BW GOLD LTD
a subsidiary company of Artemis Gold Inc

Blackwater Gold Project

Country Foods Monitoring Plan

June 2022

Signature Page

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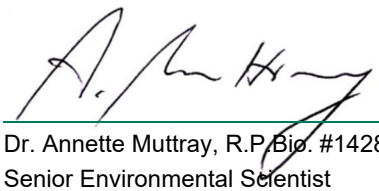

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ACRONYMS AND ABBREVIATIONS

Aboriginal Groups or Indigenous nations	Lhoosk'uz Dené Nation, Ulkatcho First Nation, Nadleh Whut'en First Nation, Saik'uz First Nation, Stellat'en First Nation and Nazko First Nation (as defined in the Project's Environmental Assessment Certificate #M19-01)
AEMP	Aquatic Effects Monitoring Plan
Application/EIS	Application for an Environmental Assessment Certificate/Environmental Impact Statement
AQDMP	Air Quality and Fugitive Dust Management Plan
Artemis	Artemis Gold Inc.
ASTM	American Society for Testing and Materials International
BACI	Before-after-control-impact
BC	British Columbia
Blackwater	Blackwater Gold Project
BMP	Best management practices
BW Gold	BW Gold LTD.
CAC	Criteria Air Contaminants
CALA	Canadian Association for Laboratory Accreditation
CCME	Council of Canadian Ministers of the Environment
CEO	Chief Executive Officer
CEQ	Commission on Environmental Quality
CFMP	Country foods monitoring plan
CM	Construction Manager
COC	Chain of custody
COO	Chief Operating Officer
COPC	Contaminant of potential concern
CSR	Contaminated Sites Regulation
DOC	Dissolved organic carbon
DM	Departmental Manager
DS	Decision Statement
EA	Environmental assessment
EAC	Environmental Assessment Certificate
EM	Environmental Manager

EMB	Environmental Management Board
EMLI	Ministry of Energy, Mine and Low Carbon Innovation
EMPR	Ministry of Energy, Mines, and Petroleum Resources (currently Ministry of Energy, Mines, and Low-carbon Initiatives, EMLI)
EMS	Environmental Management System
ENV	Ministry of Environment and Climate Change Strategy
EPC	Exposure point concentration
EPCM	Engineering, Procurement and Construction Management
ESL	Effects screening level
FWR	Freshwater reservoir
GM	General Manager
HHERA	Human health and ecological risk assessment
HHRA	Human health risk assessment
IAAC	Impact Assessment Agency of Canada
Indigenous groups or Aboriginal Peoples	Ulkatcho First Nation, Lhoosk'uz Dené Nation, Nadleh Whut'en First Nation, Stellat'en First Nation, Saik'uz First Nation, Nazko First Nation, Skin Tyee Nation, Tŝilhqot'in Nation, Métis Nation British Columbia, and Nee-Tahi-Buhn Band (as defined in the Project's federal Decision Statement)
km	Kilometre
LDN	Lhoosk'uz Dené Nation
LSA	Local Study Area
MDMER	Metal and Diamond Mining Effluent Regulations
MDL	Method detection limit
MMO	Major Mines Office
MoH	BC Ministry of Health
Mtpa	Million tonnes per annum
NH	Northern Health (Authority)
OAAQC	Ontario Ambient Air Quality Criteria
OMECP	Ontario Ministry of Environment, Conservation and Parks
PASS	Passive air sampling system
PM	Particulate matter
Project	Blackwater Gold Project
Proponent	BW Gold LTD.

QA/QC	Quality assurance/quality control
QP	Qualified Professional
SCP	Sediment control ponds
t/d	Tonnes per day
TSF	Tailings storage facility
UCLM	Upper confidence limit of the mean
UFN	Ulkatcho First Nation
VP	Vice President

1. INTRODUCTION

The Blackwater Gold Project (the Project) is located approximately 112 kilometres (km) southwest of Vanderhoof, 160 km southwest of Prince George, and 446 km northeast of Vancouver (Figure 1-1). The mine site is centered at latitude 53°11'22.872" N, and longitude 124°52' 0.437" W (375400 E, 5893000 N) on National Topographic System sheet 93F/02.

The Project is a greenfield gold and silver open-pit mine with associated ore processing facilities. The mine will have a life of mine of 23 years and will ramp up production in three phases: Year 1-5: 15,000 tonnes/day (t/d) (5.5 Million tonnes per annum [Mtpa]); Year 6-10: 33,000 t/d (12 Mtpa); and Year 11-23: 55,000 t/d (20 Mtpa; Artemis 2020). Ore will be processed in a plant by a combined gravity circuit and whole ore cyanide leach to recover gold and silver. The gold and silver will be recovered into a gold-silver doré product. Project layout at the end of the Operations phase is found on Figure 1-2.

The Project received Environmental Assessment Certificate #M19-01 (EAC) on June 21, 2019 under the 2002 *Environmental Assessment Act* and a Decision Statement (DS) on April 15, 2019 under the *Canadian Environmental Assessment Act, 2012* approving the Blackwater Project, with conditions. This document describes the Country Foods Monitoring Plan (CFMP) required to address the provincial EAC and federal DS conditions. The location of EAC and DS condition requirements in the CFMP are identified in concordance tables in Appendix A (Table A-1 for EAC conditions, Table A-2 for DS conditions), which include the following:

- in the EAC:
  - Condition 41: Country Foods Monitoring Plan;
  - Condition 2: Plan Development;
  - Condition 3: Adaptive Management; and
  - Condition 4: Consultation;
- in the DS:
  - Conditions 6.5, 6.11, 6.12 and 6.15: Health and Socio-economic Conditions and Current Use of Lands and Resources for Traditional Purposes;
  - Conditions 2.3 and 2.4: Consultation;
  - Conditions 2.5, 2.6, 2.7, 2.8, 2.9, and 2.10: Follow-up and Adaptive Management; and
  - Conditions 2.11, 2.12, and 2.13: Annual Reporting.

The Draft CFMP addresses the EAC and DS conditions in the bullet list above. After review and engagement with Indigenous groups and regulators and revisions to the Draft CFMP are completed by BW Gold, a CFMP Version 1.0 will be issued. The CFMP Version 1.0 will be the first, final version of the plan with subsequent Versions (e.g., Version 2, Version 3, etc.) issued when revisions to the plan are needed to reflect updates or adjustments to the CFMP over time.

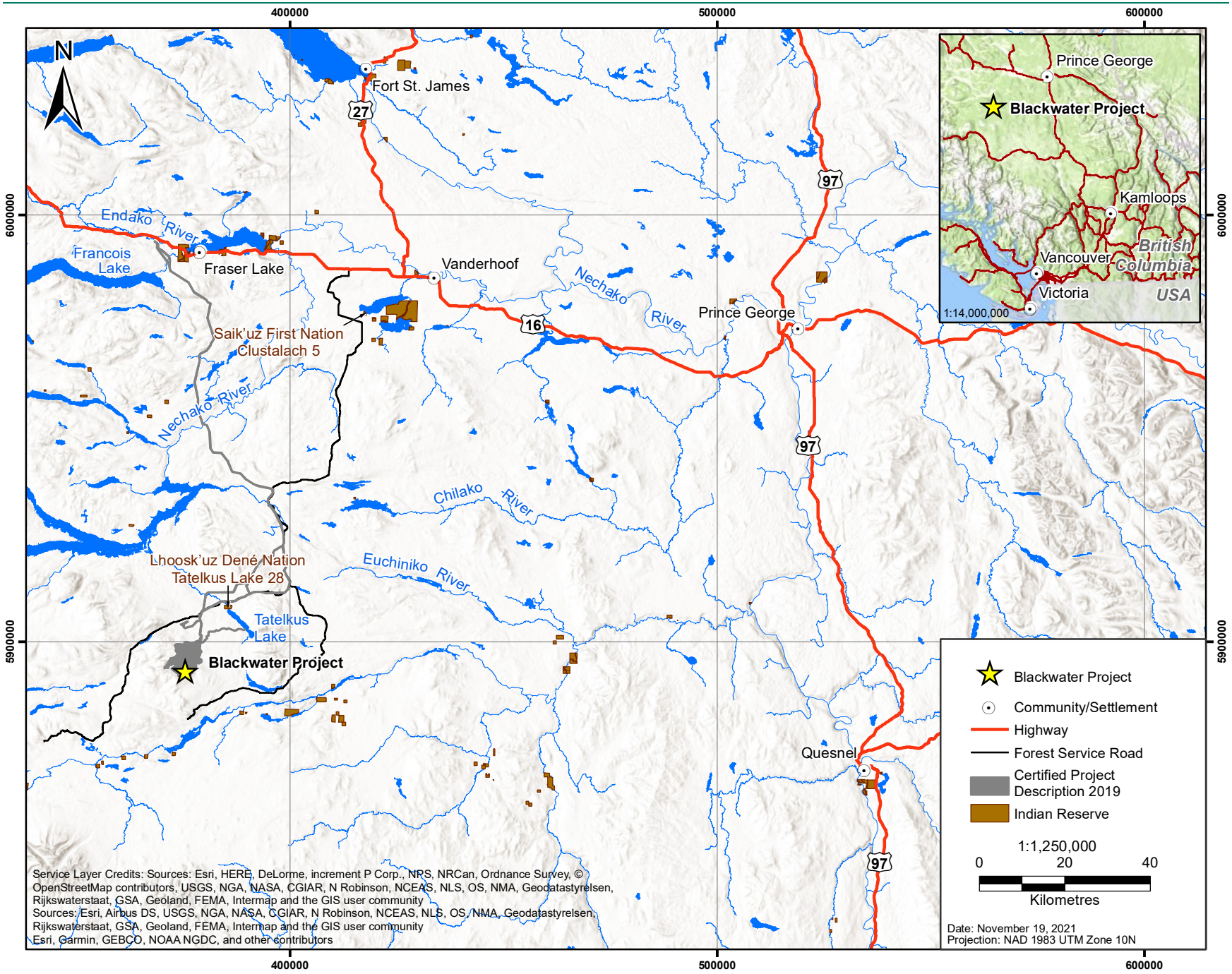

Figure 1-1: The Blackwater Gold Project Location

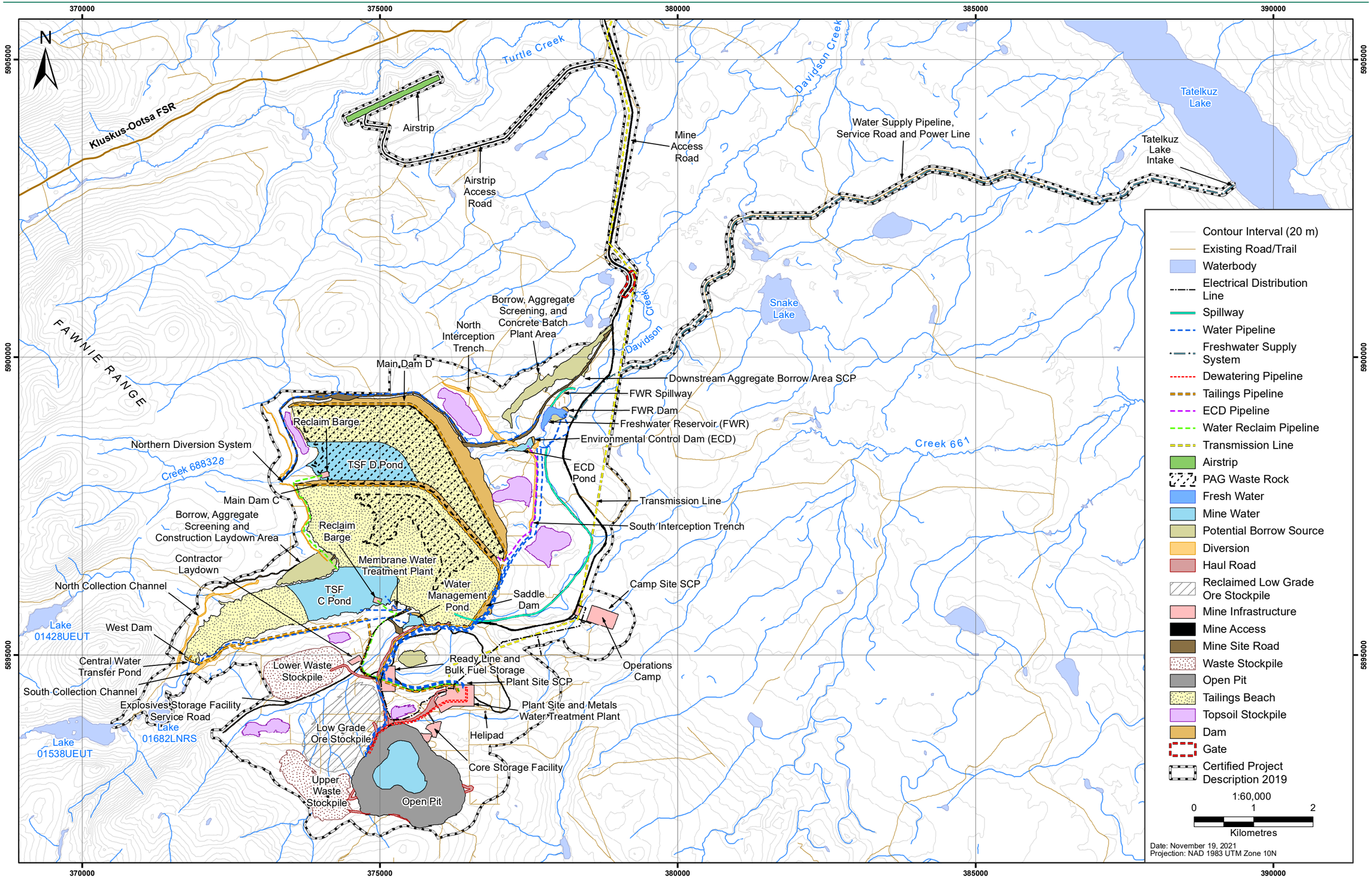

Figure 1-2: The Blackwater Gold Project Mine Plan

1.1 Purpose and Objectives

People may be exposed to contaminants of potential concern (COPCs) through inhalation of gases or particulates in air or ingestion of surface water, soil (incidental), or country foods such as plants and berries, fish, mammals, or birds. As a result of mining, mineral processing, or related activities, changes in concentrations of COPCs in environmental media, like surface water or soil, can influence the concentrations of the COPCs in plants, berries, fish, mammals, or birds (from uptake of COPCs through ingestion of environmental media or food) that may then be eaten by people as country foods. If concentrations or exposures are high enough, there is the potential for human health to be affected by exposure to the COPCs in environmental media or country foods.

The purpose of the CFMP is to identify and mitigate potential adverse effects on the health of Indigenous Peoples and other land users as a result of the Project. As stated in the federal DS, objectives of the CFMP are:

- *"to verify the accuracy of the environmental assessment as it pertains to adverse environmental effects of the Designated Project on the health of Indigenous Peoples caused by changes in concentrations of contaminants of potential concern in water, soil, vegetation and wildlife, including fish"* (Condition 6.11 of the Decision Statement). No adverse effects to Indigenous or non-Indigenous health were identified in the environmental assessment, so the CFMP is intended to confirm that assessment.
- to identify *"levels of environmental change relative to baseline conditions that would require the Proponent to implement modified or additional mitigation measure(s)"* (Condition 2.5.4 of the Decision Statement).

To achieve the first objective, the CFMP is designed to enable the identification of environmental changes in areas closest to the Project mine site where environmental changes are most likely to occur (near field sites), as well as extent of changes through the inclusion of sites further away from Project-related sources of COPCs (mid field sites). The CFMP will ensure collection of environmental monitoring data for comparison to what was predicted in the human health risk assessment (HHRA; Entia 2021). To achieve the second objective, the CFMP includes an adaptive management framework and triggers or thresholds for when additional actions or mitigation would be required.

However, an additional objective that is not explicitly laid out in the federal Decision Statement or EAC Condition 41 is to generally measure and assess the potential risks related to the concentrations of COPCs in country foods that people may be consuming. This more general objective is to provide local land users with information about the quality of environmental media and country foods within the study area and identify any changes, trends, or concerns that are currently existing or that may occur in the future. Thus, monitoring proposed under the CFMP is a balance between sampling where Project-related environmental changes may be highest but that may have lower relevance to consumers of country foods (e.g., near field sites). Monitoring proposed will also include evaluation of the quality of the country foods that people are more likely to be consuming, which may be from areas where Project-related effects are less likely or are not expected to occur (e.g., mid field or control sites).

1.2 Roles and Responsibilities

1.2.1 Proponent Roles and Responsibilities

BW Gold has the obligation of ensuring that all commitments are met and that all relevant obligations are made known to mine personnel and site contractors during all phases of the mine life. A clear understanding of the roles, responsibilities, and level of authority that employees and contractors have when working at the mine site is essential to meet Environmental Management System (EMS) objectives.

Table 1.2-1 provides an overview of general environmental management responsibilities during all phases of the mine life for key positions that will be involved in environmental management. Other positions not specifically listed in Table 1.2-1 but who will provide supporting roles include independent environmental monitors, an Engineer of Record (EOR) for each tailings storage facility and dam, an Independent Tailings Review Board (ITRB), TSF qualified person, geochemistry qualified professional, and other qualified persons and qualified professionals.

Table 1.2-1: Blackwater Roles and Responsibilities

Role	Responsibility
Chief Executive Officer (CEO)	The CEO is responsible for overall Project governance. Reports to the Board.
Chief Operating Officer (COO)	The COO is responsible for engineering and Project development and coordinates with the Mine Manager to ensure overall Project objectives are being managed. Reports to CEO.
General Manager (GM) Development	The GM is responsible for managing project permitting, the Project's administration services and external entities, and delivering systems and programs that ensure Artemis's values are embraced and supported: Putting People First, Outstanding Corporate Citizenship, High Performance Culture, Rigorous Project Management and Financial Discipline. Reports to COO.
Vice President (VP) Environment & Social Responsibility	The VP Environment & Social Responsibility is responsible for championing the Environmental Policy Statement and EMS, establishing environmental performance targets and overseeing permitting. Reports to COO.
Mine Manager	The Mine Manager, as defined in the *Mines Act*, has overall responsibility for mine operations, including the health and safety of workers and the public, EMS implementation, overall environmental performance and protection, and permit compliance. The Mine Manager may delegate their responsibilities to qualified personnel. Reports to GM.
Construction Manager (CM)	The CM is accountable for ensuring environmental and regulatory commitments/ and obligations are being met during the construction phase. Reports to GM.
Environmental Manager (EM)	The EM is responsible for the day-to-day management of the Project's environmental programs and compliance with environmental permits, updating EMS and MPs. The EM or designate will be responsible for reporting non-compliance to the CM, and Engineering, Procurement and Construction Management (EPCM) contractor, other contractors, the Company and regulatory agencies, where required. Supports the CM and reports to Mine Manager.
Departmental Managers	Departmental Managers are responsible for implementation of the EMS relevant to their areas. Report to Mine Manager.
Indigenous Relations Manager	Indigenous Relations Manager is responsible for Indigenous engagement throughout the life of mine. Also responsible for day-to-day management and communications with Indigenous groups. Reports to VP Environment & Social Responsibility.
Community Relations Advisor	Community Relations Advisor is responsible for managing the Community Liaison Committee and Community Feedback Mechanism. Reports to Indigenous Relations Manager.
Environmental Monitors	Environmental Monitors (includes Environmental Specialists and Technicians) are responsible for tracking and reporting on environmental permit obligations through field-based monitoring programs. Report to EM.

Role	Responsibility
Aboriginal Monitors	Aboriginal Monitors are required under EAC condition 17 and will be responsible for monitoring for potential effects from the Project on the Aboriginal interests. Aboriginal Monitors will be involved in the adaptive management and follow-up monitoring programs. Report to EM.
Employees and Contractors	Employees are responsible for being aware of permit requirements specific to their roles and responsibilities. Report to departmental managers.
Qualified Professionals (QPs) and Qualified Persons	QPs and qualified persons will be retained to review objectives and conduct various aspects of environmental and social monitoring as specified in EMPs and social MPs.

BW Gold will employ a qualified person as an EM who will ensure that throughout the Construction phase the EMS requirements are established, implemented and maintained, and that environmental performance is reported to management for review and action. The EM is responsible for retaining the services of qualified persons or qualified professionals with specific scientific or engineering expertise to provide direction and management advice in their areas of specialization. The EM will be supported by a staff of Environmental Monitors that will include Environmental Specialists and Technicians and by a consulting team of subject matter experts in the fields of environmental science and engineering.

During the Construction phase, the Engineering, Procurement and Construction Management (EPCM) contractor and sub-contractors will report to the CM. The EPCM contractor will be responsible for ensuring that impacts are minimized, and environmental obligations are met during the Construction phase. For non-EPCM contractors, who will perform some of the minor works on site, the same reporting structure, requirements, and responsibilities will be established as outlined above. BW Gold will maintain overall responsibility for management of the construction and operation of the mine site and will, therefore, be responsible for establishing employment and contract agreements, communicating environmental requirements, and conducting periodic reviews of performance against stated requirements.

The CM is accountable for ensuring that environmental and regulatory commitments/obligations are being met during the Construction phase. The EM will be responsible for ensuring that construction activities are proceeding in accordance with the objectives of the EMS and associated MPs. The EM or designate will be responsible for reporting non-compliance to the CM, and EPCM contractor, other contractors, the Company and regulatory agencies, where required. The EM or designate will have the authority to stop any construction activity that is deemed to pose a risk to the environment; work will only proceed when the identified risk has been addressed and concerns rectified.

Environmental management during operation of the Project will be integrated under the direction of the EM, who will liaise closely with Departmental Managers and will report directly to the Mine Manager. The EM will be supported by the Company Corporate Office and VP of Environment and Social Responsibility in order to provide an effective and integrated approach to environmental management and ensure adherence to corporate environmental standards. The EM will be accountable for implementing the approved management plans and reviewing them periodically for effectiveness. Departmental Managers (e.g., mining, milling, and plant/site services) will be directly responsible for implementation of the EMS and MPs and standard operating procedures relevant to their areas. All employees and contractors are responsible for daily implementation of the practices and policies contained in the EMS.

During Closure and Post-closure staffing levels will be reduced to align with the level of activity associated with these phases. Prior to initiating closure activities, BW Gold will revisit environmental and health and safety roles and responsibilities to ensure the site is adequately resourced to meet permit monitoring and reporting requirements. The Mine Manager will have overall responsibility for closure and post-closure activities at the mine site.

Pursuant to Condition 19 of the Project's EAC #M19-01, BW Gold has established an Environmental Monitoring Board (EMB) to facilitate information sharing and provide advice on the development and operation of the Project, and the implementation of EAC conditions, in a coordinated and collaborative manner. Committee members include representatives of the Environmental Assessment Office (EAO), Ulkatcho First Nation (UFN), Lhoosk'uz Dené Nation (LDN), Nadleh Whut'en First Nation, Stellat'en First Nation, Saik'uz First Nation, Nazko First Nation, Ministry of Energy, Mines and Low Carbon Innovation (EMLI), Ministry of Environment and Climate Change Strategy, and Ministry of Forests, Lands, Natural Resource Operations and Rural Development.

Pursuant to Condition 17 of the EAC, Aboriginal Group Monitor and Monitoring Plan, BW Gold will retain or provide funding to retain a monitor for each Aboriginal Group prior to commencing construction and through all phases of the mine life. The general scope of the monitor's activities will be related to monitoring for potential effects from the Project on the Aboriginal Group's Aboriginal interests.

Specific to the CFMP and as indicated in Section 1.3.1, one or more QPs will be responsible for the design and implementation of the CFMP, including data analysis, interpretation, recommendations, and reporting. An acknowledgement or signature page will be provided in all reports to identify the QP(s) responsible for the report and the section(s) for which they were responsible (if more than one QP is responsible).

Sampling required under the CFMP will be completed by qualified persons or professionals under the supervision of the QP for the CFMP and samplers will be competent in proper sample collection and handling techniques. Standard operating procedures (SOPs) for field sampling will be developed for each component of the CFMP (i.e., criteria air contaminants [nitrogen dioxide, sulfur dioxide, particulate matter], dust, surface water, fish tissue, soil, and berry and plants). The SOPs will be appended to the CFMP once reviewed by Indigenous groups and regulators. Samplers will follow the SOPs and will make note of any deviations from the SOPs during field sampling so the QP can determine what implications, if any, the deviation from the SOP may have on monitoring results. The QP for the CFMP will be responsible for ensuring that SOPs are reviewed and updated periodically (with opportunity for review by Indigenous groups and regulators) to reflect changes in guidance documents and standard field practices over time.

