country foods from areas beyond the LAAs listed above would reduce the quantity of country foods harvested from within the LAAs and thereby reduce the potential exposures to Project-related COPC harvested within the LAA for the HHRA. Thus, land and resource areas beyond the Atmospheric Environment and Surface Water LAAs have not been included in the LAA for the HHRA.

**Regional Assessment Area:** The Regional Assessment Area (RAA) for the Atmospheric Environment is the same as the LAA. Thus, the RAA for the Atmospheric Environment was used to assess potential changes in physical health conditions.



**Figure 2-1 Project Location and Spatial Boundaries for the Assessment of Change in Physical Health Conditions**

## 2.1 BASELINE CONDITIONS

Baseline metal concentrations in country foods were established as part of the Country Foods sampling program (HHRA Appendix C; Stantec 2021). Baseline samples were collected from areas where Project-related effects would be most likely to occur and where country foods harvesting activities were identified as a current use of land and resources for traditional purposes in the EIS. The data from this program were used to establish baseline metal concentrations in terrestrial (plant and animal tissue) and aquatic (fish tissue) country foods. The methods used to collect these samples, as well as the analytical results and statistical analyses used to establish the exposure point concentrations for each metal in each tissue type are described in Appendix C of the HHRA (Stantec 2021). The baseline chemical concentrations in terrestrial and aquatic country foods identified in the Country Foods sampling program are summarized in Table 2.1.

As noted in Health Canada (2007), analysis of fish tissues typically involves measurement of total mercury (i.e., the sum of all chemical forms of mercury present), while from a human health perspective it is the amount of methylmercury that is of most interest since methylmercury is much more readily absorbed into the human blood stream. The portion of total mercury that is present in fish tissues is variable, even among fish of the same species (Health Canada 2007). For brook trout, the First Nations Food, Nutrition and Environment Study (Chan et al. 2021) reported that the mean concentration of methylmercury was 0.20 mg/kg while the mean total mercury concentration was 0.21 mg/kg (i.e., 95% of total mercury present as methylmercury). In the absence of detailed mercury speciation, it is simply assumed that 100% of total mercury in fish tissues is methylmercury for the purposes of health risk assessments (Health Canada 2007).

**Table 2.1 Summary of Baseline Metal Concentrations in Country Foods**

Chemical Parameter	Units	Snowshoe Hare		Labrador Tea	Blueberry	Brook Trout
		Internal Organs	Muscle Tissue			
		Baseline				
Aluminum	mg/kg - ww	1.46	7.69	8.65	10.3	0.628
Antimony	mg/kg - ww	<0.001	0.0019	0.0271	0.00346	0.0032
Arsenic	mg/kg - ww	0.068	0.0319	0.0132	0.0106	0.5
Barium	mg/kg - ww	0.303	0.639	28.8	3.013	0.41
Beryllium	mg/kg - ww	<0.001	<0.001	<0.0053	<0.0017	<0.001
Bismuth	mg/kg - ww	<0.001	<0.001	<0.0053	<0.0017	<0.001
Boron	mg/kg - ww	0.28	0.23	6.58	1.298	0.21
Cadmium	mg/kg - ww	1.49	0.0086	<0.00265	0.00117	0.0194
Calcium	mg/kg - ww	149	109	2352	232	1763
Chromium	mg/kg - ww	<0.01	0.079	<0.053	<0.017	0.0734
Cobalt	mg/kg - ww	0.0837	0.0163	0.0127	<0.0034	0.0163

