

## 2 WILDLIFE ASSESSMENT

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### 2.1 PROBLEM FORMULATION

This assessment evaluates risks to wildlife ROCs from ingestion of POPCs measured in environmental media in 2024 for exposure pathways as identified in the WSLRA Plan (March, 2024). Receptors, protection goals, exposure pathways, and identification of POPCs are summarized below, and the conceptual model is shown in Figure 4.

#### 2.1.1 Receptors of Concern (ROCs)

The original Meadowbank WSLRA (Azimuth, 2006) considered four groups of ROCs: ungulates, small mammals, waterfowl and songbirds. These choices were determined from the project's initial FEIS (Cumberland, 2005), which included discussions with stakeholders, public meetings, traditional knowledge and experience from other mines. Specifically, the 2006 WSLRA focussed on caribou, Canada goose, Lapland longspur and northern red-backed vole as representative species. An ecological description of the area and detailed descriptions of the biology of each of these receptors can be found in Azimuth (2006). This updated assessment framework also includes an assessment of risks to all original receptors, plus shorebirds (as represented by semi-palmated sandpiper) from contaminants within the TSF, based on a commitment made during the Whale Tail Mine project Final Hearing, following discussions with Environment and Climate Change Canada (ECCC) (Technical Meeting Commitment 45, as described in Golder (2019b)).

#### 2.1.2 Protection Goals and Endpoints

Since the ROCs identified are not rare or endangered species, protection at the population level was determined to be appropriate (Azimuth, 2006). The assessment endpoint is no adverse effect of POPCs on populations of caribou, Canada goose, Lapland longspur, northern red-backed vole, and semi-palmated sandpiper.

As a result, ecotoxicological benchmarks used in the risk characterization are 20% effect levels where dose-response modeling was available (as used in derivation for Toxicity Reference Values (TRVs) in ECCC, 2021) or lowest observable adverse effect levels (LOAELs), which are generally considered to be appropriate for determining risk at the population level (Azimuth, 2006). TRV selection is further described in Section 2.3.

#### 2.1.3 Exposure Pathways

The following exposure pathways will be investigated, as shown in Figure 4. The term “tundra pathways” is used throughout to refer to evaluations conducted for samples collected at Meadowbank onsite, near-site, AWAR, Whale Tail Mine and WTHR locations (Figures 1 and 2), as opposed to the “TSF pathway” which assesses exposure to contaminants directly from the TSF.

##### **Small mammals (Northern Red-Backed Vole):**

- TSF pathway: ingestion of tailings water
- Tundra pathways: ingestion of insects, plants, water; incidental ingestion of soil

##### **Ungulates (Caribou):**

- TSF pathway: ingestion of tailings water
- Tundra pathways: ingestion of plants, water; incidental ingestion of soil

**Songbirds (Lapland Longspur):**

- TSF pathway: ingestion of tailings water
- Tundra pathways: ingestion of insects, plants, water; incidental ingestion of soil

**Waterfowl (Canada Goose):**

- TSF pathway: ingestion of tailings water
- Tundra pathways: ingestion of insects, plants, water; incidental ingestion of soil

**Shorebirds (Semi-Palmated Sandpiper):**

- TSF pathway: ingestion of tailings water and tailings benthic invertebrates; incidental ingestion of tailings sediment
- Tundra pathways: not evaluated<sup>1</sup>

Inhalation and dermal absorption of metals are generally considered to be insignificant in comparison to exposures through ingestion (USEPA, 2005), so they are not considered in Meadowbank WLSRA.

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<sup>1</sup> Based on discussions with ECCC during the permitting process for the Whale Tail Mine Expansion Project, assessment of risk to shorebirds was required to be added for the TSF pathway only (as in Golder, 2019b).