1.3 Compliance Obligations, Guidelines, and Best Management Practices

The CFMP has been developed in accordance with federal and provincial legislative requirements, EAC and federal DS conditions, and guidelines and best management practices (BMPs), as described in the following sections.

1.3.1 Qualified Professionals

As required by EAC Condition 41, the CFMP was prepared and will be implemented by qualified professionals (QPs), including those shown on the signature page for this document. A QP is a person who has training, experience, and expertise in a discipline relevant to the field of practice set out in the condition, is registered with a professional organization enabled under an Act who must follow a code of ethics issued by the professional organization, perform her or his duties in the public interest, and can be subject to disciplinary action by the organization.

1.3.2 Legislation and Regulations

While there is legislation and/or regulations related to various aspects of human health or public health (e.g., *Public Health Act* and associated regulations, *Environmental Management Act* and associated *Contaminated Sites Regulation*, *Drinking Water Protection Act*) there are no acts or regulations pertaining specifically to country foods. Applicable federal and provincial legislation includes *United Nations Declaration on the Rights of Indigenous Peoples Act* (2021) and *Declaration on the Rights of Indigenous Peoples Act* (2019), respectively.

1.3.3 Environmental Assessment Certificate and Decision Statement Conditions

As stated in Section 1, EAC Conditions 2, 3, 4, and 41 (Appendix A-1) and federal DS conditions 6.11, 6.12, 6.15, and 2.5 to 2.13 (Appendix A-2) are applicable to the CFMP and follow-up program.

1.3.4 Permit Requirements

As described in the *Joint Application Information Requirements for Mines Act and Environmental Management Act Permits* (BC Energy, Mines and Petroleum Resources/BC Ministry of Environment and Climate Change [ENV] 2019), any areas of known or suspected contamination must be addressed prior to mine closure. This may be done through site remediation and/or completion of a human health and ecological risk assessment (HHERA). The HHERA may be used to ensure that reclamation and closure objectives will be achieved in a manner that will not result in adverse effects to people or other biota.

While there are currently no specific permit requirements related to country foods or human health, a HHERA may include a country foods component for areas where country foods are used by Indigenous populations or other land users.

1.3.5 Guidelines and Best Management Practices

Country foods (or human health) risk assessments and country foods monitoring programs are guided by various guidance documents and informed by current and scientific best management practices. Federal and provincial guidance includes:

- *British Columbia Guidance for Prospective Human Health Risk Assessment* (BC MOH 2021);
- *Federal Contaminated Sites Risk Assessment in Canada, Part I: Guidance on Human Health Preliminary Quantitative Risk Assessment (PQRA), Version 3.0 (Health Canada 2021a)*;
- *Federal Contaminated Sites Risk Assessment in Canada, Part II: Health Canada Toxicological Reference Values (TRVs) and Chemical-Specific Factors, Version 3.0 (Health Canada 2021b)*;
- *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: Country Foods* (Health Canada 2018);
- *Technical Guidance 7 on Contaminated Sites – Supplemental Guidance for Risk Assessment* (BC ENV 2017);
- *Federal Contaminated Sites Risk Assessment in Canada: Interim Guidance on Human Health Risk Assessment for Short-Term Exposure to Carcinogens at Contaminated Sites* (Health Canada 2013); and
- *Federal Contaminated Sites Risk Assessment in Canada, Part V: Guidance on Human Health Detailed Quantitative Risk Assessment for Chemicals (DQRA$_{Chem}$)* (Health Canada 2010).

1.4 Linkages to Other Management and Monitoring Plans

A series of management and monitoring plans have been developed for the Project. Many of these plans outline monitoring commitments relevant to the CFMP objectives and, where possible, the sampling requirements under other plans align with the sampling requirements for the CFMP. The CFMP relies on the monitoring and associated results from several of the plans, as follows:

- Aquatic Effects Monitoring Plan (AEMP):
  - Data collected under the AEMP will be used to fulfill requirements for CFMP sampling of water and fish tissue (EAC Condition 41(d)(vi) and 41(d)(vii), federal Decision Statement condition 6.11).
  - The AEMP outlines requirements for monitoring of water and fish tissue at various locations in the aquatic receiving environment and at reference[1] sites.
  - Water and fish (juvenile Rainbow Trout) tissue samples will be co-collected at stream sites including near-field impact sites in Davidson Creek (DC-05 and DC-15) and Creek 661 (661-05 and 661-10), and reference sites in Creek 705 (705-05, 705-10) and a Fawnie Creek tributary (FC-01). Sampling will also be done in Turtle Creek (TC-01, TC-05, and TC-10) once the airstrip is constructed for the Project.
  - Water and fish (adult Kokanee, Rainbow Trout, and Mountain Whitefish) tissue samples will be co-collected at lake sites including Tatelkuz Lake (potential impact site) and Kuyakuz Lake (reference lake).
- Air Quality and Fugitive Dust Management Plan (AQDMP):
  - Data collected under the AQDMP will be used to fulfill requirements for CFMP sampling of meteorological conditions and criteria air contaminants (CACs; EAC Condition 41(d)(iii), federal Decision Statement condition 6.12).
  - The AQDMP outlines requirements for monitoring of meteorological conditions (e.g., air temperature, relative humidity, precipitation, wind speed and direction, barometric pressure, snow depth, net radiation, and solar radiation) in two locations.
  - The AQDMP also includes monitoring of CACs including particulate matter (PM) of less than 10 microns in diameter (PM_{10}) and less than 2.5 microns in diameter ($PM_{2.5}$), nitrogen dioxide (NO_2), and sulfur dioxide (SO_2).

[1] The CFMP refers to the reference sites of the AEMP as control sites.

2. ENGAGEMENT AND CONSULTATION

2.1 Approach to Engagement and Consultation with Indigenous Groups

Implementing the CFMP will be responsive to Indigenous group's and public concerns from planning through execution. Plans will be informed by meetings with Indigenous groups, regulators, and community members to ensure their issues and concerns are addressed in the plan. Adjustments to the plan will be accommodated where feasible.

There have been and will continue to be opportunity for input and feedback from Indigenous groups and regulators while the Draft CFMP is being developed and once a Version 1.0 (first 'final' version after review and acceptance of the Draft CFMP) is issued.

2.1.1 Engagement and Consultation prior to Availability of a Draft CFMP

During the preparation of the Draft CFMP and to support field program design for summer 2021, BW Gold engaged with Ulkatcho First Nation (UFN) and Lhoosk'uz Dené Nation (LDN) as part of the regular Blackwater Environmental Management Board (EMB) meetings to discuss the preliminary proposed sampling plans for the CFMP required by EAC Condition 41. The first discussion on May 5, 2021 included a presentation of the preliminary plans for sampling under the CFMP in both aquatic and terrestrial environments. During the meeting, UFN, LDN, and their consultants (Keefer Ecological Services Ltd.) were invited to provide input and feedback on the preliminary proposed sampling plans.

Draft comments, along with an Excel list of species to target in the CFMP, were provided by UFN and LDN to BW Gold in an Excel tracking spreadsheet on June 2, 2021. Comments included topics such as:

- Administrative issues (e.g., format and results, timelines, involvement of Health Canada or Indigenous groups other than UFN and LDN, identification of guidance documents);
- Sampling frequency (annually versus every three years) for all environmental media or tissues;
- Fish and water sampling locations (lakes versus streams) and type of sampling (adult versus juvenile fish);
- Soil and plant sampling (e.g., species to target, parts of plants, co-collection of soil, definition of near field vs. mid field vs far field sampling locations);
- Request for arsenic speciation analysis; and
- Request for insect sampling.

As a result of the input and feedback received from the UFN and LDN, the proposed sampling plan for the CFMP was revised to include:

- Sampling frequency was proposed to be set to annually initially (rather than every three years) in the initial draft of the CFMP, with a framework to decrease sampling frequency if effects were not identified and a minimum sampling frequency of once every three years.
- Sampling of fish tissue from adult fish (Kokanee [*Oncorhynchus nerka*], rainbow trout [O*ncorhynchus mykiss*], and whitefish [*Prosopium williamsoni*]) from Tatelkuz Lake and Kuyakuz Lake (control site) were added to the sampling plan, rather than focusing only on Rainbow Trout in the stream sites closest to the mine site. Sampling of fish tissue from locations where there is Kokanee spawning habitat (e.g., lower Davidson Creek, Chedakuz Creek) is not recommended to ensure that this important fish habitat is not altered or damaged by methods requiring in-creek sampling.

- Expand scope of soil and vegetation sampling to include three plants (willow species [*Salix* sp.], sedge species [*Carex* sp.], huckleberry [*Vaccinium membranaceum*] leaves/stems] and mixture of berries, with soil co-collected at each site.
- Include arsenic speciation in tissue analysis for country foods eaten by people (e.g., fish, berries) to confirm the assumptions used in the HHRA.
- Insect sampling was not included in the revised sampling plan as sampling of insects for the purposes of country foods monitoring was not recommended by the QP for the following reasons: insects are not eaten by people; insects are not eaten by the country foods species most commonly eaten by people; insects are unlikely to provide more information than soil and plant or berry sampling; accumulation of metals in insects may not be representative of accumulation in mammals or birds as physiology is very different; and insect sampling does not meet the requirement of EAC Condition 41 for small mammal sampling. BW Gold proposes to use donated game meat samples and a small mammal (rodent) sampling program as direct measures of parameter concentrations in mammal tissues (see Section 4.5) instead of using insects as a surrogate.

The revised CFMP sampling plans were presented and discussed at a meeting on July 29, 2021. During the meeting, UFN, LDN, and their consultants (Keefer Ecological Services Ltd.) provided additional feedback indicating that the species identified for plant and berry sampling did not sufficiently consider culturally important plant species. Soapberry (*Shepherdia canadensis*, also known as soopolallie), Labrador tea [usually *Rhododendron* sp.], and medicinal plants were mentioned as being absent from the preliminary proposed program.

Following the July 29, 2021 meeting, BW Gold adjusted field sampling plans for August 2021 to include additional target species of plants and berries for sampling. Field sampling included three days of initial reconnaissance to identify spatial distribution of key plant and berry species including stinging nettle (*Urtica dioica*), blueberries (*Vaccinium* sp.), soapberries, cow parsnip (*Heracleum lanatum*), nodding onion (*Allium cernuum*), fireweed (*Epilobium angustifolium*), raspberries (*Rubus idaeus*), huckleberries, kinnikinnick (*Arctostaphylos urva-ursi*), willow, yarrow (*Achillea millefolium*), and red osier dogwood (*Cornus stolonifera* or *C. sericea*). After the initial reconnaissance, several plant and berry species were identified that had good spatial distribution across the study area and were targeted for sample collection including willow, sedge, Labrador tea, huckleberry and blueberry, and soapberry.

On October 14, 2021, BW Gold provided UFN/LDN an update on baseline sampling of fish tissue, soil, plants, and berries that was completed in August 2021. These baseline data will form the foundation for future monitoring under the CFMP and were available in Q4 2021, with a report prepared in late Q4 2021 or early Q1 2022.

2.1.2 Engagement and Consultation on Draft CFMP Plan prior to Regulatory Submission and during Regulatory Review

BW Gold is committed to continuing to work with Indigenous groups to refine monitoring locations and CFMP sampling program design, including consideration of additional sampling locations based on consultation with Indigenous elders. Feedback from Indigenous groups, if any, will be considered in future iterations of the CFMP.

BW Gold provided a draft CFMP to the Indigenous groups for review in advance of submission to regulators. BW Gold considered the comments, input, and feedback provided by Indigenous group reviewers to finalize the draft CFMP prior to formal submission of the draft CFMP for regulator review.

In addition to providing written responses to each comment received, as a result of the input and feedback received from the UFN and LDN, BW Gold updated this draft CFMP to include:

- Changes to the proposed monitoring frequency under the CFMP. During discussions prior to the sharing of the initial draft CFMP, UFN and LDN had provided a request for annual monitoring under the CFMP, with an understanding that frequency would decrease if no significant changes were noted (see Section 2.1.1). However, following Indigenous group review of the initial draft CFMP, additional comments, and discussion with UFN and LDN in early December 2021, monitoring frequencies were reverted back to once every three years in this draft CFMP (Section 4). Rationale for the selection of this monitoring frequency was added to the draft CFMP.
- Rationale for the selection of impact *vs*. control sites and site selection in general, was added to Section 4.
- Clarification regarding the minimum suite of parameters to be included in laboratory analysis of samples was added to Section 3 and 4.
- Addition of text to explain how data collected under the small mammal sampling program, specifically data collected from analysis of donated country foods samples, would be used (Section 4.5).
- Addition of some management responses to the adaptive management framework in Tables 6.3-1 to 6.3-5 (Section 6.3).
- A new appendix (Appendix B) showing the details of soil, plant, and berry sampling locations including UTM coordinates and classification of each site based on distance from the mine site.
- Minor text and editorial edits.

As required by EAC Condition 41, the draft plan will be submitted to regulators and Indigenous groups at least 60 days prior to the start of Construction phase.

Once the draft CFMP is submitted for regulatory review, Indigenous groups, regulators, and others will be invited to review the draft CFMP and provide comments; the timeline for comments will be determined after the draft CFMP is submitted based on input from all stakeholders. BW Gold will receive, consider, and respond to all comments received from reviewers. The responses to comments may include providing additional rationale or explanations or making changes to the Draft CFMP. At the completion of the draft CFMP review, a CFMP Version 1.0 will be completed and issued that incorporates all changes made to the draft CFMP during review and is compliant with the requirements under the EAC and federal DS.

2.1.3 Future Engagement and Consultation on the Final CFMP

It is expected that the CFMP may be revised and updated over time as part of the adaptive management framework (i.e., adjustments based on results of monitoring). Conditions 2.3 and 2.4 of the federal DS requires that the Proponent shall consult with Indigenous groups and reach consensus as follows:

> *"2.3 The Proponent shall, where consultation is a requirement of a condition set out in this Decision Statement:*
>
> *2.3.1 provide a written notice of the opportunity for the party or parties being consulted to present their views and information on the subject of the consultation;*
>
> *2.3.2 provide all information available and relevant on the scope and the subject matter of the consultation and a period of time agreed upon with the party or parties being consulted, not less than 15 days, to prepare their views and information;*
>
> *2.3.3 undertake a full and impartial consideration of all views and information presented by the party or parties being consulted on the subject matter of the consultation;*

2.3.4 strive to reach consensus with Indigenous groups; and

2.3.5 advise the party or parties being consulted on how the views and information received have been considered by the Proponent including a rationale for why the views have, or have not, been integrated. The Proponent shall advise the party or parties in a time period that does not exceed the period of time taken in 2.3.2.

2.4 The Proponent shall, where consultation with Indigenous groups is a requirement of a condition set out in this Decision Statement, determine and strive to reach consensus with each Indigenous group regarding the manner by which to satisfy the consultation requirements referred to in condition 2.3, including:

2.4.1 the methods of notification;

2.4.2 the type of information and the period of time to be provided when seeking input;

2.4.3 the process to be used by the Proponent to undertake impartial consideration of all views and information presented on the subject of the consultation; and

2.4.4 the period of time and the means by which to advise Indigenous groups of how their views and information were considered by the Proponent."

The CFMP Version 1.0 will be the starting point for future monitoring of country foods and other environmental media outside of the mine site. It is expected that the plan will be reviewed and revised, as required, on a regular basis throughout the life of mine to ensure that the objectives described in Section 1.1 are achieved. Future revisions to the CFMP may include adjusting, adding, or removing monitoring components to ensure that the objectives are achieved, to reflect changes to field practices or guidance, and to address or resolve uncertainties identified in future monitoring.

It is anticipated that the CFMP will be reviewed as part of each reporting cycle (i.e., each time a CFMP report is issued). Proponent-identified recommendations for changes to the CFMP will be documented by the QPs preparing the CFMP report.

In addition, submission of recommendations, input, or feedback from Indigenous groups or regulators to BW Gold are anticipated following review of the Draft CFMP report after each CFMP reporting cycle. BW Gold intends to track and respond to comments received on the CFMP report, which may include proposing changes to the CFMP sampling or analysis. The process and timelines for review of future CFMP reports and changes to the CFMP itself will be defined through engagement and consultation with Indigenous groups and regulators during the Draft CFMP plan review; thus, details are not provided yet in this Draft CFMP.

Separate from the CFMP, EAC Condition 12 requires an Independent Environmental Monitor (IEM) be retained by the proponent during all phases of the Project. This is in addition to EAC Condition 17 that requires an Aboriginal Group Monitor and Monitoring Plan, where the proponent must retain or provide funding to retain one monitor for each Aboriginal Group. It is possible that the IEM under EAC Condition 12 or monitor retained under EAC Condition 17 could identify and recommend additional sampling be incorporated into the CFMP rather than under a separate monitoring program. BW Gold would consider and respond to any input or comments received from the IEM or Aboriginal Group monitor as it relates to the CFMP.

Upon approval of the CFMP Version 1.0, future changes to the CFMP will require robust review to ensure that the CFMP will continue to meet regulatory requirements (e.g., elimination of a monitoring component required by the EAC or federal Decision Statement cannot be completed without regulator agreement or amendment authorizing the removal). Changes to the CFMP could also affect the ability to conduct some statistical analyses (e.g., before-after- control- impact) that rely on collecting similar or analogous data

over time at the same locations. BW Gold intends to engage in dialogue with Indigenous groups and regulators regarding changes to the scope, methods, and analysis used in the CFMP, while maintaining regulatory compliance.

Results of the CFMP will be provided to regulatory agencies and Indigenous groups, and discussed with the Community Liaison Committee or the EMB for the Project, as described in Section 8 of this plan.

2.2 Engagement with Regulators

The EAC and federal DS each outline requirements for engagement and consultation with provincial and federal regulators, respectively. Condition 41 of the EAC requires the CFMP be developed in consultation with EMPR (now EMLI), ENV, Northern Health, with the final plan (Version 1.0) to be submitted to the same groups plus BC EAO a minimum of 60 days prior to the planned commencement of Construction phase. Similarly, the Condition 6.12 requires that the CFMP be developed in consultation with Indigenous groups and “relevant authorities” prior to construction, with any subsequent updates to the plan identified as part of the adaptive management plan be provided to the same groups within 30 days of updates being made.

BW Gold is providing the Draft CFMP for review and comment to BC ENV, EMLI, and Northern Health (distributed via the Major Mines Office, MMO) and to Health Canada (distributed via an intake email address at Health Canada) at least 60 days prior to the beginning of Construction phase. BW Gold will consider the comments, input, and feedback provided by regulatory agency reviewers prior to finalizing the draft CFMP into the Version 1.0 CFMP.

3. IDENTIFICATION OF CONTAMINANTS OF POTENTIAL CONCERN

An updated human health risk assessment was completed in Entia (2022) and included a problem formulation, which culminates in a graphic presentation of the Project-related sources, transport pathways, and exposure pathways for COPCs[2] to different types of receptors of concern (ROCs, including people) that may be found at or near the Project. The following text is a short summary of the results of the problem formulation, as it relates to identification of COPCs for the CFMP.

The updated HHRA (Entia 2022) identified three groups of potential human ROCs including:

- Temporary Land User: Indigenous or non-Indigenous traditional or recreational land user who engages in hunting, fishing, berry/plant collecting, traditional, cultural, or recreational activities for short periods of time and uses surface water as a drinking water source while on the land. Country foods are collected and taken home for consumption throughout the year.
- Full-time Resident: a full-time Indigenous resident on Tatelkus Lake 28 reserve or a resident at the Tatelkuz Lake Ranch Resort near the outlet of Tatelkuz Lake, primarily using drinking water sourced from groundwater wells plus surface water during time away from home while out on the land, and engaging in hunting, fishing, and berry/plant picking. Country foods are collected and taken home for consumption throughout the year.
- Off-duty Worker: a worker residing at the exploration camp or the operations camp that will be present during all Project phases, with drinking water supplied from a groundwater well. The off-duty worker does not hunt, fish, or consume country foods while onsite or in transit to site, as per Project policy, and does not drink surface water while residing at the camp.

For the purposes of the CFMP, the focus is on Temporary Land Users and Full-time Residents because they are the ROCs who may consume country foods.

Project infrastructure such as the Open Pit and dewatering system, TSF, waste and ore stockpiles, water management infrastructure, haulage and service roads, and mining activities such as milling, equipment use, and blasting, are potential sources of Project-related COPCs. Metals, ions, or nitrogenous compounds mobilized in water from these components can be transported to the receiving environment outside of the mine site through either effluent discharge or seepage including:

- Effluent discharge from the mine site to Davidson Creek, with the final discharge point at the Freshwater Reservoir (FWR).
- Discharge from sediment control ponds (SCP) in Construction and Operations phases to Davidson Creek (TSF Stage 1 SCP, Aggregate Borrow Area SCP) or Creek 661 (Plant Site and Camp SCPs).
- Unrecovered seepage that may report to Davidson Creek or Creek 661.

CACs or dust containing metals can be carried through atmospheric transport (i.e., in the air) to areas outside of the mine site. Dust containing metals may be deposited onto soil or plant surfaces, or be taken up by plants through the root from soil.

A COPC was identified as a parameter that had a Baseline Case (based on measured or predicted existing conditions data) or Project Case (based on predicted, future concentrations) concentration higher than an applicable environmental quality guideline or screening benchmark. The guidelines or screening benchmarks included:

[2] In other documents, including the updated HHRA (Entia 2022), COPCs are referred to as parameters of concern (POC). Since EAC Condition 41 and DS 6.11 refer to “COPCs” that is the terminology used in the CFMP.

- Air CACs: BC Ambient Air Quality Objectives (BC ENV 2020c) and Canadian Ambient Air Quality Standards (CCME 2021);
- Air metals: Effects Screening Levels (Texas CEQ 2016) and Ontario Ambient Air Quality Criteria (OMECP 2020);
- Soil: BC Contaminated Sites Regulation (BC CSR; B.C. Reg. 375/96) Schedule 3.1 Soil Standards for reverted wildlands based on intake of contaminated soils, and CCME Environmental Quality Guidelines for soil for the protection of human health (CCME 2022);
- Surface water and groundwater: BC Source Drinking Water Quality Guidelines (BC ENV 2020d), Health Canada Drinking Water Quality Guidelines (Health Canada 2020); and BC CSR (B.C. Reg. 375/96) Schedule 3.2 Drinking Water Standards; and
- Country foods: Project-specific screening benchmarks back-calculated based on acceptable exposure thresholds (toxicity reference values) and country foods consumption rates (Attachment A of Entia 2021a).

No CACs were identified as COPCs, although air quality monitoring will still be included under the AQDMP and CFMP, as required by EAC Condition 41. Criteria air contaminants to be monitored include PM_{10}, $PM_{2.5}$, NO_2, and SO_2. For Temporary Land Users and Full-time Residents, COPCs for the Project included 18 metals associated with surface water and groundwater, soil, and/or country foods (e.g., fish, plant, and berry; Table 3-1). No nitrogen-containing compounds (e.g., nitrate, nitrite) or ions (e.g., sulfate, chloride) were identified as COPCs.

Table 3-1: Summary of Contaminants of Potential Concern

Contaminant of Potential Concern	Exposure Media				
	Air	Soil	Surface Water	Groundwater	Country Foods
Aluminum					X
Antimony			X		X
Arsenic		X			X
Beryllium					X
Cadmium					X
Chromium					X
Cobalt			X		X
Copper					X
Iron					X
Lead					X
Lithium			X	X	X
Manganese			X	X	X
Mercury					X
Molybdenum		X			X
Nickel					X
Selenium					X
Thallium					X
Zinc					X

Based on Table 3-1, for the purposes of sampling and laboratory analysis under the CFMP, metals will be the COPCs for this Project. At minimum, parameter lists for laboratory analysis of metals in all environmental media or tissue samples will include all of the parameters listed in the first column of Table 3-1, plus additional metals if they are included in standard metals analysis packages.