**Table 2.1 Summary of Baseline Metal Concentrations in Country Foods**

Chemical Parameter	Units	Snowshoe Hare		Labrador Tea	Blueberry	Brook Trout
		Internal Organs	Muscle Tissue			
		Baseline				
Copper	mg/kg - ww	3.86	2.31	1.61	0.42	0.381
Iron	mg/kg - ww	434	35.9	13.0	2.64	6.55
Lead	mg/kg - ww	0.0356	0.0477	0.0161	0.0104	0.0732
Magnesium	mg/kg - ww	188	287	709	88.0	304
Manganese	mg/kg - ww	16.4	14.6	554	111	2.59
Mercury	mg/kg - ww	0.263	0.0027	<0.0053	<0.0017	0.128
Molybdenum	mg/kg - ww	0.298	0.0082	0.0161	0.00815	0.00478
Nickel	mg/kg - ww	0.036	0.028	0.229	0.0483	0.022
Phosphorus	mg/kg - ww	2740	2570	473.2	164	3656
Potassium	mg/kg - ww	2830	3680	2234	887	4285
Selenium	mg/kg - ww	0.901	0.242	0.0289	<0.0085	0.403
Silver	mg/kg - ww	0.0496	0.0014	<0.00265	<0.00085	0.00418
Sodium	mg/kg - ww	1350	715	6.37	4.46	514
Strontium	mg/kg - ww	0.241	0.112	6.68	0.97	1.74
Thallium	mg/kg - ww	0.0034	0.001	0.00854	0.000458	0.00888
Tin	mg/kg - ww	<0.02	0.039	<0.053	<0.017	0.0261
Titanium	mg/kg - ww	0.152	0.215	0.314	<0.085	0.195
Uranium	mg/kg - ww	<0.0004	<0.0004	<0.00106	<0.00034	0.00123
Vanadium	mg/kg - ww	<0.02	<0.02	<0.106	<0.034	0.025
Zinc	mg/kg - ww	21.6	20.5	7.06	1.09	14.8

## 2.2 POTENTIAL PROJECT EFFECTS

### 2.2.1 Terrestrial Country Foods

Project-related changes in the concentrations of the parameters of concern in soil will govern the Project-related changes in the quality of terrestrial country foods. Changes in country food quality could result in changes in human health risk associated with the consumption of country foods. The assessment of Project-related changes in metal concentrations in soil, resulting from deposition, determined that the maximum predicted Future Case concentrations of metals in soil (i.e., at the end of the operational life of the mine) would be less than 2% above Baseline Case concentrations, and for most of the metals the predicted increase from Baseline Case conditions was less than 1% (Stantec 2021). These nominal increases in metal concentrations in soil would not be expected to alter the quality of terrestrial county food from baseline conditions.

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### **2.2.2 Aquatic Country Foods**

The assessment of surface water quality determined that within 300 m of each receiving point, the concentrations of Project-related chemicals will have returned to baseline conditions (Section 7.6.2 of Chapter 7 [Surface Water Resources] of the EIS [Marathon 2020]). The areas within 300 m of each receiving point represent a very small portion of the surface water bodies and a correspondingly small proportion of the area likely to be inhabited by fish species targeted for consumption. Mercury was not detected in the geochemical testing of the ore samples (BSA.5, Attachment 5-B of the EIS [Marathon 2020]). The Project processes do not include the use of mercury. The results of the geochemical water quality modelling showed that the concentrations of mercury in Victoria Lake Reservoir, Valentine Lake and Victoria River would not change from Baseline Case concentrations (Chapter 7 [Surface Water Resources] of the EIS [Marathon 2020]). As a result, Project-related activities are not expected to alter the quality of aquatic country foods, or the potential human health risks associated with the consumption of aquatic country foods.

## **3.0 PROPOSED MITIGATION AND MANAGEMENT MEASURES**

The conclusions of the HHRA are based on the EIS which assessed potential changes in air, soil and surface water quality as described in Chapter 5 (Atmospheric Environment) and Chapter 7 (Surface Water Resources) of the EIS (Marathon 2020). The predictions provided in these sections incorporate consideration of mitigation measures to reduce the environmental effects of the Project. These mitigation measures also serve to address potential Project-related effects on terrestrial and aquatic country foods. As a result, additional mitigation measures specific to the protection of country food quality are not required. However, additional mitigation measures that may be identified as part of the Project approval and permitting will be incorporated in this document in subsequent updates.

## **4.0 MONITORING PROGRAM**

### **4.1 MONITORING OBJECTIVES**

The objective of the CFFMP is to monitor metal concentrations in terrestrial (plants, small and large mammals) and aquatic (fish) country foods over the construction, operation, decommissioning and post closure phases of the Project. Data from the CFFMP will be used to validate the country food quality and human health risk predictions presented in the HHRA and to address potential Indigenous or public concerns.