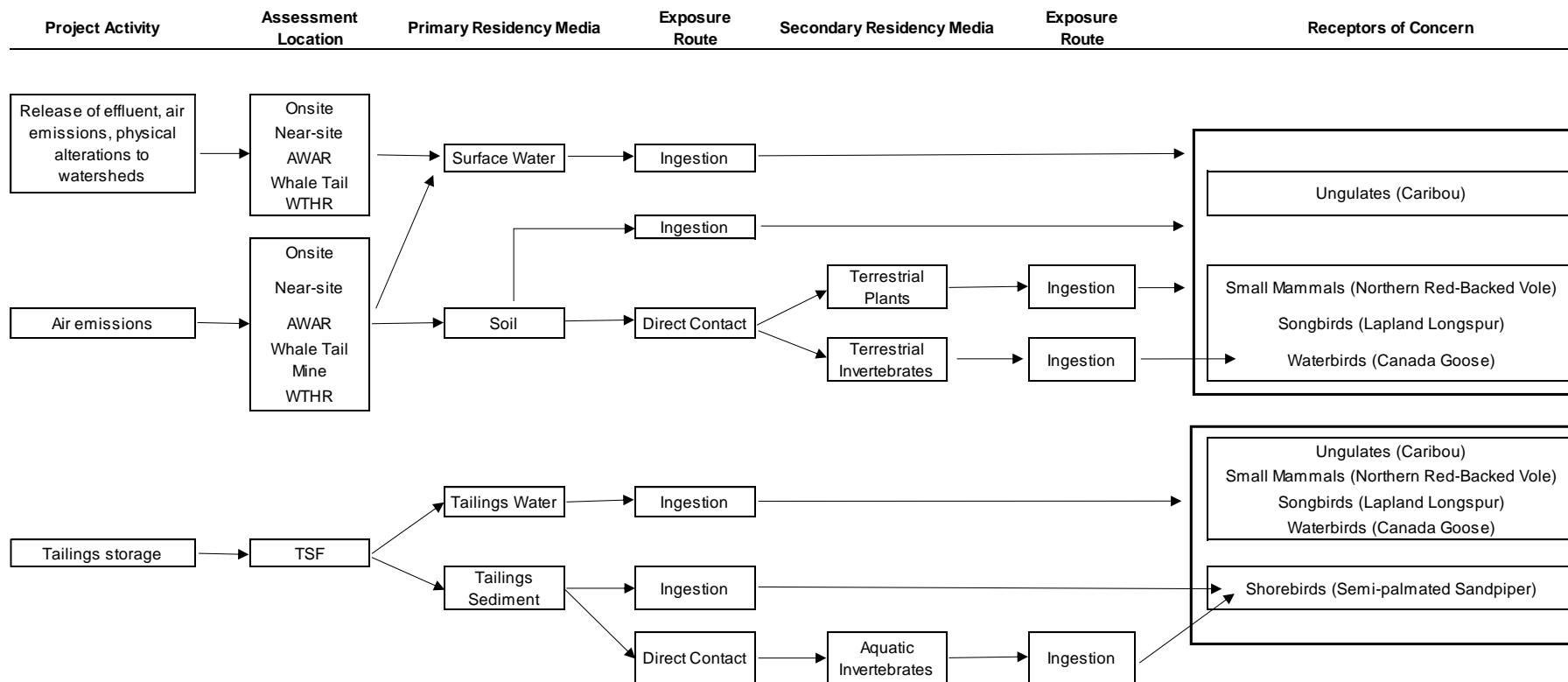


Figure 4. Wildlife risk assessment conceptual model.

#### 2.1.4 Parameters of Potential Concern (POPCs)

To identify POPCs for further evaluation, measured concentrations of chemicals in primary residency media (soil, lake water, tailings sediment, and tailings water) were screened against established regulatory guideline values (described below) and maximum measured baseline concentrations +10%. If measured concentrations in primary residency media were less than these screening values, the parameter was not retained for further evaluation.

Parameters were selected for analysis and screening based on potential presence in dust and effluent sources, as described in the original Meadowbank WSLRA (Azimuth, 2006) and summarized in the WSLRA Plan (March, 2024). In general, these parameters include all metals with CCME Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 2024a) and CCME Canadian Water Quality Guidelines for the Protection of Agriculture (CCME, 2024b), plus manganese and strontium. Cyanide was also added as a screening parameter for the TSF pathway, beginning in 2019.

All screening parameters, guideline values, baseline concentrations (where required), and measured concentrations in primary residency media are presented in Appendix B and screening results are discussed below for each medium.

**Soil** – Maximum measured concentrations of chemicals in soil were screened against CCME's Canadian Soil Quality Guidelines for the Protection of Environmental and Human Health (SQGE) for residential land use (CCME, 2024a - primary source), British Columbia's Contaminated Sites Regulation guidelines for environmental protection (BC CSR, 2023a) (secondary source, where CCME guidelines were unavailable – manganese only), and maximum measured baseline concentrations + 10% (from Azimuth, 2006; Golder, 2018; Golder, 2019a) when no other guideline was available (strontium), or baseline concentrations exceeded guidelines (arsenic, chromium, nickel). All concentrations in soil met screening values (Appendix B, Tables B-1 – B-4), with the exception of strontium at a single location (T10-1; 49.2 mg/kg), which marginally exceeded the maximum measured baseline concentration + 10% (47 mg/kg). This incremental difference is well within the expected range of analytical uncertainty (e.g. CCME (2016) notes that 30% is an acceptable relative percent difference (RPD) for laboratory duplicates in soil samples), so this difference is considered negligible and no further assessment of metals in soil was required. It is noted that strontium concentrations also exceeded baseline at this location in 2021, and evaluation at that time indicated that local mineralization was a much more likely cause than atmospheric deposition from mine operation, in part because this location is predominantly upwind of all mine operations.