3.1 Engagement with Indigenous Groups on the Contaminants of Potential Concern

A list of COPC classes intended to be monitored was presented to UFN and LDN in May 2021, prior to finalization and commencement of field sampling in August 2021. The COPC classes identified in the May 6, 2021 presentation to UFN and LDN for monitoring in the aquatic environment included *in situ* parameters, total and dissolved metals, anions, nutrients, cyanides, and general parameters for surface water and fish tissue (metals). The COPC classes identified for monitoring in the terrestrial environment included metals and criteria air contaminants (CACs).

The parameters shown in Table 3-1 (first column) and Section 3.1 were selected based on results of the HHRA Update report (Entia 2022) and are the subset of parameters from the COPC classes from the May 6, 2021 presentation that are specific to human health.

Input of Indigenous groups and other stakeholders during review of the draft CFMP will also be considered in the final selection of COPCs as it may affect design and implementation of monitoring actions under this plan.

4. SAMPLING PLAN: DESIGN, FREQUENCY, LOCATIONS, AND METHODS

4.1 Design of the Country Foods Monitoring Plan

The CFMP has been designed to incorporate all of the requirements of applicable EAC conditions and the DS conditions (see Section 1.3.3). In addition to guidance document listed in Section 1.3.5, additional field sampling or laboratory analysis guidance documents were also considered, including:

- *Ecological Risk Assessment Guidance Document* (CCME 2020);
- *British Columbia Environmental Laboratory Manual* (BC ENV 2020a);
- *Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators* (BC ENV 2016);
- *Guidance Manual for Environmental Site Characterization in Support of Environmental and Human Health Risk Assessment: Volume 1 Guidance Manual* (CCME 2016); and
- *British Columbia Field Sampling Manual* (BC ENV 2013).

BW Gold is committed to continuing to work with Indigenous groups to refine monitoring locations and CFMP sampling program design, including consideration of additional sampling locations based on consultation with Indigenous elders. Feedback from Indigenous groups, if any, will be considered in future iterations of the CFMP.

It is anticipated that the sampling plan presented herein will be sufficient to determine if altered or new mitigation measures and/or remediation activities, if any, are effectively mitigating or remediating potential effects and or avoiding potential effects. However, if mitigation is added or altered and the CFMP sampling program design requires refinement to monitor the effectiveness of that mitigation, updates will be made in consultation with the EAO, EMLI, ENV, NHA, and the Aboriginal Groups following review of the annual report described in Section 8.2. In the event that the Project enters into a care and maintenance phase that lasts for a period of less than three years, monitoring under the CFMP will continue at the frequency described in Sections 4.2 to 4.5.

If the care and maintenance phase extends beyond three years, the need for air quality and terrestrial monitoring described in Sections 4.2, 4.3, and 4.5 is diminished as the primary transport pathways of COPCs from the Project to these CFMP components is through air emissions. During an extended care and maintenance phase, air emissions would be minimal as Project activities would be minimal and mitigation measures would remain in place. In this situation, sampling frequencies described in Section 4.2, 4.3, and 4.5 would be decreased by 50% to be once every 6 years or once every 12 years.

For the aquatic environment (i.e., water quality and fish tissue sampling), if a care and maintenance phase continued for more than three years' effluent discharges or seepage from the Project are likely to continue. Monitoring under the AEMP (and Section 4.4 of the CFMP) would continue at the scheduled frequency, although consultation on modifying the spatial extent of the monitoring program may be warranted if sufficient rationale is available to support a decrease in program scope (e.g., Project effects on water quality are localized so monitoring would be scaled back to near field and control sites only during care and maintenance).

4.1.1 Study Area

The study area selected for the CFMP is the same as the study area used in the updated HHRA (Entia 2022). The CFMP study area is based on an overlay of the air quality modelling domain, the surface water quality local study area (LSA), and the terrestrial LSA used in the Application/EIS and in the Joint Application. The air quality, surface water quality and terrestrial study areas were used as the foundation

for the CFMP study area because they represent key exposure pathways between environmental media and human receptors. The LSAs or modelling domains were used (rather than the larger, regional study areas) because any effects due to the Project are likely to be highest in the areas closest to Project sources of COPCs at the mine site.

Since the air quality modelling domain is larger than the other two LSAs, the human health LSA is effectively equivalent to the air quality modelling domain (Figure 4.1-1).

4.1.2 Components of the Country Foods Monitoring Plan

Consistent with EAC Condition 41 and the DS (conditions 6.11 and 6.12) requirements, the following components are included in the CFMP:

- Air quality monitoring, including CACs, dustfall, and meteorological conditions (Section 4.2);
- Soil, plant and berry sampling (Section 4.3);
- Surface water and fish tissue sampling (Section 4.4); and
- Small mammal sampling (Section 4.5).

4.1.3 General Approach to Monitoring Plan Design

In general, the CFMP study design is based on a before-after-control-impact (BACI) approach, where data are collected prior to the development of the project (before) for comparison to future monitoring data (after) at both control and impact sites. The main statistic of interest in a BACI analysis is an ANOVA interaction term (Before-After × Control-Impact), which would be significant when a change occurs at the impact site but not at the control site (Smokorowski and Randall 2016).

In both the terrestrial and aquatic monitoring components, sampling sites were selected at near field (i.e., sites closest to the mine site), mid field (i.e., sites further away from the mine site but located downstream or downwind close enough to be potentially affected by the Project), far field sites (for water quality only, which are sites far downstream of Project discharges or seepage pathways) and control (reference) sites (i.e., sites upstream of the Project or located at a distance unlikely to be affected by the Project). For the purposes of BACI analysis, impact (near field) and control (or reference) sites are of primary interest in identifying potential Project-related changes to the surrounding environment. Mid or far field sites are intended to support exploratory analysis to identify the extent of Project influence or in spatial analysis (e.g., heat maps or gradient analysis) to identify trends or patterns in concentrations of COPCs.

More specific information on approaches and statistics used for data analysis is provided in Section 5.

4.2 Air Quality

4.2.1 Parameters for Air Quality Sampling

Monitoring of air quality is described in more detail in Section 9.3 of the AQDMP and is summarized here (with cross-references) for convenience. Monitoring of air quality under the AQDMP will include measurement of the following parameters or conditions:

- Meteorological conditions including air temperature, relative humidity, precipitation, wind speed and direction, barometric pressure, snow depth, net radiation, and solar radiation;
- Particulate matter including both PM_{10} and $PM_{2.5}$;
- Nitrogen dioxide; and
- Sulfur dioxide.

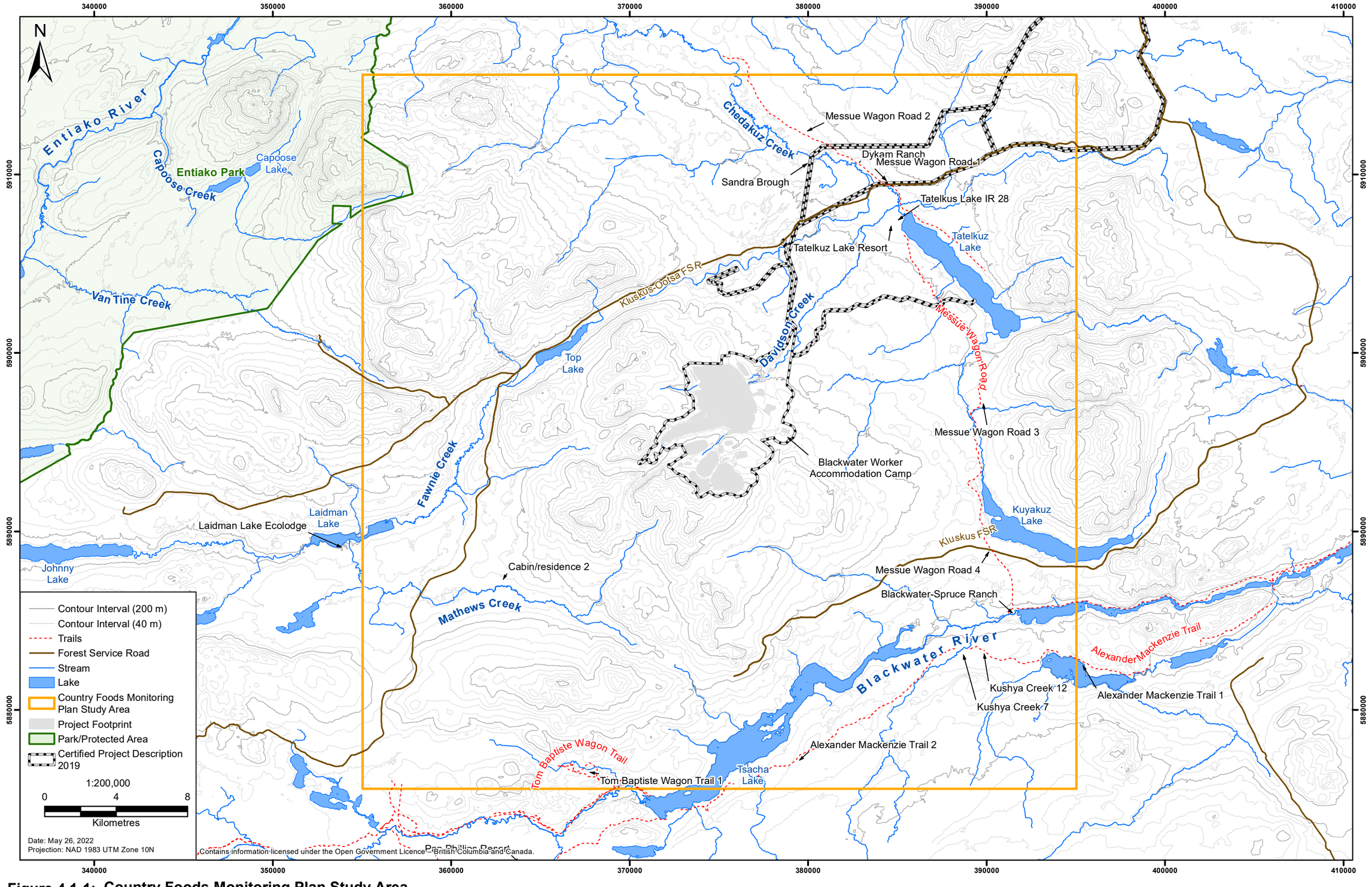

Figure 4.1-1: Country Foods Monitoring Plan Study Area

Based on the air dispersion modelling results, CO monitoring is not recommended as CO levels are below BC air quality objectives at the human receptor locations (i.e., less than 5% of the objective). The maximum 1-hr CO concentration at any human receptor is 317 ug/m^3 while the objective is 14,300 ug/m^3. The maximum 8-hr CO concentration is 205 ug/m^3 while the objective is 5,500 ug/m^3.

Section 9.3.2 of the AQDMP includes visual monitoring for fugitive dust; however, the AQDMP does not include collection of dustfall for laboratory analysis of deposition rates, as this is not recommended by regulators for fugitive dust management plans (BC EMLI/BC ENV 2018; BC ENV 2020e). However, EAC Condition 41 requires the monitoring of dustfall, so collection and analysis of dustfall for metals (at minimum, the 18 COPCs listed in Table 3-1) will be conducted under the CFMP.

4.2.2 Locations, Frequencies, and Methods for Air Quality Sampling

As described in Section 9.3.1 of the AQDMP, there are two existing meteorological stations which will continue to be used: the low station and the high station. The low station is located near Tatelkuz Lake and has been operating since August 2011, while the high station is located near the mine site and has been operating since July 2012 (Figure 4.2-1). These stations will provide ongoing meteorological data that can be used, as needed, to aid in the interpretation of results of CFMP sampling (e.g., wind directions to understand probable areas of CAC dispersion or dust deposition). The meteorological stations will remain in place throughout mine life.

Reference (control) data for criteria air contaminants (CACs) including nitrogen dioxide, sulfur dioxide, and particulate matter will rely on data collected at regional stations, consistent with the approach used in baseline studies for these parameters. As described in Section 9.3.3 of the AQDMP, particulate matter ($PM_{2.5}$ and PM_{10}) monitoring will be done at the exploration camp before the start of construction and moved to the site of the operations camp when it replaces the exploration camp. These locations were selected since they are immediately downwind of some of the key sources of air emissions (e.g., equipment operating in and around the open pit and TSF) and are the closest human receptor locations (off-duty workers) to Project sources of particulate matter and concentrations of particulate matter are expected to be lower in more distant parts of the study area. Monitoring will be done using a Partisol sampler. Fine particulate sampling will occur every third day, alternating between $PM_{2.5}$ and PM_{10}, between May and October. During the winter, sampling frequency will be weekly.

As described in Section 9.3.4 of the AQDMP, nitrogen dioxide and sulfur dioxide will be sampled using a passive air sampling system (PASS). Sampling will be done at the same locations as for particulate matter, with the PASS units collected for analysis approximately every 30 days.

Dustfall metal concentration monitoring is not described in the AQDMP but will be conducted under the CFMP at a subset of soil quality sampling sites, shown on Figure 4.2-1. BC ENV no longer recognizes dustfall and metal deposition rates because the sampling methodology produces results that are not accurate nor reproducible (BC ENV 2020e). The purpose of monitoring dust and metal deposition at the Project is to estimate the percentage of different metals in the deposited dust and not to measure dustfall deposition rates.

Baseline data have not yet been collected for dustfall metals analysis due to delays in receiving the sampling apparatus and is currently planned for summer 2022. A total of four near field (sites 4, 6, 14, and 19) and four control sites (24, 27, 32, and a new site near Tatelkuz Lake[3]) will be used for the collection of dustfall for metals analysis. Dustfall metal samples will be collected at the same time as soil, plant, and berry samples (see Section 4.3.2.2 for sampling frequencies).

[3] This sampling site at Tatelkuz Lake has been added at the request of UFN/LDN; coordinates have not yet been provided by UFN/LDN. It is intended that this new site will include sampling of dustfall, soil, plant and/or berry metal concentrations. It will be added to the map and field sampling program once the location is provided by UFN/LDN.

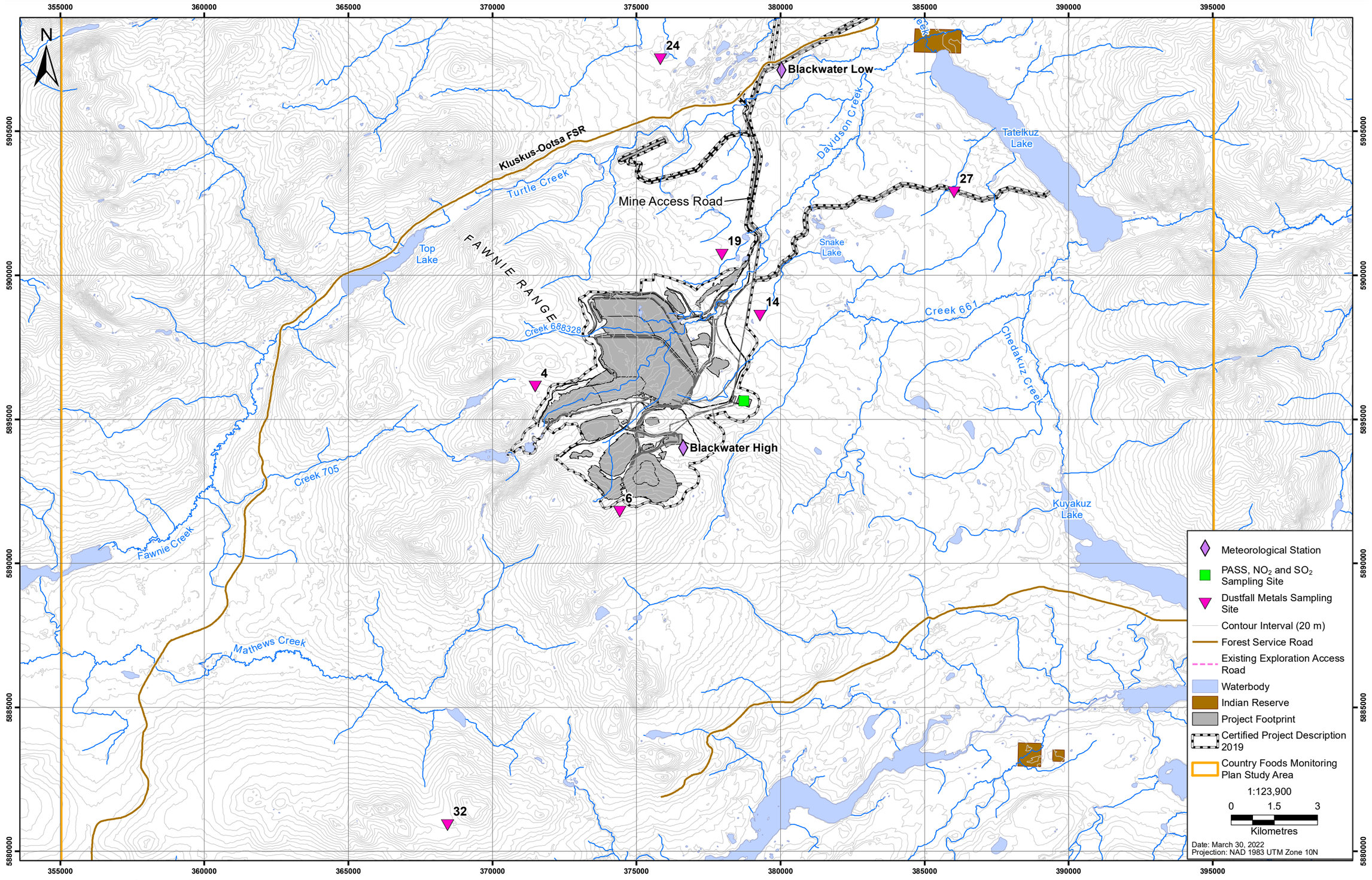

Figure 4.2-1: Air Quality Sampling Locations

Dustfall monitoring will be completed in accordance with sampling method ASTM International D1739-98 (ASTM 2017) and BC ENV dustfall sampling methodology (BC ENV 2018). Collection of dustfall will be done using a passive, open canister apparatus. Stations will consist of a laboratory-supplied collection bottle with large diameter opening. The bottles (duplicate per station) will be mounted 2 m above the ground. Sampling will occur during summer months when dustfall is typically higher and canisters will collect dust for a minimum period 30 days, although canisters may remain in place for up to 60 days to ensure sufficient sample volumes for analysis. Dustfall will be measured for quantity collected and dust will be analyzed for metal concentrations (at minimum, the 18 COPCs listed in Table 3-1) at an analytical laboratory with accreditation from the Canadian Association for Laboratory Accreditation (CALA-certified).

Monitoring for CACs and dustfall metal concentrations will begin in Construction phase. The need for continued monitoring through Operations and Closure will be evaluated after each monitoring cycle, in consultation with Indigenous groups and regulators, based on the results of the monitoring conducted in a given year. Trends or changes in CAC concentrations or dustfall metal concentrations will be evaluated and if no significant changes are identified the monitoring frequency may be reduced (see Section 4.3.2.2).

As air emissions in Post-closure phase are predicted to be minor, no monitoring is proposed during this phase.

4.2.3 Quality Assurance/Quality Control Program for Air Quality

The quality assurance/quality control (QA/QC) program for air quality is described in Section 9.3.6 of the AQDMP and will include:

- Use of standard field data sheets and SOPs (e.g., for calibration of the Partisol and PASS sampling equipment) for field sampling and data collection;
- Review of data once transferred to a database to minimize the potential for transcription errors;
- Appropriate training for field personnel responsible for collecting samples;
- Use of chain of custody (COC) forms and CALA-accredited laboratory for analysis of samples;
- Duplicate dustfall metals samples collected at each dustfall monitoring site; and
- Appropriate laboratory-based QA/QC programs, consistent with the requirements of the British Columbia Environmental Laboratory Manual (BC ENV 2020a).

4.3 Soil, Plant and Berry Sampling

The purpose of monitoring soil, plant, and berries for COPC (metal) concentrations is to identify whether there are Project-related changes in the quality of these media. The primary transport pathway for COPCs from the Project to the terrestrial environment outside of the mine site is atmospheric, through deposition of dust containing metals onto soil (which could then also be taken up by plants) or onto plant and berry surfaces. Uptake of metals by plants from soil can be estimated by calculating a bioaccumulation factor, which is the concentration of metals in plant or berry tissues divided by the concentration of metals in co-collected soil samples.

Sampling of soil, plants, and berries under the CFMP is focused outside of the mine site during Construction and Operations phases, in areas which will remain accessible to the public during mine operations. Although it is possible that the public may access the mine site during active mining operations, access to the mine site will be controlled for safety reasons (as described in the Mine Site Traffic Control Plan) and it is unlikely that people would collect plants or berries for consumption from within the mine site boundaries during Construction or Operations phases.

However, sampling of soil and plants is proposed within the mine site under the Closure and Reclamation Plan, to support the reclamation monitoring program. As the mine approaches the Closure phase, these data may be considered within the context of the CFMP, as the mine site will be more accessible to the public during Closure and Post-closure phases. Where possible, plant and berry species sampled for the reclamation monitoring program will align with those sampled for the CFMP.

4.3.1 Parameters for Soil, Plant, and Berry Sampling

At minimum, soil, plant, and berry samples will be analyzed for the 18 metal COPCs listed in the first column of Table 3-1. Soil samples will also include measurement of pH. Plant and berry samples will also be analyzed for moisture content. All concentrations will be reported in a dry weight concentration, although plants and berries may also be reported in a wet weight concentration.

Targeted detection limits for metal COPCs will be at least 10 times lower than soil quality guidelines or standards, where available, or tissue guidelines, consistent with recommendations for environmental media in BC ENV (2016).

4.3.2 Locations, Frequencies, and Methods for Soil, Plant, and Berry Sampling

Baseline data collected by AMEC in 2011 and 2012 were limited to several plant species, did not include berry sampling, parameters analyzed in soil samples were limited, and plant samples were not always co-collected with soil samples. Given that the available data were about 10 years old and had some limitations, additional baseline data collection was completed in August of 2021 to supplement and expand the scope of available baseline data that will support future monitoring and follow-up programs. The rationale for identification of sampling locations and selection of plant and berry species is provided in subsection 4.3.2.1, while the following subsections provide details on sampling timing, frequency, and methods for future sampling.

4.3.2.1 Sampling Locations

Soil samples must be collected at each site where a plant or berry sample is collected. The 2021 baseline field program sampled a total of 38 sites for soil quality alongside one or more plant or berry samples per site. Selection of the sampling sites in August 2021 considered the following factors:

- Baseline meteorological data on prevailing wind direction (generally from the west or southwest) that would influence the location of Project-related fugitive dust deposition (generally to the east or north east of the mine site);
- Ensuring good spatial coverage of the LSA, with the intent of locating an equal number of samples (target of 10 per zone) for each plant or berry species at:
  - near field (within 1 km from the mine site boundary and within 1 km from the access road);
  - mid field (between 1 and 5 km from the mine site boundary and more than 1 km from the access road); and
  - control sites (more than 5 km from the mine site boundary and more than 1 km from the access road);
- Consideration of the potential for plant or berry species to be found at different elevations between the mine site (higher elevation) and the lower elevation areas near Tatelkuz Lake;
- Available ecosystem mapping and data from baseline reports to indicate which species of plants or berries could be found throughout the LSA; and

- Consultation with a botanist and rare plant expert to identify the likelihood that various target plant or berry species would be found in sufficient numbers or with reasonable spatial distribution throughout the LSA.

The selection of the distances from Project sources of dust emissions for the three zones (near, mid, and control) were based on air quality modelling completed for the Project (see Appendix 5.2.4A of the Application/EIS) and literature suggesting that most dust deposition occurs within a few hundred metres of the source (Walker and Everett 1987). The boundary between near and mid field sites is based on professional judgement and is intended to ensure that potential effects from dust deposition at the near field sites (most likely to be impacted) are not diluted or diminished by considering locations in the mid field zone where influence from dust is expected to be lower. Control sites were selected to be a long distance away (>5 km) from Project sources of dust, where any influence of the Project would be indistinguishable from baseline concentrations.

Selection of plant or berry species for sampling in August 2021 and inclusion under the CFMP was done following consultation with UFN and LDN in several meetings. A list of culturally-appropriate and important plant species was provided by UFN and LDN in June 2021, with an updated list provided in September 2021. These lists of plant and berry species were combined with lists of species that were previously sampled in 2011/2012 and baseline or field data about plants and berries known to occur in the LSA.