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## 4.2 APPROACHES

The CFFMP will focus on metals, including total mercury, in the same country foods and environmental media considered in the baseline assessment. The first sampling event (during construction) will also include analysis of methylmercury in fish tissue to establish the reasonableness of assuming 100% of total mercury in fish tissue occurs as methylmercury. Similarly, although methylmercury is estimated to constitute only 1% of the total mercury content of water (Health Canada 1986), and baseline surface water sampling did not detect mercury in 95% of the 618 surface water samples analysed, the first surface water sampling event (during construction) will include analysis of methyl mercury in surface water samples collected 100 m from receiving points in Victoria Lake Reservoir, Valentine Lake, and the Victoria River. The country foods and environmental media of interest and the rationale for inclusion in the country foods sampling program are as follows:

- **Fish** (Ouananiche, Artic Char, Brook Trout): Fish ingestion is an exposure pathway for Indigenous and non-Indigenous people who may harvest fish from within the LAA.
- **Soil**: Soil is one of the most important of the media considered. Indigenous and non-Indigenous people are exposed directly to soil, and the models used in the HHRA rely heavily on the soil concentrations to predict concentrations in various other media. In addition, existing soil concentrations represent the current conditions associated with historical deposition.
- **Blueberries** (*Vaccinium sp.*): Ingestion of the fruit is an exposure pathway for Indigenous and non-Indigenous people who may harvest berries from within the LAA.
- **Labrador Tea** (*Rhododendron sp.*): Ingestion of plants is a direct pathway for Indigenous and non-Indigenous people who may harvest these plants from within the LAA.
- **Snowshoe Hare** (*Lepus americanus*): Small mammals are exposed directly to soil and forage/browse as well as form an exposure pathway for Indigenous and non-Indigenous people who may harvest wild meat from within the LAA.
- **Large Mammals (Caribou or Moose)** Large mammals are exposed directly to soil and forage/browse as well as form an exposure pathway for Indigenous and non-Indigenous people who may harvest wild meat from within the LAA.

As noted in the HHRA, both people and animals within the LAA would be expected to move throughout the LAA (and possibly beyond the LAA) and thus, experience a range of metal concentrations. However, the HHRA conservatively assumed that 100% of exposures for both people and animals occur within the LAA; this results in overstating rather than understating the risk, as actual exposures would be lower for people and animals that spend time outside the LAA. Consistent with this approach and Health Canada guidance, the Country Foods Monitoring Program focuses on the exposure media that represent pathways for both people and animals at locations within the LAA most likely to be affected by Project activities and where harvesting could occur.

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## 4.3 METHODS

### 4.3.1 General Plan Considerations

The methods applied to the CFFMP will be consistent with the recommendations for characterization of biological site conditions recommended by CCME (CCME 2016). These include:

- **Monitoring Schedule:** Country food quality monitoring should be considered during each Project phase including:
  - Construction Phase: A minimum of 1 monitoring event during the typical harvest periods for terrestrial and aquatic country foods during construction.
  - Operations Phase: Project-related changes in country food quality depend on changes in soil and water quality in the LAA. If Project-related changes in soil and water quality occur, the changes will occur gradually over the operational life of the Project. Monitoring country food quality on a 5-year cycle over the operational life of the Project would be sufficient to identify potential changes in the quality of country foods harvested from within the LAA. Therefore, sampling for terrestrial country foods (and soil) should be sampled a minimum of once every 5 years; sampling for fish tissues should be completed as outlined in the Fish and Fish Habitat Follow-up Monitoring Program. As with other Project phases, monitoring should be conducted during the typical harvest periods for terrestrial and aquatic country foods.
  - Decommissioning & Closure Phase: A minimum of 1 monitoring event during the typical harvest periods for terrestrial and aquatic country foods during decommissioning and closure.
  - Post Closure: Project-related changes in terrestrial country food quality are dependent on Project-related changes in soil quality. Project-related changes in soil quality result from the deposition of metal containing dust onto surface soils. In the post-closure phase of the Project, Project-related dust deposition is not expected to occur, thus, two rounds of post-closure monitoring of terrestrial country food quality, conducted within the first ten years post-closure, should be sufficient to confirm terrestrial country food quality. Project-related changes in aquatic country food quality depend on changes on Project-related changes in water quality. Monitoring of fish tissue should be aligned with post-closure water quality monitoring and post-closure fish and fish habitat monitoring. Monitoring of post-closure aquatic country food quality could cease when post-closure water quality and fish and fish habitat monitoring cease.
- **Data Quality Objectives:** Data quality objectives for the terrestrial and aquatic country foods monitoring should be consistent with the CCME guidance (CCME 2016).
- **Quality Assurance/Quality Control:** Quality assurance/quality control procedures for the CFFMP will follow CCME 2016 guidance and, where appropriate, include consideration of reference standards, duplicate samples, replicate samples, and split samples.

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### 4.3.2 Specific Sampling Requirements

To address potential Indigenous or public concerns, country food samples will be collected, where possible, from the same locations used in the baseline assessment.

- **Terrestrial Sampling:** For each terrestrial species, a minimum of one sample will be collected from each location used in the baseline assessment as follows:
  - **Blueberries:** Blueberry samples will be collected from the same locations as the baseline program. If blueberries are no longer in season at the time of sampling, partridge berries will be collected as the alternative. A field duplicate will also be collected.
  - **Labrador Tea Leaves:** Similar to berry sampling, Labrador tea leaves will be collected from the same locations as the baseline program, one sample per location. If local custom uses only the new growth parts of the plant, then sample collection will need to focus on this part of the plant. A field duplicate will also be collected.
  - **Soil Sampling:** A soil sample will be collected from each vegetation sampling location and submitted for metals analysis. The soil samples will be representative of the rooting zone of the sampled plants. Two field duplicates will also be collected.
  - **Small Mammal Sampling (Snowshoe Hare):** The same locations as the baseline program will be targeted for snowshoe hare. Multiple snares will be placed at target locations, and muscle tissue and internal organs (including heart, liver, and kidney) samples from up to two animals per location submitted for analysis.
  - **Large Mammals (Caribou or Moose):** The baseline program did not include harvesting of large mammals. The large home ranges of these animals means that they are less likely to be affected by the localized changes in environmental quality that could result from dustfall or water quality. However, these are species of importance to Indigenous and non-Indigenous people. Therefore, if tissue samples can be provided by local hunters, incorporating this data into the CFFMP would be beneficial.
- **Aquatic Sampling:** Aquatic sampling will be completed by other on-going monitoring programs as noted below.
  - **Surface Water:** Sampling for surface water will be completed as outlined in the Surface Water monitoring programs and include locations in Valentine Lake, Victoria Lake and Victoria River.
  - **Fish Tissue Sampling:** Sampling for fish tissues will be completed as outlined in the Fish and Fish Habitat monitoring programs and include fish species of local importance collected from multiple locations within the assessment area. Because the sampling is being done to support an assessment of human health, the fillet portions of the fish will be submitted for analysis.

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#### 4.4 RESPONSE TO CHANGES IN COUNTRY FOODS QUALITY

To confirm that predictions and assumptions used in the HHRA and relied upon in the EIS are accurate, and address potential Indigenous or public concerns, adaptive management with respect to country foods would be initiated in the event of the following trigger thresholds:

- Concentrations of metals in soil are higher than the predicted concentrations identified in the HHRA
- Concentrations of metals in surface water samples collected 100 m from receiving points in Victoria Lake Reservoir, Valentine Lake and the Victoria River are not consistent with the predicted concentrations identified in the EIS
- Concentrations of metals in tissue concentrations of country foods are not consistent with baseline concentrations

If one of these trigger thresholds is identified, then the following actions will be completed:

1. **Confirm the results** – review field notes and discuss results with the laboratory to identify possible sources of error.
2. **Resample** - Complete an additional sampling event at the time of the next available harvesting event for the medium identified rather than the next scheduled monitoring event.
3. **Evaluate the dataset** - Compare the range of metal concentrations in source media (soil, water) and country foods tissues to determine if the trigger exceedance reflects the potential for a Project related effect.
  - a. If resampling indicates concentrations are below the trigger threshold, or not related to a Project-related effect, then no action is required and continue with the scheduled monitoring plan.
  - b. If exceedance of trigger level is validated, then evaluate the change in human health risk.
4. **Evaluate the change in human health risk** – characterize the human health risk related to the consumption of country foods (i.e., hazard quotients and incremental lifetime cancer risks, as appropriate) for both Baseline conditions and Current conditions consistent with most recent guidance from Health Canada to determine the potential for unacceptable risk. Discuss findings with relevant health agencies. More rigorous monitoring or more detailed assessment may be recommended. Notify relevant authorities if new mitigation is required. and document in annual report (Section 5).