The August 2021 field trip began with three days of reconnaissance, where an inventory of 21 target plant and berry species (including 13 from the lists provided by UFN and LDN) at potential sampling sites was completed. The inventory was evaluated to identify three plant and three berry species that had good spatial distribution with high cultural relevance or importance or high relevance as a potential browse item for country foods species. Ultimately, the three plant species sampled in August 2021 included willow (*Salix* spp., at all 38 sites), sedge (*Carex* spp., at 31 of 38 sites; from wetland), and Labrador tea (*Rhododendron* sp., at 23 of 38 sites), while the three berry species sampled included soapberry (*Shepherdia canadensis*, at 21 of 38 sites), huckleberry (*Vaccinium membranaceum*, at 12 of 38 sites), and blueberry (*Vaccinium spp*., at 10 of 38 sites). These will be, at least initially, the target species for the CFMP in future years.

While the 2021 field program objective was to collect 10 target species in each of the near field, mid field, and control zones, the final selection of sampling sites was limited by what plant or berry species could be found at a given location (Table 4.3-1). Although refinement of the sampling locations may occur over time, to the extent possible, the sites sampled in August 2021 will contribute to the calculation of baseline concentrations (see Section 6.2.2) and the “before” (baseline) dataset in future BACI analysis (see Section 5). Sites and the plants or berries collected at each site are shown on Figure 4.3-1, with additional details of the sampling locations (e.g., coordinates, types of samples per site, distance from mine site) are provided in Appendix B, Table B-1.

4.3.2.2 Sampling Timing and Frequency

Plant and berry samples (and thus soil samples) should be collected close to the peak summer growth prior to seed set, generally in the middle of July through the middle of August. For berries, only ripe fruit should be collected; sampling may be attempted again later if only “green” (unripe) berries are encountered. Sampling of vegetation should focus on leaves and stems.

Sampling should be conducted close to the same time each year to reduce potential changes in metal concentrations due to temporal differences and should be collected at the same sites over time to enable BACI analysis and minimize potential changes in metal concentrations due to spatial differences.

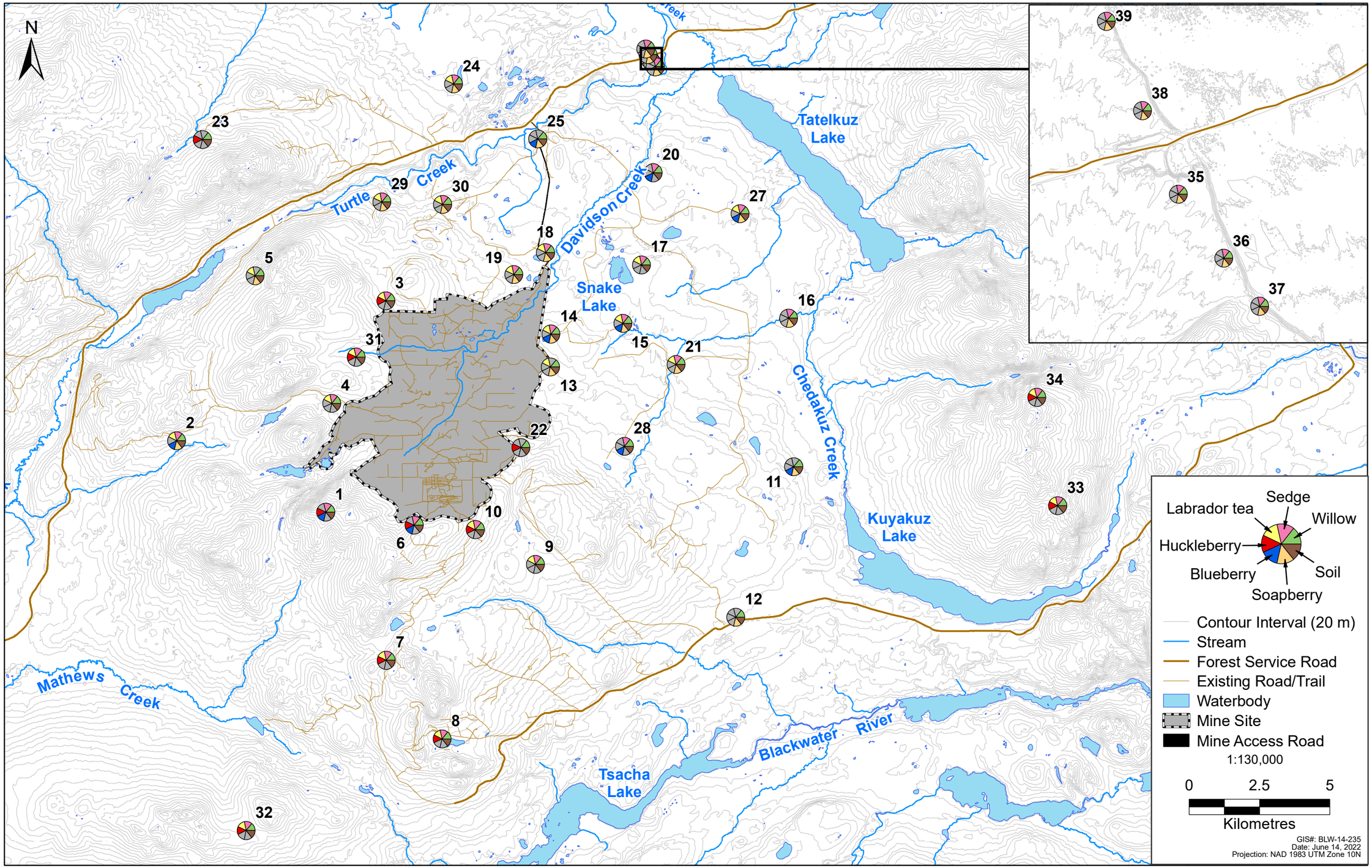

Figure 4.3-1: Soil, Plant and Berry Sampling Locations, 2021

Table 4.3-1: Soil, Plant, and Berry Sampling

Common Name	Scientific Name	Rationale for Sampling	Number of Samples Collected in 2021				
			Near Field	Mid Field	Road Transect	Control	Total
Soopolallie or soapberry	*Shepherdia canadensis*	No berries collected in baseline studies. People may consume berries and soapberry was identified as being of interest for Indigenous groups.	5	6	5	5	21
Black huckleberry	*Vaccinium membranaceum*	No berries collected in baseline studies. People may consume berries and huckleberry was identified as a potential country food.	5	2	0	5	12
Blueberry	*Vaccinium* spp.	No berries collected in baseline studies. People may consume berries and blueberry was identified as a potential country food.	3	4	0	3	10
Willow	*Salix* spp.	Commonly sampled in vegetation programs and thought to be a hyperaccumulator of metals. Represents a terrestrial (moist soil) browse species for wildlife and is widely distributed across multiple elevations.	11	11	5	11	38
Sedge	*Carex* spp.	Commonly sampled in vegetation programs. Represents a wetland browse species for wildlife. Commonly located in sensitive environments and may have high metal tolerance.	8	10	5	8	31
Labrador tea	*Rhododendron* spp.	Identified as a potential country food (medicinal or traditional plant), reasonably wide distribution across sites.	8	9	0	6	23

Once Construction phase begins, sampling outside of the mine site boundary will initially be conducted once every three years under the CFMP. The CFMP includes triggers (see Section 6.2) to decrease sampling frequency to once every six years after two successive sampling cycles are completed if no significant changes in metal concentrations relative to baseline conditions are identified. Sampling frequency may increase to once every three years if significant changes in metal concentrations relative to baseline conditions are identified. The adaptive management framework (Section 6.3) also allows for additional sampling to be adjusted or added, both in terms of sampling frequency and locations, when warranted to identify magnitude, spatial extent, or reversibility of observed Project-related effects.

A sampling frequency of every three to six years is consistent with similar country foods or human health monitoring programs for other mining projects in BC. The sampling frequencies are expected to be often enough to identify Project-related changes to the terrestrial environment, as any Project-related changes are likely to occur slowly from dust deposition. Modelling of soil and vegetation concentrations completed to support the HHRA update (Entia 2022) suggest that predicted changes in concentration are negligible (less than 5% change in the 95% upper confidence limit of the mean [UCLM] concentration after 23 years through the Construction and Operations phases). In addition, these sampling frequencies of once every three or six years were, in part, selected to align with requirements for fish tissue sampling frequencies under the Metal and Diamond Mining Effluent Regulations (MDMER; SOR/2002-22). Aligning these

frequencies will ensure that all components of the CFMP will be sampled during the same monitoring year to increase their value and usefulness in supporting a HHRA, should one be required as a management response in the adaptive management plan (see Section 6.3).

The last sampling event for soil, plants, and berries will occur near the end of the Closure phase. Sampling will cease in the Post-Closure phase as there are not expected to be significant sources of Project-related dustfall once the mine site has been reclaimed and metal concentrations in plants and soil are expected to return to baseline conditions.

4.3.2.3 Sampling Methods

Plant and berry tissues collection methods are as follows:

- Samples will be collected by field staff trained in proper sample collection techniques and field SOPs will be used to ensure consistent sample collection and prevent cross-contamination between sampling sites.
- Foliage and berry samples will be collected as a composite from new growth leaves or ripe berries, respectively, from at least three locations on each plant.
- Composite samples from a sample site will comprise sampling from three to five plants (depending on availability on a given site), distributed throughout an individual sample site to ensure that the minimum sample weight is collected.
- Nitrile gloves (or similar) will be worn during vegetation and berry tissue and soil collection and changed between sampling sites.
- All foreign debris will be removed prior to the sample being placed into a plastic sampling bag; however, plant and berry samples will not be washed prior to placing in the bag (i.e., analysis should also include any dust on surfaces to be consistent with methods used in baseline studies).
- Bags will be labelled with location, date, sample ID, and the species and sample type collected.
- A hand-held GPS will be used to record the location of each sample.
- Sample ID, species collected, date and time of collection, and location waypoint will be recorded on field forms or field notebooks. Site observations (e.g., unusual conditions, signs of stress) will also be recorded. One or more photographs will be taken at each sampling site.
- Vegetation samples will be kept frozen or kept cool below 5 ºC (placed directly into a cooler with ice packs and transferred to a fridge/freezer each evening) and packaged in coolers with ice packs to transport to the laboratory for analysis.
- Samples will be tracked using chain of custody forms.

Soil sample collection methods are as follows:

- Samples will be collected by field staff trained in proper sample collection techniques and field SOPs will be used to ensure consistent sample collection and prevent cross-contamination between sampling sites.
- Soil samples will be collected at the same sites as plant or berry samples.
- Samples will be collected within the rooting zone (top 30 cm of the soil horizon) of each sampled plant at the base of the plant or within 1 m of a plant or clump of plants using a stainless-steel hand-trowel, so will consist of a plant-integrated and depth-integrated composite sample at each site.

- Coarse fragments will be removed from soil in the field and sifted at the lab to remove coarse fragments greater than 2 mm.
- All foreign debris will be removed prior to the sample being placed into a plastic sampling bag.
- Bags will be labelled with location, sample ID, and the type of sample collected.
- Sample ID, sample type, date and time of collection, location waypoint, soil horizon (mineral or organic), and soil texture will be recorded on field forms. One or more photographs will be taken at each sampling site.
- Soil samples will be kept cool below 5 ºC (placed directly into a cooler with ice packs and transferred to a fridge each evening) and packaged in coolers with ice packs to transport to the laboratory for analysis.
- Samples will be tracked using chain of custody forms.

4.3.3 Quality Assurance/Quality Control Program for Soil, Plant, and Berry Sampling

Quality assurance and quality control (QA/QC) procedures as described in Part A (Quality Control and Quality Assurance in BC ENV 2013) and Part D of the BC Field Sampling Manual (BC ENV 2020b) will be followed during vegetation and soil sampling for metal analysis. The QA/QC program will include:

- All persons collecting samples must be capable of identifying plant and berry species that will be collected.
- Samplers will be trained on appropriate sampling techniques to minimize the potential for cross-contamination and ensure that sample sizes are adequate for chemical analyses.
- Field notes and observations will be maintained to document field conditions, unusual conditions, general plant health at a sample site, and any notes related to the samples collected using standardized forms.
- Field data will be reviewed for accuracy after input into a database to minimize the potential for transcription errors.
- Chain of custody forms will be used for all samples submitted to a CALA-certified laboratory for analysis.
- Appropriate laboratory-based QA/QC programs, consistent with the requirements of the British Columbia Environmental Laboratory Manual (BC ENV 2020a).

The precision and accuracy, representativeness, and sample holding times will be reviewed. Precision and accuracy will be controlled through an assessment of laboratory sample duplicate analysis. The CALA-certified laboratory's QA/QC procedures will include duplicate testing and calculation of relative percent difference, laboratory blanks, and instrument calibration verification.

The field sampling program will include field split duplicates samples at a target frequency of approximately 10% of total samples collected to evaluate sample heterogeneity and precision of sampling for soil, plant, and berry samples. A relative percent difference between field split duplicate samples will be calculated, using the methods described in BC ENV (2013). For each pair of QA/QC field duplicate samples, the relative percent differences (RPD) will be calculated using Equation 1, as follows:

$$RPD = 100\% \times \left(\frac{|replicate\ 1 - replicate\ 2|}{\frac{replicate\ 1 + replicate\ 2}{2}} \right) \quad \text{[Equation 1]}$$

As soil and tissue samples are typically more variable than other environmental media such as surface water, an RPD of less than 60% in field split duplicate samples when concentrations are more than five times higher than the method detection limit (MDL) typically indicates acceptable precision and sample homogeneity (CCME 2016). Relative percent differences of greater than 60% can indicate sample contamination or sample heterogeneity.

4.4 Surface Water and Fish Tissue Sampling

Water quality and fish tissue samples are a component of the CFMP, with the required samples collected under the AEMP.

The purpose of monitoring surface water and fish tissues for COPC (metal) concentrations is to identify whether there are Project-related changes in the quality of these media. The primary transport pathway for COPCs from the Project to the aquatic environment is from discharges and seepage from mine infrastructure to water, which can then also be taken up by fish. Uptake of metals by fish from the water can be estimated by calculating a bioaccumulation factor, which is the concentration of metals in fish tissues divided by the concentration of metals in co-collected surface water samples.

As was described for soil, plant, and berry samples in Section 4.3, sampling of surface water quality and fish tissue will be focused outside of the mine site during Construction and Operations phases. Access to the mine site will be limited during these phases for safety reasons and there won't be any fish in waterways within the mine site.

In addition, as required by Section 6.5 of the federal DS, and in consultation with Indigenous groups, signs indicating that consumption of surface water is not advisable will be installed at or near the TSF, the pit lake, and in Davidson Creek year round.

4.4.1 Parameters for Surface Water and Fish Tissue Sampling

At minimum, surface water samples will be analyzed for the 18 metal COPCs listed in the first column of Table 3-1. Other general chemistry analyses will include pH, hardness, dissolved organic carbon (DOC), and anion (e.g., sulfate, chloride) concentrations that could influence the uptake or toxicity of metal COPCs in surface water to aquatic biota, including fish. A full list of parameters that will be analyzed in surface water is provided in Section 4.2 of the AEMP.

At minimum, fish tissue samples will also be analyzed for the 18 metal COPCs listed in the first column of Table 3-1. Samples will also be analyzed for tissue moisture content so that metal concentrations can be reported in both dry and wet weight concentrations.

Targeted detection limits for metal COPCs will be at least 10 times lower than water quality guidelines or standards, where available, consistent with recommendations in BC ENV (2016) for surface water and fish tissue metal samples.

Arsenic speciation analysis was completed for fish tissue and berry samples collected in August 2021. Chromium speciation analysis was initiated in Q3 2021 for surface water samples at a subset of sampling locations in quarterly samples for one year. Results of these speciation analyses will be reported in baseline reports and this type of analysis will not be included in routine analysis of future samples under the CFMP. Speciation will not be included in routine analyses as the Project is not anticipated to cause changes in metal speciation in the aquatic environment and Project-related changes in concentrations of these metals in surface water or fish tissues are small (Entia 2022).

4.4.2 Sampling Locations, Frequency, and Methods for Water Quality and Fish Tissue

4.4.2.1 Sampling Locations

Sampling locations for surface water quality and fish tissue metals analysis are shown on Figure 4.4-1 and are consistent with those described in Section 4.2 of the AEMP. To the extent possible, sampling locations under the CFMP (and AEMP) use the same sites from the surface water quality baseline program to take advantage of the extensive baseline data at many of these sites.

Stream sampling sites where fish tissue (and surface water quality samples) will be collected include near field sites in Davidson Creek (DC-05 and DC-15), Creek 661 (661-05 and 661-10), and Turtle Creek (TC-05, TC-10), as well as control sites in Turtle Creek (TC-01), Creek 705 (705-10), and a tributary to Fawnie Creek (FC-01). Sampling will also be done in Tatelkuz Lake (mid field impact site) and Kuyakuz Lake (control site). Control sites are locations that are either upstream of Project influence or located in a different watershed than the Project and water quality at these sites are not predicted to be affected by the Project. Additional details about the sampling locations are found in Section 4.2 of the AEMP.

Water samples will be co-collected (temporally and spatially) at each site where fish tissue sampling is completed.

Selection of fish species for sampling in August 2021 and inclusion under the CFMP was done following consultation with UFN and LDN in several meetings. A list of fish species of interest was provided by UFN and LDN in June 2021. The list of fish species was combined with lists of species known to occur in the LSA to identify the species and locations targeted for sampling.

Sampling of fish tissue is divided into two groups:

- Sampling of juvenile Rainbow Trout at stream sites closest to the mine site; and
- Sampling of adult Kokanee, Rainbow Trout, and Whitefish in Tatelkuz and Kuyakuz lakes.

While sampling of juvenile Rainbow Trout is less relevant from a human consumption perspective as they are not frequently consumed by people, these are resident fish that are present in the streams closest to the mine site where discharge or seepage (i.e., Davidson Creek and Creek 661) is anticipated. Sampling of juvenile Rainbow Trout in the near field sites will provide the most conservative measure of the influence of the Project on fish tissue concentrations compared to sampling fish further away from the mine site.

Adult fish are the ones typically consumed by people and were identified by UFN and LDN as high priority for sampling. Therefore, sampling of three species of adult fish from Tatelkuz Lake (mid field impact site that is downstream of Creek 661) and Kuyakuz Lake (control site) was added to the baseline sampling program in August 2021.

Surface water quality sampling will also be done at a number of other mid and far field sampling locations, as described in Section 4.2 of the AEMP. Fish tissue sampling will not be done at these locations further away from the mine site as they are generally located in sensitive Kokanee or other fish spawning habitat; to avoid disruption of bed habitats in this sensitive habitat, in stream sampling is not recommended.

4.4.2.2 Sampling Timing and Frequency

Sampling for surface water quality will be as described in Section 4.2 and Table 4.2-2 in the AEMP. Depending on the sampling site, frequency for surface water quality sampling will be either monthly or quarterly, with more intensive sampling (5 samples in 30 days) replacing the monthly sampling at a subset of sites during spring freshet, fall rains, and winter low flow periods.

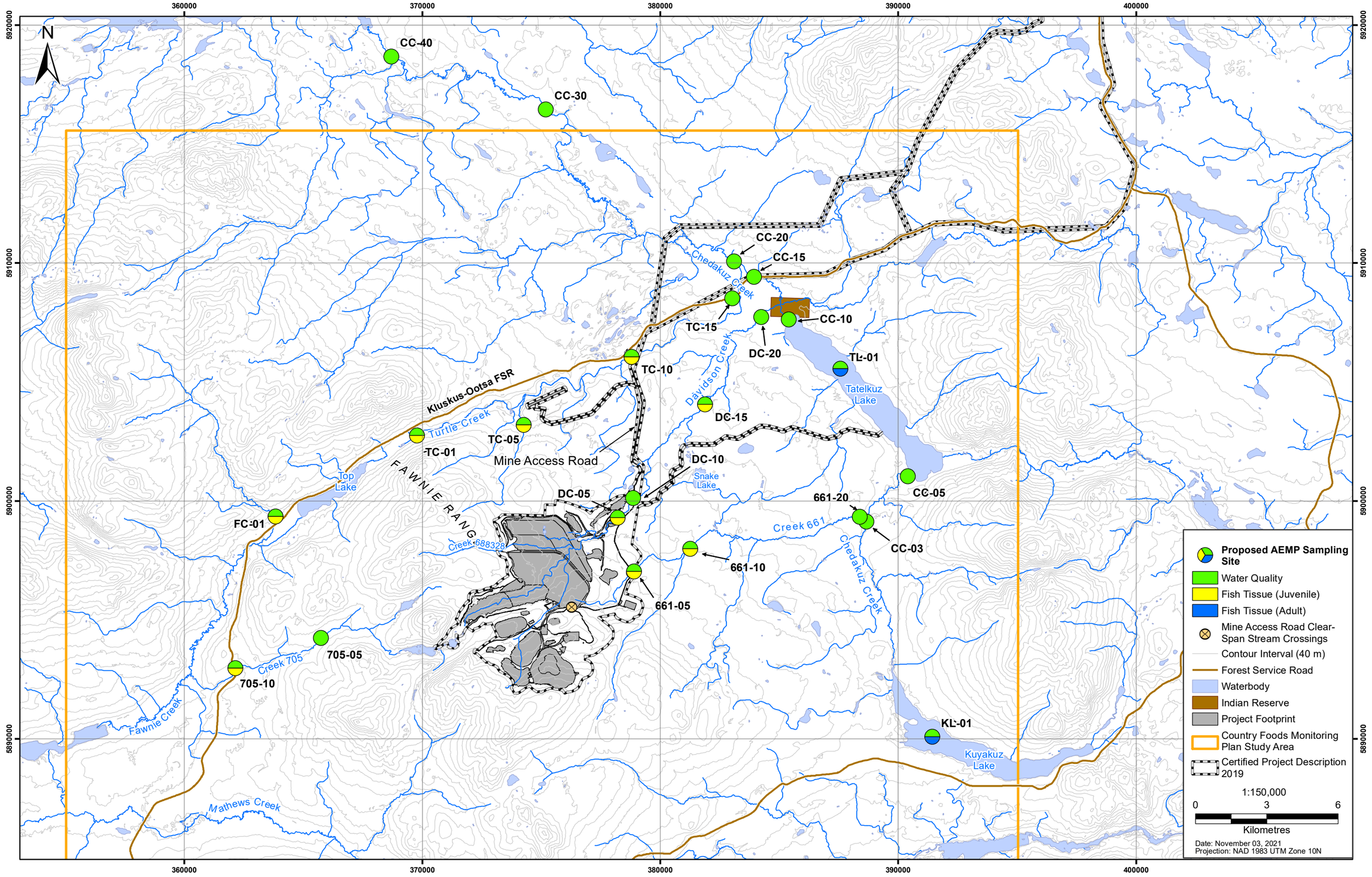

Figure 4.4-1: Surface Water and Fish Tissue Sampling Locations

Fish tissue sampling, with concurrent surface water quality sampling, will be conducted in August to target fish at peak growing season and to coincide with the timing of the wider AEMP and CFMP sampling programs. To the extent possible, the timing will be consistent between years to minimize the potential for timing of sampling to confound results. However, the timing of sampling may be altered, particularly in sampling of adult fish from the lake sites, to increase sampling success (e.g., earlier sampling to capture Kokanee, prior to their migration to stream sites for spawning).

As described in the AEMP and consistent with the approach for soil, plant, and berry sampling described in Section 4.3 of the CFMP, once Construction phase begins, sampling frequency will be once every three years. However, sampling frequency will be decreased to once every six years after two successive cycles in which no effects are identified. Once sampling frequency is decreased to once every six years, frequency would be increased again to once every three years if effects were identified. The adaptive management framework (Section 6.3) also allows for additional sampling to be adjusted or added, both in terms of sampling frequency and locations, when warranted to identify magnitude, spatial extent, or reversibility of observed Project-related effects.

These sampling frequencies are consistent with those used by other mining projects in BC, are consistent with the fish tissue sampling requirements under the MDMER, and would minimize the potential for causing adverse effects to fish populations due to the monitoring program (i.e., cumulative loss of individuals from the populations through lethal sampling).

It is anticipated that monitoring for surface water and fish tissue quality will continue throughout all phases of mine life. Once water quality (and, thus, fish tissue quality) in the receiving environment has stabilized in Post-closure phase, the need for ongoing monitoring through Post-closure phase will be evaluated in consultation with Indigenous groups and regulators.

4.4.2.3 Sampling Methods

Sampling methodologies are described more fully in Section 4.4.2 (Surface Water Quality Sampling) and Section 4.8.1.2 (Sampling Locations and Methods [for fish community]) in the AEMP, and are summarized here for convenience. Sampling of surface water quality will follow methods described in BC ENV (2016) and BC ENV (2013), as updated from time to time, as follows:

- Samples will be collected by field staff trained in proper sample collection techniques and field SOPs will be used to ensure consistent sample collection.
- Samplers will practice clean sampling techniques, including the use of clean vinyl or nitrile gloves.
- Where possible, samples will be collected in areas of laminar flow, with the sampler facing upstream and submerging the laboratory-provided bottles.
- *In situ* sampling will use properly calibrated equipment.
- Samples will be field filtered and/or preserved according to laboratory-specified protocols.
- Samples will be stored in the dark in coolers on ice and/or refrigerated until shipment to the laboratory.
- Samples will be submitted to a CALA-certified laboratory for analysis.
- Samples will be tracked using chain of custody forms.

Sampling of fish tissues will follow methods described in BC ENV (2016) and BC ENV (2013), as updated from time to time, as follows:

- Sampling will be conducted by field staff trained in proper method and equipment use (e.g., electrofishers, gill nets, angling) and sample collection techniques, and field SOPs will be used to ensure consistent sample collection.

- Samplers will practice clean sampling techniques, including the use of clean vinyl or nitrile gloves.
- Sample ID, species collected, date and time of collection, and location waypoint will be recorded on field forms or field notebooks. Site observations (e.g., unusual conditions, signs of stress) will also be recorded. One or more photographs will be taken at each sampling site.
- Fish for tissue analysis will be weighed and measured (fork length and/or total length), and any lesions, parasites, or other abnormalities on fish will be recorded.
- For juvenile fish, lethal sampling will be done and whole body tissue analysis will be completed. For adult fish, fish will be sacrificed if necessary, although use of fish tissue plugs may be explored as an alternative to lethal sampling. When lethal sampling is used for adult fish, tissue samples for laboratory analysis will include liver, muscle, and carcass/viscera. When tissue plugs are used, samples will be collected from the dorsal muscle. Tissue plug samples are expected to be representative of muscle concentrations of metals.
- Tissue samples will be collected and stored in individually labelled plastic bags and stored in the dark in coolers on ice and/or refrigerated until shipment to the laboratory.
- Samples will be submitted to a CALA-certified laboratory for analysis.
- Samples will be tracked using chain of custody forms.

4.4.3 Quality Assurance/Quality Control Program for Water and Fish Tissue Sampling

Quality assurance and quality control (QA/QC) procedures including those described in Part A of the *British Columbia Field Sampling Manual* (Quality Control and Quality Assurance in BC ENV 2013), *Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators* BC ENV (2016) and *Metal Mining Technical Guidance for Environmental Effects Monitoring* (ECCC 2012) will be followed during water and fish tissue sampling for metal analysis. The QA/QC program will include:

- Samplers will be trained on appropriate sampling techniques to minimize the potential for cross-contamination and ensure that samples are collected into appropriate containers, using appropriate equipment, filtered and preserved if needed, and stored appropriately until shipment to the laboratory.
- Field notes and observations will be maintained to document field conditions, unusual conditions, and any notes related to the samples collected using standardized forms.
- Meters or scales used *in situ* will be calibrated (and calibration recorded in the equipment log), with the measurements allowed to stabilize before taking a reading and the data reviewed for unreasonable or erroneous values.
- Field data will be reviewed for accuracy after input into a database to minimize the potential for transcription errors.
- Chain of custody forms will be used for all samples submitted to a CALA-certified laboratory for analysis.
- QA/QC samples for surface water samples will include one field blank and one trip blank per sampling event, one equipment blank (where equipment is used to collect the sample, such as for lake samples), and blind, field split duplicate samples (for surface water) at the rate of approximately 10% of the total number of samples. No field split duplicate samples will be done for fish tissue, as either the whole fish is submitted for a sample (juvenile Rainbow Trout) or the small tissue plugs that may be collected in non-lethal sampling of adults are too small to allow duplicate samples.
- Appropriate laboratory-based QA/QC programs, consistent with the requirements of the British Columbia Environmental Laboratory Manual (BC ENV 2020a) will be used.

The precision and accuracy, representativeness, and sample holding times will be reviewed. Precision and accuracy will be controlled through an assessment of laboratory sample duplicate analysis. The CALA-certified laboratory's QA/QC procedures may include method blanks, replicates, laboratory control samples and reference material, and matrix spikes, as determined by the laboratory for each type of analysis.

Detected concentrations of water quality parameters (concentrations above the MDL) will be noted for both travel and field blanks to indicate possible contamination.

A RPD between field split duplicate water samples will be calculated using Equation 1 (provided in Section 4.3.3), using the methods described in BC ENV (2013). A RPD of less than 20% in field split duplicate samples of surface water when concentrations are more than 5 times higher than the MDL typically indicates acceptable precision and sample homogeneity, while relative percent differences of greater than 20% (and particularly greater than 50%) can indicate sample contamination or sample heterogeneity (BC ENV 2013).

4.5 Small Mammal Tissue Sampling

There are two components to the small mammal tissue sampling under the CFMP:

1. Collaboration with Indigenous groups, particularly with hunters and trappers, to develop an Indigenous-led program for sampling and laboratory analysis of game animals that are hunted or trapped within the CFMP study area (donated samples); and
2. A small mammal (rodent) sampling program that will only be initiated and completed if triggered through the trigger response framework (see Section 6.3 for triggers).

The intent of the first component will be to collect donated samples of tissues (e.g., meat, liver, kidney of small and large mammals, such as hare, deer, moose) from country foods hunted or trapped within the study area to provide a direct measure of the country foods tissue quality. This program could be similar to and build upon a program previously completed by a Masters student (Lis 2016) in the region. However, this CFMP component may not be able to generate data that can be used to identify potential Project effects because of uncertainty about where animals are sampled from, mobility (home ranges) of animals that are sampled, inclusion of multiple species for sampling, and the challenges of collecting sufficient samples from both near field and control areas of the study area.

This first component of the small mammal tissue sampling program is intended to provide local country foods consumers with direct information about the quality of their country foods from within the LSA, which may or may not be linked to changes associated with Project development. However, these measured data may be used to estimate bioaccumulation factors (based on tissue and soil or plant metal concentrations), as direct inputs into future HHRAs as the exposure point concentrations for specific country foods from the study area, or to calibrate the food chain model used in the HHRA (Entia 2022) to improve the accuracy of the food chain model.

The second component would be a more directed program to identify potential Project effects on small mammal tissue quality (typically rodents such as mice), where sampling locations could be identified at near field and control sites and small mammals with small home ranges could be targeted and sampled for tissue analysis. This sampling program would be triggered, developed, and implemented as part of the adaptive management response framework, depending on results from other environmental monitoring (soil, plant, and berry sampling, see Section 6.3). This program would be developed in consultation with Indigenous groups and regulators once triggered in the medium and high action levels of the adaptive management framework.

4.5.1 Parameters for Small Mammal Tissue Sampling

As with other components of the CFMP, the minimum parameter list for analysis of game animal tissue samples and small mammal tissue samples is the 18 COPCs (metals) shown in the first column of Table 3-1. Tissue samples would also be analyzed for tissue moisture content.

Targeted detection limits for metal COPCs will be 10 times lower than tissue guidelines (consistent with BC ENV [2016] requirements for environmental media) or lower than the country foods screening benchmarks, where possible. Note that, because of conservatisms used in their derivation, some of the country foods screening benchmarks in the HHRA Update report (Entia 2022) were at or lower than achievable analytical detection limits (e.g., antimony, arsenic), so targeting detection limits that are 10-fold lower than the screening benchmarks is not possible.

4.5.2 Sampling Locations, Frequencies, and Methods for Small Mammal Tissue

Sampling locations, frequencies, and types of species sampled in the hunter/trapper Indigenous-led component would be variable and would depend on the types and numbers of samples donated by local hunters and trappers. Standardized methods for sample collection and field forms to collect information about what was sampled and where should be developed prior to the collection or submission of samples.

Sampling locations, frequencies, and methods for small mammal tissue sampling intended to identify potential Project effects will be developed as part of the triggered responses under the adaptive management framework. In general, the following should be considered in developing the sampling plan:

- Program design should consider what triggered the need for a small mammal sampling program (e.g., changes in COPC concentrations in soil or plants in a specific area to target the sampling program to answer specific questions [hypotheses]).
- Small mammal sampling should ideally be co-located with soil, plant, and/or berry sampling sites to enable a more robust analysis of potential effects and will include near-field and control sites.
- Sufficient sample numbers (both replicates within a site and total number of sites) should be targeted to enable statistical analysis of results.
- Targeted species or type of animal should consider home ranges (ideally small) and type(s) of foods consumed, where possible.
- SOPs for field sampling and sample submission should be developed in advance of program implementation.
- Sampling program should be developed in consultation with Indigenous groups and regulators.

4.5.3 Quality Assurance/Quality Control Program for Small Mammal Tissue Sampling

The QA/QC program for small mammal tissue sampling will be developed during development of the small mammal tissue sampling program. In general, the QA/QC program should consider:

- Ensuring that field staff or people collecting samples are trained in proper, clean sampling methods and sample storage and shipping procedures (e.g., developing SOPs and training for samplers).
- Developing standardized field data collection forms to document sample types and sampling locations, observations, and other relevant field notes.

- Inclusion of field replicates and duplicate (field split) samples where appropriate, along with any laboratory-based QA/QC samples.
- Submission of samples to a CALA-certified laboratory for analysis.
- Use of chain of custody forms for tracking of samples.

5. DATA ANALYSIS

5.1 Hypotheses, Measurement Endpoints, and Assessment Endpoints

This section describes the measurement endpoints and assessment endpoints to be used in analyzing the results from sampling conducted under Section 4.1 to 4.4 of the CFMP. The measurement endpoints (changes in COPC concentrations) are directly linked to the first objective described in Section 1.1 (first bullet) and are intended to answer the following questions:

1. Are COPC concentrations in air, water, soil, or country foods different than were predicted in the predictive models or the HHRA?

   It is hypothesized that if Project activities lead to emissions or effluent discharges of COPCs outside of the mine site that were underestimated in predictive modelling or in the HHRA, then there would be a significant increase in metal concentrations in environmental media (air, water, or soil) or country foods (e.g., plants, berries, and fish) tissues within the study area in comparison with predicted concentrations (or exposure point concentrations [EPCs]) used in the HHRA. Answering this question will verify the accuracy of the models and the environmental assessment (follow-up program).

2. Are COPC concentrations in air, water, soil, and country foods (i.e., plants, berries, and fish) changing relative to baseline conditions due to Project-related emissions or discharges of COPCs?

   It is hypothesized that if Project activities lead to emissions or effluent discharges of COPCs outside of the mine site, then there would be a significant increase in metal concentrations in environmental media (air, water, soil) or country foods (e.g., plant, berries, and fish) within the study area in comparison with baseline concentrations.

3. If concentrations are different than baseline and different than predicted, are the changes statistically significant or exceeding levels of concern? What is the extent of Project-related influence on COPC concentrations in air, water, soil, or country foods?

   It is hypothesized that if Project activities have emissions or effluent discharges that result in concentrations of COPCs outside of the mine site in environmental media (air, water, and soil) and country foods (specifically plants, berries, or fish) tissue that are higher than baseline concentrations and were underestimated in predictive modelling or in the HHRA, then there would be an unexpected significant increase in metal concentrations in environmental media or country foods, with statistically significant changes in near field sites (relative to control sites) following development of the Project and an identifiable gradient of decreasing concentrations with distance from the Project source(s) of COPCs.

To answer these questions, the following measurement endpoints will be used:

- Concentrations of COPCs at control sites, which are the concentrations measured at sites that are not expected to be affected by Project air emissions or effluent discharges in the future as the sites are at a sufficient distance to the Project or are located upstream or in an adjacent watershed; and
- Concentrations of COPCs at potential impact sites, which are the concentrations measured at sampling sites selected for monitoring potential Project effects during future monitoring and follow-up programs (these sites are categorized as near field, mid field, and far field – see Sections 4.2.2, 4.3.2.1, and 4.4.2.1).

The assessment endpoints will be based on comparisons of concentrations measured in the monitoring program to predicted, baseline, control concentrations, and to guidelines, standards, or other benchmarks (Table 5-1). A BACI analysis of near field and control sites will also be used to identify if there are Project-related impacts to environmental media or country foods (plant, berry, and fish tissue).

Table 5-1: Measurement and Assessment Endpoints for Environmental Media and Country Foods

Measurement Endpoint	Assessment Endpoint
COPC concentrations in air, water, soil, and country foods (plants, berries, and fish tissue)	■ Comparison of measured concentrations to predicted concentrations ■ Comparison of measured concentrations to baseline concentrations ■ Comparison of measured concentrations to applicable environmental media or tissue guidelines or country foods trigger benchmarks ■ Before-after-control-impact (BACI) analysis

5.2 Data Analysis for Air Quality, Soil, Plant Tissue, Berry Tissue, Water, and Fish Tissue Sampling

As the first step in analysis for surface water, air, soil, and tissue metals data, LSA-wide summary statistics (minimum, mean, standard deviation, standard error, median, 95% UCLM, and maximum) of measured concentrations will be prepared. If a measurement is below the MDL, then half the MDL concentration will be used during calculations of summary statistics. Where field split duplicates are collected, duplicates will be averaged to represent concentrations at a given site.

To answer Question 1, measured concentrations will be compared to the predicted concentrations used as input values in the HHRA (EPCs, see Section 6.2.1) for air, soil, water, and country foods. To answer Question 2, measured concentrations will be compared to baseline concentrations (see Section 6.2.2) for baseline environmental media or country foods tissue quality to identify if there have been changes relative to baseline conditions. Media-specific comparisons include:

- Mean measured LSA-wide concentration compared to the 95% UCLM predicted concentration used as the EPC for the Project Case (predicted future conditions) in the HHRA (Entia 2022) to answer Question 1; and
- Mean measured LSA-wide concentration compared to the 95% UCLM baseline concentration measured during baseline studies (see Section 6.2.2) to answer Question 2.

Measured concentrations will also be compared against human health-based guidelines, standards, or benchmarks, where available. Guidelines, standards, and benchmarks were used to support identification of COPCs for the HHRA, so the comparison of maximum measured concentrations of COPCs against the same criteria will confirm the results of the COPC screening process in the HHRA to answer Questions 1 and 2. In addition, this comparison will help to answer part of Question 3, as the guidelines or standards represent the threshold for identifying concentrations of COPCs that are at levels of concern requiring additional assessment and/or mitigation. The health-based guidelines or standards are discussed in Section 6.2.3.

To fully answer Question 3 and further assess Project-related effects on environmental media or tissue concentrations of COPCs, a before-after-control-impact (BACI) analysis will be completed to determine whether changes at potential impact sites also occurred at control sites or whether the change is related to Project emissions or discharges. To reduce the number of false positives (Type I error) due to the large number of statistical tests conducted, a reduced significance level (0.01) will be used when reviewing the results. Highly censored parameters (i.e., more than 70% of data below the MDL) are considered unreliable and will not be subjected to BACI analysis.

In the BACI analysis, for the class effect, data will be grouped into impact (near field monitoring sites) and control sites. For the period effect, data will be grouped into one of two periods: baseline data collected before the start of Construction phase (the “before” dataset) and monitoring data collected after the start of Construction phase (the “after” dataset). The key effect of interest in this BACI design is the interaction

effect. The interaction between the period (before or after) and class (impact or control) effects reveals whether any before-after change in the mean parameter concentration that occurred in the impact site also occurred in the control site or whether before-after changes at impact sites are potentially related to the Project.

For example, if impact site COPC concentrations increase or decrease over time relative to control sites (i.e., a significant interaction effect), this may suggest that the Project is having an effect on COPC concentrations (i.e., a non-parallel effect). However, if a change in the mean at impact sites is detected by the before-after comparison, but the BACI analysis indicates that a parallel change also occurred at the control site, it is reasonable to assume that this change is likely a natural phenomenon (such as natural inter-annual variability in water flows, flooding or other extreme weather events, fires, landslides) and unrelated to the Project activities (e.g., related to logging, agriculture, transportation, etc.). Thus, some professional judgement is needed in the analysis and interpretation of monitoring plan results.

Where potential effects due to the Project are suspected or confirmed with the BACI analysis using data from near field and control sites, additional analysis will be done that includes data from the mid or far field sites to identify the spatial extent or distribution of Project effects. This analysis may be done using statistics and/or visual exploration of the data (e.g., heat maps) to identify gradients and extents of effects. Together, the BACI and spatial analyses will answer Question 3 about significance and extent of Project effects.

5.3 Data Analysis for Small Mammal Tissue Sampling

There are two components to small mammal tissue sampling outlined in Section 4.5: a routine Indigenous-led donated tissue sample analysis program (which may include both small and large mammals) and a triggered small mammal (rodent) tissue sampling program (triggered if significant Project-related changes are identified in soil, plant, or berry metal concentrations).

Data analysis for the donated tissue sample analysis program will include the calculation of summary statistics for each type of tissue sample collected. For small mammals that have a relatively small home range and where the location of capture is known, it may be possible to match the location to one or more nearby soil, plant, and berry sampling locations. Bioaccumulation factors from soil or plant/berries can be calculated as the ratio of the measured metal concentration in the animal tissue over the measured metal concentration in soil, plants, or berries.

For larger mammals with a larger home range or for small mammals where the capture location is not known or not reported, bioaccumulation factors can be estimated based on a study area-wide summary statistic for soil, plants, or berries. The bioaccumulation factor can be calculated as the measured tissue concentration over the 95% UCLM study-area wide concentration for each metal.

The calculated bioaccumulation factors can be compared to those used in the food chain model in the HHRA Update (Entia 2022). This will provide an indication of the extent to which metals are taken up by biota from exposure media (i.e., soil or food) into the tissues that people are consuming.

In addition, the measured metal concentrations from donated samples can be compared to the predicted metal concentrations from the food chain model used in the HHRA Update (Entia 2022). This will provide information about the accuracy of the HHRA risk characterization used to conclude that adverse effects of the Project on human health would be negligible (i.e., to confirm the results of the effects assessment). This information can be used to help answer Question 1 in Section 5.1 (i.e., are COPC concentrations in country foods different than predicted). In addition, the measured metal concentrations can be used to calibrate the food chain model used in the HHRA to improve the accuracy of future predictions using that model.

In the event that a small mammal tissue sampling program is triggered, data will be collected from near field and control sites based on the study design developed at the medium action level for soil, plant tissue, or berry tissue. Summary statistics will be calculated and control-impact statistical analysis will be completed (e.g., ANOVA or non-parametric equivalent) to identify whether there are differences in tissue concentrations between near field and control sites. Results of these analyses will be used in conjunction with data and analysis from other media (e.g., soil, plant tissue, berry tissue, water, dustfall) to determine whether Project-related changes to tissue metal concentrations have occurred in small mammals. This contributes to answering Question 3 in Section 5.1 (i.e., are changes in COPCs concentrations in country foods statistically significant).

In addition, bioaccumulation factors can be calculated for small mammals based on the soil, plant or berry samples that are co-collected with the small mammal tissue samples. These bioaccumulation factors can also be compared between near field and control sites to identify if bioaccumulation patterns differ. If available, bioaccumulation factors from literature for rodents may also be used in comparisons with the calculated bioaccumulation factors from the field samples.

6. ADAPTIVE MANAGEMENT AND FOLLOW-UP PROGRAM

The CFMP is a living document that will evolve over time in response to the results of the monitoring program, changing conditions or development at the Project, updates to scientific methods, and through consultation and discussions with Indigenous groups, regulators, or other stakeholders. This process of continuous improvement with changing conditions is referred to as adaptive management.

Condition 3 of the EAC requires an adaptive management plan to provide a framework for identifying triggers to determine effectiveness of mitigation and whether additional mitigation is required to address effects of the Project on country foods. The monitoring (CFMP) and adaptive management plan, as defined in Condition 3(d) to 3(l) of the EAC, must include:

"3(d) the monitoring program that will be used including methods, location, frequency, timing and duration of the monitoring;

3(e) the baseline information that will be used, or collected where existing baseline information is insufficient, to support the monitoring program;

3(f) the scope, content and frequency of reporting of the monitoring results;

3(g) the identification of qualitative and quantitative triggers, which, when observed through monitoring required under paragraph d), will require the Holder to alter existing, or develop new, mitigation measures to avoid, reduce, and/or remediate effects;

3(h) methods that will be applied to detect when a numeric trigger, or type or level of change referred to in paragraph g) occurs;

3(i) a description of the process for and timing to alter existing mitigation measures or develop new mitigation measures to reduce or avoid effects;

3(j) identification of the new and/or altered mitigation measures that will be applied when any of the changes identified in paragraphs a) to c) occur, or the process by which those will be established and updated over the relevant timeframe for the specific condition;

3(k) the monitoring program that will be used to determine if the altered or new mitigation measures and/or remediation activities are effectively mitigating or remediating the effects and or avoiding potential effects; and

3(l) the scope, content and frequency of reporting on the implementation of altered or new mitigation measures."

Similarly, the federal DS has requirements related to follow-up programs and adaptive management frameworks including:

"2.5 The Proponent shall, where a follow-up program is a requirement of a condition set out in this Decision Statement, have a Qualified Professional, where such a qualification exists for the subject matter of the follow-up program, determine, as part of the development of each follow-up program and in consultation with the party or parties being consulted during the development, the following information:

2.5.1 the follow-up activities that must be undertaken by a qualified individual;

2.5.2 the methodology, location, frequency, timing and duration of monitoring associated with the follow-up program;

2.5.3 the scope, content, format and frequency of reporting of the results of the follow-up program;

2.5.4 the levels of environmental change relative to baseline conditions that would require the Proponent to implement modified or additional mitigation measure(s), including

instances where the Proponent may require Designated Project activities to be stopped; and

2.5.5 the technically and economically feasible mitigation measures to be implemented by the Proponent if monitoring conducted as part of the follow-up program shows that the levels of environmental change referred to in condition 2.5.4 have been reached or exceeded.

2.6 The Proponent shall update and maintain the follow-up and adaptive management information referred to in condition 2.5 during the implementation of each follow-up program in consultation with the party or parties being consulted during the development of each follow-up program."

Thus, an adaptive management framework has been incorporated into the CFMP to meet regulatory requirements and the second objective for the CFMP (Section 1.1, second bullet). Figure 6-1 identifies the components of the adaptive management framework.

Figure 6-1: Adaptive Management Framework

Plan: The CFMP study design considered the requirements for CFMP to meet EAC Conditions 3 and 41 and DS requirements 2.5 to 2.10. BW Gold is engaging with Indigenous groups and relevant federal and provincial authorities on these measures and programs.

Do: Implement the mitigation measures as described in the mitigation and management plans for the Project.

Monitor: Section 4 of the CFMP includes monitoring programs to determine if, after mitigations and management has been applied, Project-related effects to the aquatic or terrestrial environments occur.

BW Gold will review and update monitoring programs, including the CFMP, as required during the life of the Project. This will include:

- Review of the monitoring program in terms of effectiveness in detecting effects;
- Recommendations provided by a QP for changes to the monitoring plan, objectives, frequency, methods, or timing; and
- Engagement tracking to record input from Indigenous groups and regulators such as the EAO and ENV.

Adjust: Quantitative trigger concentrations (Section 6.2) are used to identify the level of Project-related change relative to predicted conditions, baseline conditions, and other benchmarks such as environmental quality guidelines to determine the appropriate action level and management responses. Management

responses may include additional monitoring or studies, adjustment of existing mitigation measures, or identification and implementation of new mitigation measures.

6.1 Country Foods Trigger Response Framework

Triggers are provided at the following action levels of the adaptive management framework: none, low, medium, and high. The framework is intended to provide an early-warning system such that when defined action levels (none, low, medium, and high) are triggered there is sufficient time to prevent adverse effects to human health.

For each of the CFMP monitoring components (air, surface water, soil, plants and berries, fish tissue), the following is required for an effective trigger response framework:

- Definition of appropriate measurement endpoints and assessment endpoints (Table 5-1), and action levels (none, low, and medium action levels) that will enable mitigation of Project-related effects prior to occurrence of adverse effects;
- Define the level of change that may result in adverse effects to human health (high action level);
- Define the process by which the Project-related effect will be assessed for each of the trigger levels;
- Identify the types of mitigations that may be implemented at each action level; and
- Define the reporting procedures for exceedances of trigger levels, including the information that will be provided in a response plan.