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## 5.0 REPORTING

A report detailing the monitoring results for terrestrial and aquatic country foods will be provided following each monitoring year. Sampling of some media for Country Foods will be completed by other on-going monitoring programs, including the Surface Water and Fish and Fish Habitat Follow-up Monitoring programs, in which case summaries of the findings for those programs will be included in the Country Foods report. The information included in the report will contribute to adaptive management strategies to address the effectiveness of mitigation to reduce potential Project effects on a change in country food quality and the associated human health risks.

## 6.0 RELATED DOCUMENTS

Other environmental management plans and monitoring programs related to this follow-up monitoring program are described in Table 6.1.

**Table 6.1 Related Management Plans and Monitoring Programs**

Plan/Program	Details
Construction EPP	The Construction EPP provides general environmental protection procedures related to Project construction activities and infrastructure such as air and greenhouse gas emissions management; erosion and sedimentation control; rock and soils management; and traffic management. Also included are protection procedures specific to caribou, avifauna, and other wildlife (including bats and American marten); fish and fish habitat; historic resources; and the Victoria Dam. The Construction EPP also includes contingency plans for fuel and hazardous materials spills, failure of erosion and sediment control measures and/or dams, and forest fires.
Accidents and Malfunctions Prevention and Response Plan	The Accidents and Malfunctions Prevention and Response Plan outlines the mitigation measures and response measures for potential accidents and malfunctions. The Plan provides direction for communication and reporting requirements following an accident or malfunction. Potential accidents or malfunctions addressed include tailings management facility malfunction, stockpile slope failure, fuel and hazardous materials spill, unplanned release of contact water, fire/explosion, and vehicle accidents.
Fish and Fish Habitat Follow-up Monitoring Program	The Fish and Fish Habitat Follow-up Monitoring Program describes the monitoring of fish and fish habitat that will be conducted during Project construction and operation to meet regulatory requirements and verify predicted Project effects made in the EIS. The CFFMP will consider the fish and fish habitat monitoring results to assist with identifying the need for further mitigation and adaptive management measures.

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**Table 6.1 Related Management Plans and Monitoring Programs**

<b>Plan/Program</b>	<b>Details</b>
Surface Water Follow-up Monitoring Program	The purpose of the Surface Water Follow-up Monitoring Program is to confirm compliance with regulatory requirements, support predictions of effects of the Project on water quality, identify changes in drainage patterns and surface water flow, and determine if additional mitigation or response measures are required. The CFFMP will consider surface water monitoring results to assist with identifying the need for further mitigation and adaptive management measures.
Other Wildlife Follow-up Monitoring Program	The Wildlife Follow-up Monitoring Program links the predicted Project effects to mitigation, mitigation objectives to monitoring, and monitoring results to adaptive management actions. The CFFMP will consider the other wildlife monitoring results to assist with identifying the need for further mitigation and adaptive management measures.
Air Quality Emissions Follow-up Monitoring Program	The Air Quality Emissions Follow-up Monitoring Program has been developed to identify the ambient air quality monitoring to be conducted during Project construction, operation and decommissioning/closure, to meet federal and provincial ambient air quality standards and criteria. The CFFMP will consider air quality monitoring results to assist with identifying the need for further mitigation and adaptive management measures.
Avifauna Follow-up Monitoring Program	The Avifauna Follow-up and Monitoring Program has been developed to verify Project EIS predictions and evaluate the effectiveness of mitigation strategies for the environmental effects on avifauna and avifauna habitat (i.e., change in habitat and mortality risk), particularly as they relate to uncertainty in the assessment. In addition, the program establishes a framework for adaptive management that can be used to modify or enhance mitigation strategies for wildlife and wildlife habitat. The CFFMP will consider avifauna monitoring results to assist with identifying the need for further mitigation and adaptive management measures.

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