Similar to the questions outlined for data analysis (Section 5), the triggers for each of the action levels consider the following questions:

- Are CFMP component assessment endpoints changing in ways that were not predicted by models or is mitigation less successful than anticipated (e.g., measured concentrations of parameters in water are higher than the predicted concentrations used in the HHRA)?
- Are CFMP component assessment endpoints at impact sites changing from baseline concentrations (e.g., measured concentrations of parameters in water are higher than the baseline concentrations) as a result of the Project?
- Are AEMP component assessment endpoints at impact sites changing to levels of concern that may be associated with effects (e.g., measured concentrations are higher than a drinking water quality guideline) as a result of the Project?

A general overview of questions to be addressed and approaches to determining the action level based on results of monitoring under the CFMP is provided in the flow diagram in Figure 6.1-1.

6.2 Human Health Trigger Concentrations

There are multiple triggers used in the adaptive management framework described in Section 6.1. Triggers include predicted concentrations used as EPCs in the HHRA (Section 6.2.1), concentrations measured in baseline studies (Section 6.2.2), and environmental media or tissue quality standards, guidelines, or benchmarks (Section 6.2.3). The following sections define each of these trigger levels and their source or how they are derived.

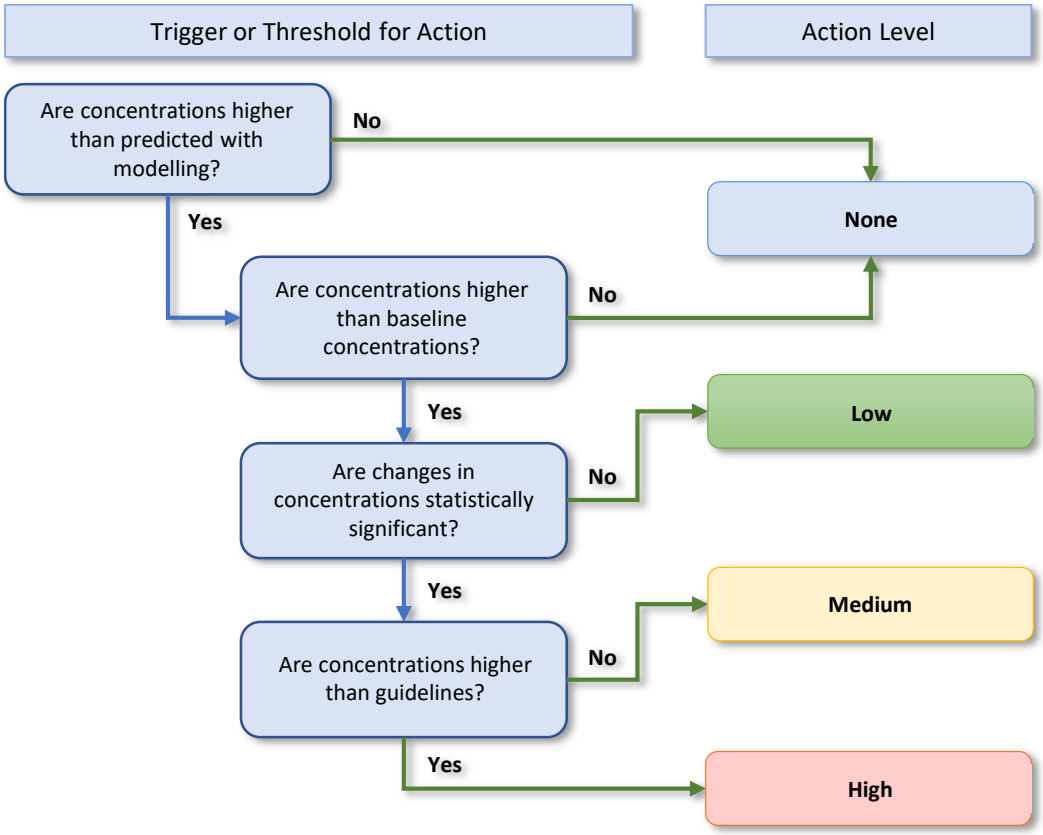

Figure 6.1-1: Overview of Action Levels and Triggers

6.2.1 Exposure Point Concentrations from Predictive Modelling as Triggers

An updated HHRA was completed in November 2021 to replace the HHRA that was originally provided in the Application/EIS for the Project in 2011 (Entia 2022). The updated HHRA considered the many new guidance documents that have been issued by provincial and federal regulators since 2011 and updated surface water quality modelling completed to support the provincial Joint Application.

The updated HHRA included consideration of potential exposure for human receptors to COPCs in air, soil, surface water, and country foods (exposure media) under both existing (Baseline Case) and future (Project Case) conditions. For each exposure media, EPCs were derived for both Baseline Case and Project Case which were used in the calculation of exposure doses. The EPCs were generally based on the 95% UCLM concentrations from each exposure medium.

The EPCs from the Project Case scenario of the HHRA can be used as a basis for comparison to confirm the results (predictions) of the HHRA and human health effects assessment and answer Question 1 in Section 5 about whether Project-related changes have occurred that were not predicted. This comparison addresses the requirement of the DS (see first bullet in Section 1.1) that requires the proponent "*to verify the accuracy of the environmental assessment…caused by changes in concentrations of contaminants of potential concern in water, soil, vegetation and wildlife, including fish".*

The EPCs used in the HHRA update (Entia 2022) will be presented, together with baseline trigger concentrations (Section 6.2.2) and applicable guidelines, standards or benchmarks (Section 6.2.3) used as human health triggers, in a separate CFMP *Human Health Triggers for Adaptive Management* report (see Section 8.1) once baseline data collection ends at the beginning of the Construction phase.

6.2.2 Baseline Trigger Concentrations

Baseline trigger concentrations used to identify whether concentrations have changed relative to baseline conditions are defined based on the concentrations of COPCs measured in environmental media or tissues in baseline studies prior to the Construction phase of the Project. Since baseline data collection is still underway for surface water and dust metals and sample analysis is still underway for baseline soil, plant, berry, and fish tissue samples, the baseline concentrations of COPCs will be defined in a separate CFMP *Human Health Triggers for Adaptive Management* report (see Section 8.1) once baseline data collection ends at the beginning of the Construction phase.

The baseline concentration of a COPC to be used as a trigger concentration is defined as the upper range of measured baseline concentrations. Since part of the objective of the CFMP is to confirm the results of the environmental assessment, and more specifically the HHRA update, baseline trigger concentrations are calculated to be as consistent as possible with the approaches used in the HHRA update (Entia 2022). Note that the baseline trigger concentrations used in the adaptive management framework may be different than the baseline concentrations used in the BACI analysis described in Section 5, as the BACI analysis groups the data and sites differently (i.e., near field vs. control sites) than the LSA-wide approach used in the HHRA.

Baseline trigger concentrations will be calculated at the LSA-wide level for all exposure media and will be based on the 95% UCLM concentration for each COPC, which provides a conservative upper limit to the average concentration of the COPC that would be expected in each media based on baseline data. The LSA-wide 95% UCLM statistic is typically used in HHRAs to provide a conservative overestimate of the average COPC exposure a person may experience within the LSA and was used in the HHRA update completed in Entia (2022).

The sites used in the calculation of the LSA-wide baseline trigger concentrations for surface water will be consistent with the sites included in the surface water quality predictive model and in the HHRA update (Entia 2022). This will include sites in Davidson Creek, Creek 661, Chedakuz Creek, and Tatelkuz Lake. Baseline surface water quality data collection for the Project was initiated in 2011 and is still ongoing. Sampling was continued or initiated (for new sites or sites that had been previously discontinued) for all sampling locations included in either the AEMP or the CFMP. Surface water samples have been analyzed for the full list of parameters required under the AEMP, which includes all of the COPCs identified in the CFMP in Section 3 and Table 3-1. Surface water quality data collection will continue into Construction phase; once Construction phase begins the cut-off date to delineate baseline data from Construction phase data will be established.

For fish tissue, the baseline trigger concentrations will be calculated using concentrations measured in fish sampled from Davidson Creek, Creek 661, Chedakuz Creek, and Tatelkuz Lake, as these were the locations used to determine EPCs for the HHRA update (Entia 2022). Sampling of juvenile Rainbow Trout and adult Kokanee, Rainbow Trout, and Mountain Whitefish was completed (with co-collected water samples) in August 2021. Samples were submitted to ALS Laboratories in Burnaby, BC for analysis and results are anticipated in late Q4 2021. Analysis of the 2021 fish tissue samples included moisture content, total metals, and arsenic speciation. Pending analysis to confirm that these new data are similar to older data, the 2021 data will supplement previous data collected in baseline programs in 2011 and 2012.

For soil, each individual plant species, and each individual berry species, calculation of statistics will include all samples collected outside of the mine site but within the LSA during baseline studies, consistent with the approach used in Entia (2022). An extensive field program for collection of baseline soil, plant and berry samples was completed in August 2021. Samples were submitted to ALS Laboratories in Burnaby, BC for analysis and results were received in late Q4 2021. Laboratory analysis of the 2021 soil samples included pH and metal concentrations, while analysis of plant and berry samples included moisture

content, total metals, and arsenic speciation (berries only). Pending analysis to confirm that these 2021 data are similar to older data, the 2021 data will supplement previous data collected in baseline programs in 2011 and 2012.

Baseline data for metals in dustfall have not yet been collected due to delays in receiving the sampling apparatus in 2021 and is currently planned for summer 2022. As described in Section 4.2.2, a total of four near field and four control sites will be used for the collection of dustfall for metals analysis. Pending analysis, these data will be used to derive the concentration of each metal attached to PM_{10} (conservatively used as the inhalable portion of PM) as follows: The 95% UCLM concentration in dustfall for each metal is divided by the total 95% UCLM concentration of all metals in dustfall to determine the proportion of each metal in dust. The proportion is then multiplied by the measured 24-hour average PM_{10} concentrations to derive the concentration of each metal attached to PM_{10}, which is used to estimate the EPC for metals in air.

6.2.3 Human Health-based Environmental or Tissue Quality Guidelines and Benchmarks as Triggers

Where available, concentrations of parameters measured in environmental media or tissues can be compared against standards or guidelines derived by regulatory agencies (e.g., BC ENV, Health Canada) or against benchmarks derived using standard methods (e.g., country foods trigger benchmarks). The standards, guidelines, or benchmarks were also used in the HHRA to identify the COPCs for evaluation.

The following are standards or guidelines developed by regulatory agencies that will be used as triggers to identify the appropriate action level in the adaptive management framework:

- Air quality:
  - British Columbia Ambient Air Quality Objectives (BC ENV 2020c) for particulate matter and gases such as nitrogen dioxide and sulfur dioxide: https://www2.gov.bc.ca/assets/gov/environment/air-land-water/air/reports-pub/prov_aqo_fact_sheet.pdf
  - Canadian Ambient Air Quality Standards (CCME 2021) for particulate matter and gases such as nitrogen dioxide and sulfur dioxide: https://ccme.ca/en/air-quality-report
  - Ontario Ambient Air Quality Criteria (OMECP 2020) for metals in air, as there are no BC or federal standards or guidelines for metals in air: https://www.ontario.ca/page/ontarios-ambient-air-quality-criteria
  - Effects Screening Levels for metals in air, for parameters without an Ontario criterion: https://www.tceq.texas.gov/toxicology/esl
- Soil quality:
  - Canadian Council of Ministers of the Environment (CCME) Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME 2022), using the human health-based guidelines rather than generic guidelines, where available: https://ccme.ca/en/resources/soil
  - BC CSR (B.C. Reg. 375/96) Schedule 3.1 soil quality standards for human health protection (intake of contaminated soil): https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/375_96_07
- Surface water quality:
  - BC Source Drinking Water Quality Guidelines (BC ENV 2020d): https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/water-quality-guidelines/approved-wqgs/drinking-water-and-recreation/source_drinking_water_quality_guidelines_bcenv.pdf

  - Health Canada Drinking Water Quality Guidelines (Health Canada 2020): https://www.canada.ca/en/health-canada/services/environmental-workplace-health/reports-publications/water-quality/guidelines-canadian-drinking-water-quality-summary-table.html
  - BC CSR (B.C. Reg. 376/96) Schedule 3.2 generic numerical water standards for drinking water: https://www.bclaws.gov.bc.ca/civix/document/id/complete/statreg/375_96_08

- Tissue quality:
  - Human Consumption Screening Values for selenium in fish tissue in BC (Beatty and Russo 2014): https://www2.gov.bc.ca/assets/gov/environment/air-land-water/water/waterquality/water-quality-guidelines/approved-wqgs/bc_moe_se_wqg.pdf

Where available, the country foods trigger benchmark can be based on tissue quality guidelines. However, for most country foods and COPCs other than selenium in fish tissue, there are no available tissue guidelines or standards for use as triggers in the adaptive management framework. It is possible to derive trigger concentrations for country foods, similar to the derivation of screening benchmarks which were used for COPC screening in country foods (Attachment C of Entia 2022). Country foods screening benchmarks were calculated for 25 metals based on Equation 2, consistent with the methods used by CCME to derive soil quality guidelines (CCME 2006):

$$\text{CF SB} = \frac{\text{TRV} \times \text{AF} \times \text{BW}}{\text{ER} \times \text{RAF} \times \text{ET}} \qquad \text{[Equation 2]}$$

where:

CF SB = screening benchmark concentration for each country food (mg/kg wet weight)
TRV = toxicity reference value (mg/kg BW-day)
AF = allocation factor (to represent the proportion of total risk derived from country foods)
BW = body weight (toddler[4], 16.5 kg BW)
ER = exposure rate (total consumption rate of all country foods, assumed to be 0.037 kg wet weight/day)
RAF = relative absorption factor (unitless, assumed to be 1)
ET = exposure time (day, assumed to be 1)

Using this conservative screening benchmark, it was found that the concentrations of 18 of 25 metal parameters in one or more country foods were higher than the benchmark and were identified as COPCs (see Table 3-1). However, for the seven parameters that had concentrations in country foods lower than the benchmarks these country foods screening benchmarks can be used as part of the adaptive management framework as country foods trigger benchmarks. For parameters that had concentrations higher than the country foods trigger benchmark, the 95th percentile of measured baseline concentrations can be used instead as the trigger benchmark.

The country foods trigger benchmarks will be derived and presented, together with the EPCs used in the Project Case HHRA (Section 6.2.1) and baseline trigger concentrations (Section 6.2.2), in a separate CFMP *Human Health Triggers for Adaptive Management* report (see Section 8.1) once baseline data collection ends at the beginning of the Construction phase.

6.3 Triggers and Management Responses for Exposure Media

The adaptive management framework for particulate matter is presented in Table 8.4-1 of the AQDMP and is not included here.

[4] Screening benchmark concentrations for country foods were based on toddlers as they are the most conservative compared to other life stages.

For each action level for metals in air, water, soil, plants or berries, and fish tissue, potential management responses are described (Tables 6.3-1 to 6.3-5). The management actions listed are not exclusive, as the adaptive management framework needs to be flexible enough to enable the tailoring of specific management responses at each action level to the types of actions most likely to be able to address the root cause of the identified changes to the aquatic environment.

As long as the CFMP is implemented and no changes are identified ("none" action level) then mitigation is deemed to be performing as anticipated. If changes are identified at the levels described in Tables 6.3-1 to 6.3-5, mitigation is deemed not to work as anticipated and, depending on where the changes are observed (e.g. in air, water, soil, country foods) and after identifying potential causes, mitigation measures can be adjusted.

An update of the HHRA is included as one potential management response at the high action level for each of the exposure media. To the extent practicable, similar methodologies for HHRA as used in Entia (2021) will be used in updates to the HHRA when triggered as a management response. However, any HHRA will need to consider changes to regulatory context or guidance documents that may have occurred since the HHRA was last updated in 2021. In addition, any updates to the consumption pattern information compared to the data used in the Entia (2021) provided by Indigenous groups after the environmental assessment will be integrated into future HHRAs. If changes are made to the assumptions used in calculating risk in the HHRA compared to Entia (2021), an updated Baseline Case HHRA would need to be completed to enable comparison to an updated Project Case HHRA (i.e., ensuring an "apples to apples" comparison of risk estimates).

Reporting will be completed on an annual basis with management responses intended to be a long-term management response to address potential adverse effects.

Table 6.3-1: Triggers and Management Responses Based on Metals in Air

Level	Trigger	Management Response
None	Mean annual metal concentrations in air (associated with PM_{10})[5] are: ■ Less than or equal to the predicted exposure point concentration (EPC) plus 20%[6]; and ■ Less than or equal to the baseline trigger concentration plus 20%; or ■ Less than Ontario Ambient Air Quality Criteria (OAAQCs) or Texas Commission for Environmental Quality Effects Screening Levels (ESLs).	■ No change to mitigation as mitigation measures are performing as expected, air concentrations are below levels of concern (OAAQCs or ESLs) or within baseline ranges, and air quality is in the range predicted by the air quality model ■ After two cycles of monitoring with no statistically significant effects, decrease sampling frequency to once every six years
Low	Mean annual metal concentrations in air (associated with PM_{10}) may be increasing in a manner not predicted by the air quality model but are below levels of concern. Measured mean annual metal concentrations in dust are:	■ Identify causes of potential changes in concentrations so that existing mitigation measures can be adjusted or targeted mitigation measures can be identified for implementation if needed

[5] Metal concentrations in air associated with PM_{10} will be estimated based on the measured concentration of metals in dustfall and the PM_{10} concentration.

[6] This percentage is based on the recommended value for relative percent difference (RPD) for duplicate surface water samples from BC ENV (2013) and is assumed to also be applicable to dustfall metals. Once available, Project-specific RPDs may be used to replace this value.

Level	Trigger	Management Response
	■ Higher than the predicted EPC plus 20%; and ■ Higher than the baseline trigger concentration plus 20%; and ■ Less than the OAAQCs or ESLs; but changes in concentration are not statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Plan a dust sampling program to define the magnitude, spatial extent, and reversibility of the potential effect ■ After two cycles of monitoring with no statistically significant effects, decrease sampling frequency to once every six years ■ Other responses as defined in the AQDMP report
Medium	Mean annual metal concentrations in air (associated with PM_{10}) are increasing in a manner not predicted by modelling but are below levels of concern. Measured average annual metal concentrations in dust are: ■ Higher than the predicted EPC plus 20%; and ■ Higher than the baseline trigger concentration plus 20%; and ■ Less than the OAAQCs or ESLs; and ■ changes in concentration are statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Increase sampling frequency to once every three years ■ Identify causes of potential changes in concentrations so that targeted mitigation measures can be identified for implementation ■ Review, optimise or adjust existing mitigation measures ■ Evaluate if new mitigation is feasible and how long it would take to implement ■ Implement a dust sampling program to define the magnitude, spatial extent, and reversibility of the potential effect ■ Plan a sampling program to directly measure metals associated with PM_{10} to confirm that concentration estimates based on concentration of metals in dustfall and PM_{10} concentrations is accurate ■ Design and/or implement additional targeted sampling programs ■ Other responses as defined in the AQDMP report
High	Mean annual metal concentrations in air (associated with PM_{10}) are increasing in a manner not predicted by modelling and are at levels of concern. Measured average annual metal concentrations in dust are: ■ Higher than the predicted EPCs plus 20%; and ■ Higher than the baseline trigger concentration plus 20%; and ■ Higher than OAAQCs or ESLs; and ■ changes in concentration are statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Increase sampling frequency to once every three years ■ Confirm root cause of changes in concentrations and implement new mitigation measures or adjust existing mitigation measures to address root cause ■ Implement a dust sampling program to define the magnitude, spatial extent, and reversibility of the potential effect and to assess the effectiveness of implemented mitigation measures ■ Implement a sampling program to measure metals associated with PM_{10} to confirm that concentration estimates based on concentration of metals in dustfall and PM_{10} concentrations is accurate and determine the magnitude, spatial extent, and reversibility of the potential effect ■ Update human health risk assessment to determine if elevated concentrations pose a risk to human health ■ Other responses as defined in the AQDMP report

Table 6.3-2: Triggers and Management Responses Based on Metals in Soil

Level	Trigger	Management Response
None	Mean measured metal concentrations in soil are: ■ Less than or equal to the predicted concentration plus 60%[7]; and ■ Less than or equal to the baseline trigger concentration plus 60%; or ■ Less than the soil quality guidelines.	■ No change to mitigation as mitigation measures are performing as expected ■ After two cycles of monitoring with no statistically significant effects, decrease sampling frequency once every six years
Low	Soil concentrations may be increasing in a manner not predicted by modelling but are below levels of concern. Mean measured metal concentrations in soil in at least two or more consecutive sampling events are: ■ Higher than the predicted concentrations plus 60%; and ■ Higher than the baseline trigger concentration plus 60%; and ■ Less than the soil quality guidelines; but changes in concentration are not statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Identify potential causes of potential changes in concentrations so that targeted mitigation measures can be identified for implementation ■ After two cycles of monitoring with no statistically significant effects, decrease sampling frequency to once every six years
Medium	Soil concentrations are increasing in a manner not predicted by modelling but are below levels of concern. Mean measured metal concentrations in soil are: ■ Higher than the predicted concentration plus 60%; and ■ Higher than the baseline trigger concentration plus 60%, and ■ Less than the soil quality guidelines; and ■ changes in concentration are statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Increase sampling frequency to once every three years ■ Identify causes of potential changes in concentrations so that targeted mitigation can be identified ■ Evaluate if additional monitoring or assessment is required (e.g., spatial analysis, update of human health risk assessment) ■ Optimize existing mitigation ■ Evaluate if new mitigation is feasible and how long it would take to implement ■ Plan a small mammal (rodent) tissue sampling program

[7] This percentage is based on the recommended value for relative percent difference (RPD) for duplicate soil samples from CCME (2016). Due to higher matrix variability in soil compared to surface waters, an acceptable value for RPD between field split duplicate soil samples is 60%. Once available, Project-specific RPDs may be used to replace this value.

Level	Trigger	Management Response
High	Soil concentrations are higher than baseline concentrations and are at levels of concern. Mean measured metal concentrations in soil are: ■ Higher than the predicted concentration plus 60%; and ■ Higher than the baseline trigger concentration plus 60%; and ■ Higher than soil quality guidelines; and ■ changes in concentration are statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Increase sampling frequency to once every three years ■ Confirm root cause of changes in concentrations and implement new mitigation measures or adjust existing mitigation measures to address root cause ■ Implement monitoring to assess effectiveness of new mitigation options ■ Implement additional monitoring or assessment (e.g., spatial analysis) to define the magnitude, spatial extent, and reversibility of the effect ■ Update human health risk assessment to determine if elevated concentrations pose a risk to human health ■ Implement a small mammal (rodent) tissue sampling program

Table 6.3-3: Triggers and Management Responses for Plant and Berry Tissue Metal Concentrations

Level	Trigger	Management Response
None	Mean measured concentration in plants or berries are: ■ Less than or equal to predicted concentrations in plants or berries plus 60%[8]; and ■ Less than or equal to baseline trigger concentration in plants or berries plus 60%; or ■ Less than country foods trigger benchmarks[9].	■ No change to mitigation as mitigation measures are performing as expected ■ After two cycles of monitoring with no statistically significant effects, decrease sampling frequency to once every six years
Low	Plant or berry concentrations may be increasing in a manner not predicted by modelling but are below levels of concern. Measured mean metal concentrations in plants or berries in at least two consecutive sampling events are: ■ Higher than predicted concentrations in plants or berries plus 60%; and ■ Less than or equal to baseline trigger concentration in plants or berries plus 60%; or ■ Less than country foods trigger benchmarks;	■ Identify potential causes of potential changes in concentrations so that targeted mitigation measures can be identified for implementation ■ After two cycles of monitoring with no statistically significant effects, decrease sampling frequency to once every six years

[8] This percentage is based on the recommended value for relative percent difference (RPD) for soil from CCME (2016). Due to matrix variability in soil, an acceptable value for RPD between field split duplicate samples is 60%. It is assumed that plant and berry samples will have a similar or higher RPD value as soil due to additional variability in BCFs between and within vegetation species.

[9] See Section 6.2.3 for a description of country foods trigger benchmarks.

Level	Trigger	Management Response
	but changes in concentration are not statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	
Medium	Plant or berry metal concentrations are increasing in a manner not predicted by modelling, are higher than baseline concentrations, but are not approaching levels of concern. Measured mean metal concentrations in plants or berries in at least two consecutive sampling events are: ■ Higher than predicted concentrations plus 60%; and ■ higher than baseline trigger concentration plus 60%; and ■ less than country foods trigger benchmarks; and ■ changes in concentration are statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Increase sampling frequency to once every three years ■ Evaluate if additional monitoring or assessment is required (e.g., spatial analysis, update of human health risk assessment) ■ Identify causes of potential changes in concentrations so that targeted mitigation can be identified ■ Optimize existing mitigation and evaluate if new mitigation is feasible and how long it would take to implement ■ Plan a small mammal (rodent) tissue sampling program as described in Section 4.5
High	Plant or berry metal concentrations are increasing in a manner not predicted by modelling and are approaching levels of concern. Measured mean metal concentrations in plants and berries in at least two consecutive sampling events are: ■ Higher than predicted concentrations plus 60%; and ■ Higher than baseline trigger concentration plus 60%; and ■ Higher than country foods trigger benchmarks; and ■ changes in concentration are statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Increase sampling frequency to once every three years ■ Confirm root cause of changes in concentrations and implement new mitigation measures or adjust existing mitigation measures to address root cause ■ Implement monitoring to assess effectiveness of new mitigation options ■ Implement additional monitoring or assessment (e.g., spatial analysis) to define the magnitude, spatial extent, and reversibility of the effect ■ Update human health risk assessment to determine if elevated concentrations pose a risk to human health ■ Implement a small mammal (rodent) tissue sampling program as described in Section 4.5

Table 6.3-4: Triggers and Management Responses Based on Metals in Surface Water

Level	Trigger	Management Response
None	Average measured parameter concentrations in water are: ■ Less than or equal to the predicted exposure point concentration (EPC) plus 20%[10]; and ■ Less than or equal to the baseline trigger concentration plus 20%; or ■ Less than the BC Source Drinking Water Quality Guidelines (BC DWQG), Health Canada Drinking Water Quality Guidelines (HC DWQG), and BC CSR Schedule 3.2 generic numerical water standards for drinking water (CSR DW).	No change to mitigation as mitigation measures are performing as expected, water concentrations are below levels of concern (drinking water guidelines or standards) or within baseline ranges, and water quality is in the range predicted by the surface water quality model.
Low	Water concentrations may be increasing in a manner not predicted by the surface water quality model but are below levels of concern. Average measured parameter concentrations in water in two or more consecutive years are: ■ Higher than the predicted EPC plus 20%; and ■ Higher than the baseline trigger concentration plus 20%; and ■ Less than the BC DWGL, HC DWGL, and CSR DW; but changes in concentration are not statistically significant between near-field and control sites or compared to baseline conditions (BACI analysis).	■ Identify causes of potential changes in water concentrations so that existing mitigation measures can be adjusted or targeted mitigation measures can be identified for implementation if needed ■ Plan a water sampling program to define the magnitude, spatial extent, and reversibility of the potential effect ■ Other applicable responses as defined in the AEMP report
Medium	Water concentrations are increasing in a manner not predicted by the surface water quality model but are below levels of concern. Average measured parameter concentrations in water in two or more consecutive years are: ■ Higher than the predicted EPC plus 20%; and ■ Higher than the baseline trigger concentration plus 20%; and ■ Less than the BC DWGL, HC DWGL, and CSR DW; and ■ changes in concentration are statistically significant between near-field and control sites or compared to baseline conditions (BACI analysis).	■ Identify causes of potential changes in water concentrations so that targeted mitigation can be identified ■ Review and optimize existing mitigation ■ Evaluate if new mitigation is feasible and how long it would take to implement ■ Implement a water sampling program to define the magnitude, spatial extent, and reversibility of the effect ■ Other applicable responses as defined in the AEMP report

[10] This percentage is based on the recommended value for relative percent difference (RPD) for duplicate surface water samples from BC ENV (2013).

Level	Trigger	Management Response
High	Water concentrations have increased in a manner not predicted by the surface water quality model and are at levels of concern. Average measured parameter concentrations in water in two or more consecutive years are: ■ Higher than predicted EPC plus 20%; and ■ Higher than the baseline trigger concentration plus 20%; and ■ At or higher than BC DWGL, HC DWGL, and CSR DW; and ■ changes in concentration are statistically significant between near-field and control sites or compared to baseline conditions (BACI analysis).	■ Confirm root cause of changes in water concentrations and implement new mitigation measures or adjust existing mitigation measures to address root cause ■ Implement a water sampling program to define the magnitude, spatial extent, and reversibility of the effect ■ Implement monitoring to assess effectiveness of new mitigation options ■ Evaluate if a human health risk assessment is required to identify spatial extent, magnitude, and reversibility of the effect ■ Other appropriate responses as defined in the AEMP report

Table 6.3-5: Triggers and Management Responses for Fish Tissue Metal Concentrations

Level	Trigger	Management Response
None	Measured mean metal concentrations in fish are: ■ Less than or equal to predicted concentrations in fish tissues plus 60%[11]; and ■ Less than or equal to baseline trigger concentration in fish tissues plus 60%; or ■ Less than country foods trigger benchmarks.	■ No change to mitigation as mitigation measures are performing as expected ■ After two cycles of monitoring with no statistically significant effects, decrease sampling frequency to once every six years
Low	Measured fish tissue metal concentrations may be changing in a manner not predicted by modelling but are below levels of concern. Mean annual measured fish tissue metal concentrations in at least two consecutive sampling events are: ■ Higher than predicted concentrations in fish tissues plus 60%; and ■ Less than or equal to the baseline trigger concentration in fish tissues plus 60%; or ■ Less than country foods trigger benchmarks; but changes in concentration are not statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Identify potential causes of potential changes in concentrations so that targeted mitigation measures can be identified for implementation ■ Plan a collection program to define the magnitude, spatial extent, and reversibility of the effect ■ After two cycles of monitoring with no statistically significant effects, decrease sampling frequency to once every six years ■ Other responses as defined in the AEMP

[11] This percentage has been set at 60% as an interim value (as biological tissues are likely to have higher RPDs similar to soil) but will be updated in the future to be based on two standard deviations of the sample mean once data are available from the 2021 field season.

Level	Trigger	Management Response
Medium	Measured fish tissue metal concentrations are increasing in a manner not predicted by modelling but are below levels of concern. Mean annual measured fish tissue metal concentrations in at least two consecutive sampling events are: ■ Higher than predicted concentrations in fish tissues plus 60%; and ■ Higher than the baseline trigger concentration in fish tissues plus 60%; and ■ Less than country foods trigger benchmarks; and ■ changes in concentration are not statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Increase monitoring frequency to once every three years ■ Identify causes of potential changes in fish tissue concentrations so that targeted mitigation can be identified ■ Review and optimize existing mitigation ■ Evaluate if new mitigation is feasible and how long it would take to implement ■ Plan a fish tissue sampling program to define the magnitude, spatial extent, and reversibility of the effect ■ Evaluate if additional monitoring or assessment is required (e.g., spatial analysis, update of human health risk assessment) to define the magnitude, spatial extent, and reversibility of the effect is required ■ Other responses as defined in the AEMP
High	Fish tissue metal concentrations are increasing in a manner not predicted by modelling and are at levels of concern. Mean annual measured fish tissue metal concentrations are: ■ Higher than predicted concentrations in fish tissues plus 60%; and ■ Higher than the baseline trigger concentration in fish tissues plus 60%; and ■ Higher than country foods trigger benchmarks; and ■ changes in concentration are statistically significant between near-field and control sites and compared to baseline conditions (BACI analysis).	■ Increase monitoring frequency to once every three years ■ Confirm root cause of changes in fish tissue concentrations and implement new mitigation measures or further adjust existing mitigation measures to address root cause ■ Implement monitoring to assess effectiveness of mitigation options ■ Implement additional monitoring or assessment (e.g., spatial analysis) to define the magnitude, spatial extent, and reversibility of the effect ■ Evaluate if a human health risk assessment is required to identify spatial extent, magnitude, and reversibility of the effect ■ Other responses as defined in the AEMP

6.4 Evaluation of Need for Long-term Monitoring

As required by the federal DS condition 6.11, monitoring under the CFMP must be implemented throughout all Project phases. The federal DS defines *"Post-closure*" in Condition 1.29 to mean the "*phase during which the Proponent has completed the reclamation of the Designated Project and during which the Proponent conducts monitoring of the Designated Project to verify that reclamation activities have been successful*." The duration of the Post-closure phase, as defined in Condition 1.29, is not explicitly defined as it will depend on the success of the Closure and Reclamation Plan for the Project.

Similarly, EAC Condition 41 requires implementation of monitoring in Construction, Operations, and Closure phases. EAC Condition 41 allows that a QP may determine that sufficient sampling has been completed under the CFMP and recommend the termination of continued sampling long-term monitoring during the Post-closure phase.

Monitoring under the CFMP will continue with the program design described in Section 4 (as amended in updated CFMP Versions, from time to time, see Section 2.1.3) into the Post-closure phase, until a QP determines that the purpose and objectives described in Section 1.1 have been achieved and continued sampling is not warranted. Recommendations for continuation or termination of monitoring may be made for the aquatic (i.e., fish and water) and terrestrial (i.e., soil, plants, berries, small mammals) environments separately. The recommendation to terminate CFMP monitoring must be supported by rationale which could include some or all of the following:

- The Project has been successfully decommissioned and monitoring under the Closure and Reclamation Plan confirms that reclamation has been successful and continued monitoring of the terrestrial environment is not warranted;
- Statistically significant changes in environmental media have not occurred in preceding Project phases and after three successive rounds of sampling once the Project is in Post-closure phase;
- Trends in environmental media or tissue quality are not found to be increasing or are stable for at least three successive rounds of sampling in Post-closure phase;
- Data (e.g., monitoring or predictive modelling) suggests that sources and/or transport pathways of COPCs from the Project are either decreasing or have stabilized and are unlikely to change significantly in the future;
- Monitoring for at least three successive rounds of sampling once the Project is in Post-closure shows that measured concentrations are below applicable guidelines, standards or benchmarks;
- A human health risk assessment is completed that finds that potential risks to human health are acceptable and are likely to remain acceptable throughout the Post-closure phase; and/or
- Any other rationale that the QP identifies to warrant a recommendation to significantly decrease the frequency or terminate the CFMP monitoring.

Where the QP recommends termination of the sampling program in Post-closure phase the rationale must be documented in either a stand-alone report or in the annual reporting required for the CFMP (see Section 8.2). The report must be provided for review and comment by Indigenous nations, EMLI, ENV, Northern Health, and Health Canada for a period of at least two months (60 days). Presentations or meetings may be held during the review period to discuss comments or concerns with termination of the program.

The CFMP monitoring program will continue until BW Gold receives approval from BC EAO to terminate the CFMP required by EAC Condition 41 and from IAAC to terminate the monitoring under the CFMP required by of the federal DS Condition 6.11.

7. IMPLEMENTATION SCHEDULE

The CFMP will be implemented throughout the following phases:

- Construction phase: Year -2 to Year -1;
- Operations phase: Year +1 to Year +23;
- Closure phase: Year +24 to Year +45; and
- Post-closure phase: Year 46+.

Sampling under the CFMP will be initiated during Construction phase, in alignment with the initiation of sampling triggered under the AEMP to satisfy MDMER requirements for fish sampling. BW Gold is of the view that an annual review of the CFMP, described in Section 8, provides adequate time to monitor the plan's implementation. As needed, changes or improvements to the CFMP can be implemented between annual review cycles, with the agreement of Aboriginal Groups and regulators.

A draft implementation schedule is provided in Table 7-1 for the next 5 years, including additional baseline sampling planned in 2022, the estimated timing for the Human Health Triggers for Adaptive Management report (plus review and comment period), and the first CFMP report (plus review and comment period). For illustrative purposes Table 7-1 also includes a row for updating the CFMP Version 1 to a CFMP Version 2; however, it is not expected that the CFMP would be updated following the first round of CFMP sampling, as any significant changes proposed to the program are likely to be based on multiple years of data collection.

The timelines indicated in the table are interim estimates and are subject to change, as the timing for implementation will ultimately be determined by when permits are received and when Construction phase of the Project formally begins. The dates shown in Table 7-1 assume that:

- The next Draft CFMP (version C.1) will be issued three months after the end of the Joint Application review to allow incorporation of comments and edits receiving during the review.
- A draft of the Human Health Triggers for Adaptive Management report will be issued within one year of completion of all baseline sampling programs (including water quality), which is planned to be completed in Q3 of 2022.
- Year -2 Construction phase activities at the mine site (beyond just early site works) are underway by Q1 2023.
- The first round of CFMP sampling will occur in 2025, assumed to be three years after the last baseline sampling was completed in 2022.
- The review and comment period for draft reports is assumed to be two months for Indigenous groups and regulators, followed by one month for BW Gold to make changes and finalize the reports.

Table 7-1: Implementation Schedule for 2022 to 2027

Task or Deliverable	Estimated Date or Deadline
2022 baseline sampling (expected to include soil, plants, berries, dustfall metals, and fish tissue from lakes plus water throughout the year)	Summer 2022 (August/September)
Draft Country Foods Monitoring Plan, Version C.1	
Draft report circulated for review by Indigenous groups and regulators	Q4 2022
Comment period on draft report	Q1 2023
Final report (CFMP, Version 1.0)	Q2 2023
Human Health Triggers for Adaptive Management report	
Draft report circulated for review by Indigenous groups and regulators	Q3 2023
Comment period on draft report	Q4 2023
Final report	Q4 2023
First round of CFMP sampling (aligned with AEMP sampling)	2025
Environmental Assessment Certificate Report for first CFMP sampling	
Draft report circulated for review by Indigenous groups and regulators	March 31, 2026
Comment period on draft report	May 31, 2026
Final report	June 30, 2026
Decision Statement Annual Reporting	
Draft report circulated for review by Indigenous groups and regulators	June 30, 2026
Comment period on draft report	August 31, 2026
Final report	September 30, 2026
Revision of Country Foods Monitoring Plan from Version 1.0 to Version 2.0	
Draft report circulated for review by Indigenous groups and regulators	Q4 2026
Comment period on draft report	Q1 2027
Final report	Q1 2027

8. REPORTING

8.1 Human Health Triggers for Adaptive Management Report

The human health triggers will be defined in a separate CFMP *Human Health Triggers for Adaptive Management* report once baseline data collection ends at the beginning of the Construction phase. The triggers will include baseline data that are not yet available for analysis, as well as the derivation of country foods trigger benchmarks (see Section 6.2).

Baseline data collection is still underway for surface water and dust metals and sample analysis is still underway for baseline soil, plant, berry, and fish tissue samples. Additional baseline samples for metals in plant and berry tissues, along with soil samples, were collected in August 2021 and sampling results were received in late Q4 2021 (see Section 4.3). Data will be used to calculate the baseline trigger values for future monitoring (Section 6.2.2).

Baseline samples for metals in dust will be collected in the summer of 2022, with results expected for Q4 2022. Samples will be collected at four control and four future impact sites, as described in Section 4.2 These data will be used to derive baseline trigger values for future monitoring (Section 6.2.2).

The *Human Health Triggers for Adaptive Management* report, together with the methods described in the CFMP, will provide the basis for annual sample collection and reporting under the CFMP upon commencement of Construction.

8.2 Country Foods Monitoring Plan Annual Report

Reporting under the CFMP on the results of the monitoring and follow-up programs and the trigger response framework will be completed for each year in which sampling is done, starting in Construction phase. As required by EAC Condition 41(i), the CFMP report will be provided to the EAO, EMLI, ENV, NHA, and Aboriginal Groups; reports will also be available for the general public, upon request. The CFMP report will include, at minimum, the following information:

> *"i) all raw data;*
>
> *ii) interpretation of the collected data, including a discussion of whether the data indicates that any contaminants exceed or exceeded triggers or thresholds…;*
>
> *iii) all additional mitigation or adaptive management measures undertaken by the Holder in response to information obtained through the implementation of the plan or proposed to be undertaken, including when the measures will be implemented, following submission of the report;*
>
> *iv) any proposed changes to the sampling program".*

Thus, the CFMP report will include a summary of field and laboratory methods, present the data collected and associated QA/QC results, data analysis and statistics, and interpret data to answer Questions 1, 2, and 3 presented in Section 5. Uncertainties or limitations in the analysis will be identified along with potential approaches to refine the monitoring or analyses to answer the questions and achieve the CFMP objectives. After the first reporting cycle, subsequent reports will also include information on any management responses that were completed based on action levels identified in preceding reports.

Results from a sampling year will be entered into the adaptive management framework presented in Figure 6-1 and Section 6.3 and the outcomes will be used to identify action levels and inform decision making for appropriate management responses. The report will also set out any modified or additional mitigation measures implemented or proposed to be implemented by the Proponent and rationale for why mitigation measures were selected.

As part of each report, the CFMP sampling plan, analysis, and adaptive management framework will be reviewed to evaluate the effectiveness of the plan and ensure that the objectives defined in Section 1.1 are being met. The CFMP report will include any recommendations for changes to the scope or timing of the CFMP sampling, including rationale for any recommended changes.

Information from reviews received during consultation on previous CFMP reports will be taken under consideration. The report will include a rationale for how the views have, or have not, been integrated into monitoring approaches under the CFMP.

In addition to the reporting described in the following subsections, BW Gold will engage with Indigenous nations through either the Community Liaison or the EMB to determine if the information contained in the CFMP annual report or plain language report would be better distributed to community members in other ways. Upon request, BW Gold will work with communities to provide information in alternative formats such as community meetings, open houses, online meetings, leaflets, or through other methods identified by the communities. BW Gold will also work with communities, through either the Community Liaison or the EMB, to identify the most appropriate ways for community members to provide feedback and input on CFMP and report any concerns related to country foods.

8.2.1 Environmental Assessment Certificate Reporting

Condition 5 of the EAC sets out timelines for reporting requirements. BW Gold must submit a report to the attention of the EAO and Aboriginal Groups on the status of compliance with EAC #M19-01 at the following times:

1. at least 30 days prior to the start of Construction;
2. on or before March 31 in each year after the start of Construction;
3. at least 30 days prior to the start of Operations;
4. on or before March 31 in each year after the start of Operations;
5. at least 30 days prior to the start of Closure;
6. on or before March 31 in each year after the start of Closure until the end of Closure;
7. at least 30 days prior to the start of Post-Closure; and
8. on or before March 31 in each year after the start of Post-Closure until the end of Post-Closure.

BW Gold will submit reports to the EAO and Aboriginal Groups within the timelines specified in Condition 5.

8.2.2 Decision Statement Annual Reporting and Information Sharing

DS Conditions 2.11, 2.12, and 2.13 set out annual reporting requirements related to the implementation of conditions in the DS. Condition 2.14 sets out information sharing requirements related to the annual reports. Reporting will commence when BW Gold begins to implement the conditions set out in the DS. Requirements in DS Conditions 2.11 – 2.14 are presented below and BW Gold is committed to meeting these reporting requirements, consultations, and timelines.

DS Condition 2.11 requires:

> *"The Proponent [BW Gold] shall, commencing in the reporting year during which the Proponent begins the implementation of the conditions set out in this Decision Statement, prepare an annual report that sets out:*
>
> *2.11.1 the activities undertaken by the Proponent in the reporting year to comply with each of the conditions set out in this Decision Statement;*

2.11.2 how the Proponent complied with condition 2.1;

2.11.3 for conditions set out in this Decision Statement for which consultation is a requirement, how the Proponent considered any views and information that the Proponent received during or as a result of the consultation, including a rationale for how the views have, or have not, been integrated;

2.11.4 the information referred to in conditions 2.5 and 2.6 for each follow-up program;

2.11.5 the results of the follow-up program requirements identified in conditions 3.14, 3.15, 3.16, 4.5, 5.5, 6.11, 6.12, 6.13, 6.14, 8.18.6, 8.20.5, 8.21, and 8.22 if required;

2.11.6 any update made to any follow-up program in the reporting year;

2.11.7 any modified or additional mitigation measures implemented or proposed to be implemented by the Proponent, as determined under condition 2.9 and rationale for why mitigation measures were selected pursuant to condition 2.5.4; and

2.11.8 any change(s) to the Designated Project in the reporting year."

DS Condition 2.12 requires: *"The Proponent [BW Gold} will provide the draft annual report to Indigenous groups, no later than June 30 following the reporting year to which the annual report applies. BW Gold will consult Indigenous groups on the content and findings in the draft annual report."*

DS Condition 2.13 requires: *"The Proponent [BW Gold], in consideration of any comments received from Indigenous groups pursuant to condition 2.12 shall revise and submit to the Agency [Impact Assessment Agency of Canada] and Indigenous groups a final annual report, including an executive summary in both official languages, no later than September 30 following the reporting year to which the annual report applies."*

DS Condition 2.14 requires: "*The Proponent [BW Gold] shall publish on the Internet, or any medium which is publicly available, the annual reports and the executive summaries referred to in conditions 2.11 and 2.13.*

The Proponent shall keep these documents publicly available for 25 years following the end of decommissioning of the Designated Project. The Proponent shall notify the Agency and Indigenous groups of the availability of these documents within 48 hours of their publication."

DS Condition 2.15 requires: "*When the development of any plan is a requirement of a condition set out in this Decision Statement, the Proponent [BW Gold] shall submit the plan to the Agency and to Indigenous groups prior to construction, unless otherwise required through the condition.*"

In addition, DS Condition 6.15 requires: "*The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, and implement, during all phases of the Designated Project, a plan to communicate the results of the follow-up program referred to in conditions 6.11, 6.12, 6.13 and 6.14 in plain language to Indigenous groups and relevant authorities. The communication plan shall include the procedures to communicate, including the frequency of communication.*" To satisfy this condition, the plain language report (Section 8.2.3) will be prepared and issued at the same time as the CFMP report. Additional communication methods or approaches may also be used, in consultation and collaboration with Indigenous groups, to disseminate results of the CFMP.

8.2.3 Plain Language Report

In addition to the detailed technical report described in Section 8.2.1 and 8.2.2, a CFMP executive summary-style report written in a manner understandable to a lay audience will be provided at the same time as the report described in Section 8.2.1. The intent of this short report will be to provide a high-level overview of the CFMP data, results, and conclusions in an easy to understand, plain language format, as required by EAC Condition Section 41(i)(v).

9. REFERENCES

Definitions of the acronyms and abbreviations used in this reference list can be found in the Acronyms and Abbreviations section.

Legislation and Regulations

Canadian Environmental Protection Act, 1999, SC 1999, c 33.

Contaminated Sites Regulation, B.C. Reg. 375/96.

Declaration on the Rights of Indigenous Peoples Act, SBC 2019, c. 44.

Drinking Water Protection Act, SBC 2001, c. 9.

Environmental Assessment Act, SBC 2018, c 51.

Environmental Management Act, SBC 2003, c. 53.

Impact Assessment Act, RSC 2019, c 28.

Public Health Act, SBC 2008, c. 28.

United Nations Declaration on the Rights of Indigenous Peoples Act, SC 2021, c 14.

Secondary Sources

ASTM. 2017. *Standard Test Method for Collection and Measurement of Dustfall (Settleable Particulate Matter), Standard D1739-98*. American Society for Testing and Materials International: West Conshohocken, PA.

BC EMLI/BC ENV. 2018. *Developing a Fugitive Dust Management Plan for Industrial Projects*. BC Ministry of Energy, Mines and Petroleum Resources (currently BC Ministry of Energy, Mines, and Low carbon Initiatives, BC EMLI) and BC Ministry of Environment and Climate Change Strategy (BC ENV): Victoria, BC.

BC ENV. 2013. *British Columbia Field Sampling Manual*. British Columbia Ministry of Water, Land and Air Protection: Victoria, BC.

BC ENV. 2016. *Water and Air Baseline Monitoring Guidance Document for Mine Proponents and Operators*. V2. Prepared by the British Columbia Ministry of Environment: Victoria, BC.

BC ENV. 2017. *Technical Guidance #7 on Contaminated Sites: Supplemental Guidance for Risk Assessments*. Victoria , BC.

BC ENV. 2018. *Standard Operating Procedure for the Sample Collection of Dustfall (Settleable Particulate Matter) and Metals –DRAFT*. Part B1 of BC Field Sampling Manual. British Columbia Ministry of Environment and Climate Change Strategy: Victoria, BC.

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APPENDIX A TABLE OF CONCORDANCE WITH PROVINCIAL AND FEDERAL CONDITIONS

Table A-1: Table of Concordance with Provincial Environmental Assessment Certificate Conditions

Environmental Assessment Certificate	Location of Information in the Country Foods Monitoring Plan
Condition 41: Country Foods Monitoring Plan	
The Holder must retain one or more Qualified Professionals to develop a Country Foods Monitoring Plan. The plan must be developed in consultation with EMPR, ENV, NHA, and the Aboriginal Groups.	Section 1.2 and 1.3.1 (Qualified Professionals), Section 2 (consultation)
The plan must include at least the following:	
a) identification of all COPCs and related human health thresholds and triggers based on human health guidelines, as identified by a Qualified Professional;	Section 3 for COPCs; Section 6.2 for triggers
b) the means by which the Qualified Professional will work with the Aboriginal Groups to identify the specific country foods to be sampled through this plan;	Section 2.1
c) the means by which any sampling required by other plans required under this Certificate can also be used to inform the requirements of this plan;	Section 1.4
d) methods and locations for sampling COPCs, including quality assurance, quality control measures and sampling frequency. Unless addressed through sampling undertaken through other plans as identified in paragraph c), sampling methods must include at least the following:	Section 4
i) detection limits that are sufficient to compare to human health thresholds and triggers outlined in paragraph a);	Sections 4.3.1, 4.4.1, 4.5.1
ii) reference sites that are not impacted by the Project;	Section 4.1.3
iii) air quality sampling and monitoring including:	Section 4.2
i. criteria air contaminants;	Section 4.2
ii. dustfall, as outlined in Condition 20;	Section 4.2
iii. meteorological parameters;	Section 4.2
iv) soil sampling, including:	Section 4.3
i. co-location of samples with vegetation tissue samples in paragraph d) v);	Section 4.3.2
v) vegetation tissue sampling, including:	Section 4.3
i. co-location of samples with soil in paragraph d) iv);	Section 4.3.2
ii. selection of plant species to be sampled in consultation with the Aboriginal Groups;	Section 2.1; Section 4.3
vi) fish tissue sampling, including:	Section 4.4
i. co-location of samples with water samples in paragraph d) vii);	Section 4.4.2
ii. selection of fish species to be sampled in consultation with the Aboriginal Groups;	Section 4.4.2
vii) water quality sampling, including:	Section 4.4
iii. parameters that can influence metal uptake;	Section 4.4.1
iv. co-location of samples with fish tissue in paragraph d) vi); and	Section 4.4.2
viii) small mammal tissue sampling;	Section 4.5

Environmental Assessment Certificate	Location of Information in the Country Foods Monitoring Plan
e) the means by which the Holder will, in consultation with Aboriginal Groups, incorporate specific measures to ensure that the sampling plan is culturally appropriate;	Section 2, Section 4.1
f) the analysis that will be undertaken by the Qualified Professional to assess if the information from the sampling indicates potential effects to country foods as a result of the Project;	Section 5, Section 6
g) how the results of other plans required by this Certificate and any provincial processes applicable to the Project, will inform and be informed by the Country Foods Monitoring Plan;	Section 1.4
h) process for a Qualified Professional to assess if sufficient sampling has been conducted and whether further long-term monitoring is required, and to what extent. The process must include consultation with EMPR, ENV, NHA, and the Aboriginal Groups;	Section 2, Section 6.4, Section 8
i) the means by which the Holder will communicate the results of the sampling to the EAO, EMPR, ENV, NHA, and the Aboriginal Groups. The process must include how the Holder will canvass and consider concerns about effects to country foods from Aboriginal Groups and set reporting frequency in consideration of those concerns. At a minimum, this must include the production and distribution of an annual report which includes:	Section 8
i) all raw data;	Section 8.2
ii) interpretation of the collected data, including a discussion of whether the data indicates that any contaminants exceed or exceeded triggers or thresholds identified in paragraph a);	Section 8.1 and 8.2
iii) all additional mitigation or adaptive management measures undertaken by the Holder in response to information obtained through the implementation of the plan or proposed to be undertaken, including when the measures will be implemented, following submission of the report;	Section 8.2
iv) any proposed changes to the sampling	Section 8.2
The Holder must provide the draft plan that was developed in consultation with EMPR, ENV, NHA and Aboriginal Groups to the EAO, EMPR, ENV, NHA, and Aboriginal Groups a minimum of 60 days prior to the planned commencement of Construction or as listed in the Document Submission Plan required by Condition 10 of this Certificate.	Section 2
The plan and any amendments thereto, must be implemented to the satisfaction of the Qualified Professional throughout Construction, Operations, and Closure, and to the satisfaction of the EAO.	Section 2, Section 7, Section 8
Condition 2: Plan Development	
Where a condition of this Certificate requires the Holder to develop a plan, program or other document, any such plan, program or other document must, at a minimum, include the following information:	
a) purpose and objectives of the plan, program or other document;	Section 1.1
b) roles and responsibilities of the Holder and Employees;	Section 1.2
c) names and, if applicable, professional certifications and professional stamps/seals, of those responsible for the preparation of the plan, program, or other document;	Signature Page and Section 1.3.1

Environmental Assessment Certificate	Location of Information in the Country Foods Monitoring Plan
d) schedule for implementing the plan, program or other document throughout the relevant Project phases;	Section 4, Section 6.3, Section 7, and Section 8
e) means by which the effectiveness of the mitigation measures will be evaluated including the schedule for evaluating effectiveness;	Section 5 and Section 6
g) schedules and methods for the submission of reporting to specific agencies, Aboriginal Groups and the public and the required form and content of those reports; and	Section 7 and Section 8
h) process and timing for updating and revising the plan, program or other document, including any consultation with agencies and Aboriginal Groups that would occur in connection with such updates and revisions.	Section 2.1.3 and Section 8
Condition 3: Adaptive Management	
Where a condition of this Certificate requires the Holder to develop a plan, program or other document that includes monitoring, including monitoring of mitigation measures or monitoring to determine the effectiveness of the mitigation measures, the Holder must include adaptive management in that plan. The objective of the adaptive management is to address the circumstances that will require the Holder to implement alternate or additional mitigation measures to address effects of the Project if the monitoring shows that those effects:	Section 6
a) are not mitigated to the extent contemplated in the Application;	Section 6 and Tables 6.3-1 to 6.3-5
b) are not predicted in the Application; or	Section 6 and Tables 6.3-1 to 6.3-5
c) have exceeded the triggers identified in paragraph g) of this condition.	Section 6 and Tables 6.3-1 to 6.3-5
The adaptive management in the plan must include at least the following:	
d) the monitoring program that will be used including methods, location, frequency, timing and duration of the monitoring;	Section 4 and Section 6.3
e) the baseline information that will be used, or collected where existing baseline information is insufficient, to support the monitoring program;	Section 6.2.2 and Section 8.1
f) the scope, content and frequency of reporting of the monitoring results;	Section 8.2
g) the identification of qualitative and quantitative triggers, which, when observed through monitoring required under paragraph d), will require the Holder to alter existing, or develop new, mitigation measures to avoid, reduce, and/or remediate effects;	Section 6.2, Section 6.3, Section 8.1
h) the methods that will be applied to detect when a numeric trigger, or type or level of change referred to in paragraph g), has occurred;	Section 5 and Section 6.3
i) a description of the process for and timing to alter existing mitigation measures or develop new mitigation measures to reduce or avoid effects;	Section 6.3
j) identification of the new and/or altered mitigation measures that will be applied when any of the changes identified in paragraphs a) to c) occur, or the process by which those will be established and updated over the relevant timeframe for the specific condition;	Section 6.3

Environmental Assessment Certificate	Location of Information in the Country Foods Monitoring Plan
k) the monitoring program that will be used to determine if the altered or new mitigation measures and/or remediation activities are effectively mitigating or remediating the effects and or avoiding potential effects; and,	Section 4
l) the scope, content and frequency of reporting on the implementation of altered or new mitigation measures.	Section 8.2
If there are any requirements or mitigation measures required in the plan, program or other document for which adaptive management, or elements of adaptive management listed in paragraphs d) to l) are assessed to be not appropriate or applicable, the plan must include identification of those requirements and measures, and the rationale for that assessment.	Section 8.2
Condition 4: Consultation	
Where a condition of this Certificate requires the Holder consult a particular party or parties regarding the content of a plan, program or other document, the Holder must, to the satisfaction of the EAO:	
a) provide written notice to each such party that:	Section 2, Section 8.2
i) includes a copy of the plan, program or other document;	Section 2, Section 8.2
ii) invites the party to provide its views on the content of such plan, program or other document; and	Section 2, Section 8.2
iii) indicates:	
i. if a timeframe for providing such views to the Holder is specified in the relevant condition of this Certificate, that the party may provide such views to the Holder within such time frame; or	Section 2, Section 8.2
ii. if a timeframe for providing such views to the Holder is not specified in the relevant condition of this Certificate, specifies a reasonable period during which the party may submit such views to the Holder;	Section 2, Section 8.2
b) undertake a full and impartial consideration of any views and other information provided by a party in accordance with the timelines specified in a notice given pursuant to paragraph (a);	Section 2
c) provide a written explanation to each such party that provided comments in accordance with a notice given pursuant to paragraph (a) as to:	Section 2, Section 8.2
i) how the views and information provided by such party to the Holder have been considered and addressed in a revised version of the plan, program or other document; or	Section 2, Section 8.2
ii) why such views and information have not been addressed in a revised version of the plan, program or other document;	Section 2, Section 8.2
d) maintain a record of consultation with each such party regarding the plan, program or other document; and	Section 2, Section 8.2
e) provide a copy of such consultation record to the EAO, the relevant party, or both, promptly upon the written request of the EAO or such party. The copy of such consultation record must be provided to the EAO, relevant party, or both, no later than 15 days after the Holder receives the request for a copy of the consultation record, unless otherwise authorized by the EAO.	Section 2, Section 8.2

Table A-2: Table of Concordance with Federal Decision Statement Conditions

Federal Decision Statement Condition	Location of Information in the Country Foods Monitoring Plan
Health and Socio-economic Conditions and Current Use of Lands and Resources for Traditional Purposes	
6.5 The Proponent shall, in consultation with Indigenous groups, install and maintain signs indicating that consumption of surface water is not advisable in the tailings storage facility, the pit lake and Davidson Creek year-round at locations established in consultation with Indigenous groups.	Section 4.4
6.11 The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, a follow-up program to verify the accuracy of the environmental assessment as it pertains to adverse environmental effects of the Designated Project on the health of Indigenous Peoples caused by changes in concentrations of contaminants of potential concern in water, soil, vegetation and wildlife, including fish, and determine the effectiveness of mitigation measures. As part of the development of the follow-up program, the Proponent shall identify the vegetation and wildlife species that shall be monitored, the locations where the monitoring will be conducted, the contaminants to be monitored and the frequency of the monitoring. The Proponent shall implement the follow-up program during all phases of the Designated Project and shall apply conditions 2.9 and 2.10 when implementing the follow-up program. In doing so, the Proponent shall:	All Sections
6.11.1 monitor, prior to construction, contaminants of potential concern in soil, vegetation, wildlife, including fish and water. The Proponent shall also co-locate soil sampling with vegetation samples and water sampling with fish samples;	Section 4, Sections 4.3.2 and 4.4.2 (co-location), and Section 6.2.2
6.11.2 monitor, during all phases of the Designated Project, contaminants of potential concern in water, soil, vegetation, and wildlife species;	Section 4
6.11.3 if the sampling and monitoring results referred to in condition 6.11.1 and 6.11.2 exceed the predictions made during the environmental assessment, implement any modified or additional mitigation measures pursuant to condition 2.9 based on the results of the follow-up program and update the human health risk assessment identified by the Proponent in Appendix 9.2.2A of the Environmental Impact Statement using the results of the sampling and monitoring. The Proponent shall integrate the current and predicted consumption patterns of each Indigenous group identified during the environmental assessment in the updated human health risk assessment and any updated consumption pattern information provided by Indigenous groups as part of the follow-up program.	Section 6 and Tables 6.3-1 to 6.3-5
6.12 The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, a follow-up program to verify the accuracy of the environmental assessment as it pertains to adverse environmental effects of the Designated Project on the health of Indigenous Peoples as a result of changes to air quality and determine the effectiveness of mitigation measures. As part of the implementation of the follow-up program, the Proponent shall monitor nitrogen dioxide (NO_2), sulfur dioxide (SO_2), fine particulate matter ($PM_{2.5}$), particulate matter (PM_{10}), dust, and carbon monoxide (CO) in air. The Proponent shall implement the follow-up program during all phases of the Designated Project and shall apply conditions 2.9 and 2.10 when implementing the follow-up program.	Section 4.2 (also links to the Air Quality and Fugitive Dust Management Plan)

Federal Decision Statement Condition	Location of Information in the Country Foods Monitoring Plan
6.15 The Proponent shall develop, prior to construction and in consultation with Indigenous groups and relevant authorities, and implement, during all phases of the Designated Project, a plan to communicate the results of the follow-up program referred to in conditions 6.11, 6.12, 6.13 and 6.14 in plain language to Indigenous groups and relevant authorities. The communication plan shall include the procedures to communicate, including the frequency of communication.	Section 8.2.2 and Section 8.2.3
Consultation	
2.3 The Proponent shall, where consultation is a requirement of a condition set out in this Decision Statement: 2.3.1 provide a written notice of the opportunity for the party or parties being consulted to present their views and information on the subject of the consultation;	Section 2
2.3.2 provide all information available and relevant on the scope and the subject matter of the consultation and a period of time agreed upon with the party or parties being consulted, not less than 15 days, to prepare their views and information;	Section 2
2.3.3 undertake a full and impartial consideration of all views and information presented by the party or parties being consulted on the subject matter of the consultation;	Section 2
2.3.4 strive to reach consensus with Indigenous groups; and	Section 2
2.3.5 advise the party or parties being consulted on how the views and information received have been considered by the Proponent including a rationale for why the views have, or have not, been integrated. The Proponent shall advise the party or parties in a time period that does not exceed the period of time taken in 2.3.2.	Section 2
2.4 The Proponent shall, where consultation with Indigenous groups is a requirement of a condition set out in this Decision Statement, determine and strive to reach consensus with each Indigenous group regarding the manner by which to satisfy the consultation requirements referred to in condition 2.3, including:	Section 2
2.4.1 the methods of notification;	Section 2
2.4.2 the type of information and the period of time to be provided when seeking input;	Section 2
2.4.3 the process to be used by the Proponent to undertake impartial consideration of all views and information presented on the subject of the consultation; and	Section 2
2.4.4 the period of time and the means by which to advise Indigenous groups of how their views and information were considered by the Proponent.	Section 2
Follow-up and Adaptive Management	
2.5 The Proponent shall, where a follow-up program is a requirement of a condition set out in this Decision Statement, have a Qualified Professional, where such a qualification exists for the subject matter of the follow-up program, determine, as part of the development of each follow-up program and in consultation with the party or parties being consulted during the development, the following information:	Section 1.3.1
2.5.1 the follow-up activities that must be undertaken by a qualified individual;	Section 1.3.1, Section 6.3, Section 8

Federal Decision Statement Condition	Location of Information in the Country Foods Monitoring Plan
2.5.2 the methodology, location, frequency, timing and duration of monitoring associated with the follow-up program;	Section 4, Section 6.3
2.5.3 the scope, content, format and frequency of reporting of the results of the follow-up program;	Section 8.2
2.5.4 the levels of environmental change relative to baseline conditions that would require the Proponent to implement modified or additional mitigation measure(s), including instances where the Proponent may require Designated Project activities to be stopped; and	Section 6.2, Section 6.3
2.5.5 the technically and economically feasible mitigation measures to be implemented by the Proponent if monitoring conducted as part of the follow-up program shows that the levels of environmental change referred to in condition 2.5.4 have been reached or exceeded.	Section 6.3
2.6 The Proponent shall update and maintain the follow-up and adaptive management information referred to in condition 2.5 during the implementation of each follow-up program in consultation with the party or parties being consulted during the development of each follow-up program.	Section 8
2.7 The Proponent shall provide a draft of the follow-up programs referred to in conditions 3.14, 3.15, 3.16, 4.5, 5.5, 6.11, 6.12, 6.13, 6.14, 8.18.6, 8.20.5, 8.21, and 8.22, if required, to the party or parties being consulted during the development of each follow-up program for a consultation period of up to 60 days prior to providing follow-up programs pursuant to condition 2.8.	Section 2, Section 8.2
2.8 The Proponent shall provide the follow-up programs referred to in conditions 3.14, 3.15, 3.16, 4.5, 5.5, 6.11, 6.12, 6.13, 6.14, 8.18.6, 8.20.5, 8.21, and 8.22, if required, to the Agency and to the party or parties being consulted during the development of each follow-up program prior to the implementation of each follow-up program. The Proponent shall also provide any update(s) made pursuant to condition 2.6 to the Agency and to the party or parties being consulted during the development of each follow-up program within 30 days of the follow-up program being updated.	Section 2, Section 8.2
2.9 The Proponent shall, where a follow-up program is a requirement of a condition set out in this Decision Statement:	
2.9.1 conduct the follow-up program according to the information determined pursuant to condition 2.5;	Section 4, Section 5, Section 6, Section 8
2.9.2 undertake monitoring and analysis to verify the accuracy of the environmental assessment as it pertains to the particular condition and/or to determine the effectiveness of any mitigation measure(s);	Section 4, Section 5, Section 6
2.9.3 determine whether modified or additional mitigation measures are required based on the monitoring and analysis undertaken in accordance with condition 2.9.2; and	Section 5, Section 6
2.9.4 if modified or additional mitigation measures are required pursuant to condition 2.9.3, develop and implement these mitigation measures in a timely manner and monitor them in accordance with condition 2.9.2.	Section 6

Federal Decision Statement Condition	Location of Information in the Country Foods Monitoring Plan
2.10 Where consultation with Indigenous groups is a requirement of a follow-up program, the Proponent shall discuss the follow-up program with Indigenous groups and determine, in consultation with Indigenous groups, opportunities for their participation in the implementation of the follow-up program, including the analysis of the follow-up results and whether modified or additional mitigation measures are required, as set out in condition 2.9.	Section 2, Section 8
Annual Reporting	
2.11 The Proponent shall, commencing in the reporting year during which the Proponent begins the implementation of the conditions set out in this Decision Statement, prepare an annual report that sets out:	Section 8.2
2.11.1 the activities undertaken by the Proponent in the reporting year to comply with each of the conditions set out in this Decision Statement;	Section 8.2
2.11.2 how the Proponent complied with condition 2.1;	Section 8.2
2.11.3 for conditions set out in this Decision Statement for which consultation is a requirement, how the Proponent considered any views and information that the Proponent received during or as a result of the consultation, including a rationale for how the views have, or have not, been integrated;	Section 8.2
2.11.4 the information referred to in conditions 2.5 and 2.6 for each follow-up program;	Section 8.2
2.11.5 the results of the follow-up program requirements identified in conditions 3.14, 3.15, 3.16, 4.5, 5.5, 6.11, 6.12, 6.13, 6.14, 8.18.6, 8.20.5, 8.21, and 8.22 if required;	Section 8.2
2.11.6 any update made to any follow-up program in the reporting year;	Section 8.2
2.11.7 any modified or additional mitigation measures implemented or proposed to be implemented by the Proponent, as determined under condition 2.9 and rationale for why mitigation measures were selected pursuant to condition 2.5.4; and	Section 8.2
2.11.8 any change(s) to the Designated Project in the reporting year.	Section 8.2
2.12 The Proponent shall provide a draft annual report referred to in condition 2.11 to Indigenous groups, no later than June 30 following the reporting year to which the annual report applies. The Proponent shall consult Indigenous groups on the content and findings in the draft annual report.	Section 7 (Table 7.1) and Section 8.2
2.13 The Proponent, in consideration of any comments received from Indigenous groups pursuant to condition, 2.12 shall revise and submit to the Agency and Indigenous groups a final annual report, including an executive summary in both official languages, no later than September 30 following the reporting year to which the annual report applies.	Section 7 (Table 7.1) and Section 8.2

APPENDIX B DETAILS OF FIELD SAMPLING LOCATIONS FOR SOIL, PLANTS, AND BERRIES

Table B-1: Soil, Plant, and Berry Sampling Locations and Types, Site Classification, and Distance from Mine Site

Full Sample ID	Sample ID for Mapping	UTM Coordinates		Sample Type							Site Classification				Distance from Mine Site (km)
				Plant			Berry			Soil					
		Easting	Northing	Willow	Sedge	Labrador Tea	Huckleberry	Blueberry	Soapberry		Near Field	Road Transect (Near Field)	Mid Field	Reference (Control)	
CFMP-SV-001	001	371271	5892260	X	X		X	X		X			X		1.6
CFMP-SV-002	002	365957	5894805	X	X	X		X	X	X			X		4.6
CFMP-SV-003	003	373408	5899788	X	X	X	X			X	X				0.4
CFMP-SV-004	004	371485	5896139	X	X	X				X	X				0.5
CFMP-SV-005	005	368752	5900683	X		X			X	X			X		4.5
CFMP-SV-006	006	374417	5891796	X	X		X	X		X	X				0.3
CFMP-SV-007	007	373424	5886984	X	X	X	X			X			X		5.0
CFMP-SV-008	008	375413	5884185	X	X	X	X			X				X	7.8
CFMP-SV-009	009	378740	5890400	X	X	X				X			X		2.8
CFMP-SV-010	010	376596	5891639	X	X	X	X			X	X				0.5
CFMP-SV-011	011	387932	5893877	X				X	X	X				X	8.8
CFMP-SV-012	012	385869	5888517	X					X	X				X	9.5
CFMP-SV-013	013	379271	5897434	X		X			X	X	X				0.2
CFMP-SV-014	014	379289	5898605	X	X	X		X	X	X	X				0.4
CFMP-SV-015	015	381854	5898987	X	X	X		X	X	X			X		2.9
CFMP-SV-016	016	387750	5899169	X	X				X	X				X	8.7
CFMP-SV-017	017	382514	5901070	X	X	X				X			X		3.3
CFMP-SV-018	018	379097	5901510	X	X	X			X	X	X				0.5
CFMP-SV-019	019	377967	5900722	X	X	X			X	X	X				0.6
CFMP-SV-020	020	382931	5904351	X	X			X		X				X	5.1

Full Sample ID	Sample ID for Mapping	UTM Coordinates		Sample Type							Site Classification				Distance from Mine Site (km)
				Plant			Berry			Soil					
		Easting	Northing	Willow	Sedge	Labrador Tea	Huckleberry	Blueberry	Soapberry		Near Field	Road Transect (Near Field)	Mid Field	Reference (Control)	
CFMP-SV-021	021	383744	5897519	X	X	X			X	X			X		4.6
CFMP-SV-022	022	378218	5894561	X			X			X	X				0.2
CFMP-SV-023	023	366878	5905536	X			X			X				X	8.8
CFMP-SV-024	024	375822	5907513	X	X	X			X	X				X	7.2
CFMP-SV-025	025	378819	5905556	X				X	X	X	X				4.5
CFMP-SV-027	027	386022	5902891	X	X	X		X	X	X				X	7.1
CFMP-SV-028	028	381909	5894605	X	X			X		X			X		2.8
CFMP-SV-029	029	373268	5903310	X	X	X			X	X			X		3.9
CFMP-SV-030	030	375429	5903222	X	X	X			X	X			X		3.2
CFMP-SV-031	031	372353	5897782	X	X	X	X			X	X				0.8
CFMP-SV-032	032	368437	5880920	X	X	X	X			X				X	12.3
CFMP-SV-033	033	397333	5892492	X	X	X	X			X				X	18.3
CFMP-SV-034	034	396588	5896349	X	X	X	X			X				X	17.3
CFMP-SV-035	035	382824	5908376	X	X				X	X		X			8.3
CFMP-SV-036	036	382924	5908235	X	X				X	X		X			8.2
CFMP-SV-037	037	383003	5908129	X	X				X	X		X			8.1
CFMP-SV-038	038	382745	5908560	X	X				X	X		X			8.4
CFMP-SV-039	039	382665	5908757	X	X				X	X		X			8.5