**Lake Water** – Maximum measured concentrations of chemicals in lake water were screened primarily against CCME Livestock Watering Guidelines (CCME, 2024b). Where CCME livestock watering guidelines were not available, results were screened against available Canadian water quality guidelines for the protection of freshwater aquatic life (BC, 2024a,b). This is considered a conservative approach since guidelines for aquatic life are generally more protective than guidelines for livestock and wildlife. All concentrations in water met their respective screening values (Appendix B, Tables B-5 – B-11), and therefore none were carried forward for further evaluation.

**TSF Water and Sediment** – For the screening of TSF media (sediment and water), tailings sediment was considered as soil and maximum measured concentrations of POPCs were screened against CCME Soil Quality Guidelines for the Protection of Environmental and Human Health (SQGE) for residential land use (CCME, 2024a; primary source), British Columbia's Contaminated Sites Regulation guidelines for environmental protection (BC CSR, 2023a) (secondary source, used where CCME SQGE unavailable – manganese only) and maximum measured baseline soil concentrations + 10% (from

Azimuth, 2006; Golder, 2018; Golder, 2019a) when no other guideline was available (strontium), or baseline concentrations exceeded guidelines (arsenic, chromium, nickel). Water chemistry results for ponded water within the TSF were screened against CCME Livestock Watering Guidelines (CCME, 2024b). Where CCME livestock watering guidelines were not available, results were screened against available Canadian water quality guidelines for the protection of freshwater aquatic life (BC, 2024a,b), as for lake water. Results of this screening are provided in Appendix B for informational purposes only. Measured concentrations for the following chemicals exceeded screening values in at least one sample, and were retained for further evaluation: arsenic, chromium, copper, molybdenum, nickel, strontium (exceeded baseline soil concentration +10%), and cyanide (no livestock watering guideline was identified, water concentrations exceeded aquatic life water quality guideline).

**Summary** - No POPCs were identified in soil and lake water, so only the TSF pathway was carried forward to the quantitative risk characterization for arsenic, chromium, copper, molybdenum, nickel, strontium, and cyanide.

## 2.2 EXPOSURE ASSESSMENT

Exposure assessment is used to calculate the dose of each POPC received by each ROC for each complete exposure pathway. For this assessment, only the TSF pathway of exposure was evaluated, because all soil and lake water results met screening criteria (Section 2.1.4).

This exposure assessment uses the food chain model developed by Azimuth (2006), and updated based on methods from the Whale Tail Pit assessments (Golder (2019a,b). The model was developed to calculate daily exposure based on POPC concentrations in food items and drinking water, dietary preferences, ingestion rates and dose-adjustment factors.

Estimated daily intake of each POPC was calculated for the TSF exposure pathway as:

$$EDI = I_{w,s,f} \times C_{w,s,f} \times T \times BF$$

Where:

EDI = estimated daily intake (mg/kg body weight·d)

$I_{w,s,f}$  = intake of water, soil/sediment and food items (L/kg ww·d; kg dw/kg ww·d; kg dw/kg ww·d)

$C_{w,s,f}$  = concentration of POPC in water, soil and food items (L/kg ww·d; kg dw/kg ww·d; kg dw/kg ww·d)

T = proportion of time in area (%)

BF = biotransfer factor (absorption factor) – assumed to be 100%

### 2.2.1 $I_{w,s,f}$ - Intake of Water, Soil/Sediment, and Food

For the TSF pathway, exposure factors are provided in Table 1, from the WSLRA Plan (complete references provided in that document). Factors for shorebird time-in-area and proportion of food derived from the TSF were increased after the 2021 WSLRA Report, based on comments received from ECCC at the time. However, those assumptions (used here) that shorebirds obtain 100% of their benthic invertebrate food source over a one-month period are considered conservatively high.

Briefly, in Golder (2019b), semi-palmated sandpiper were assumed to ingest benthic invertebrates residing in the TSF sediment. Concentrations in invertebrate tissue were calculated from measured sediment concentrations. However, it was noted that presence of invertebrates in the TSF sediment was unknown, and that a follow-up assessment would be conducted. In 2021 and 2023, TSF sediment samples were collected for evaluation of invertebrate abundance. These evaluations indicated extreme spatial heterogeneity and limited presence of invertebrates. Among the five TSF samples collected in 2021 (4L or approximately 0.08 m<sup>2</sup> each), four had between 0 and 3 organisms in total, and one had 55 individuals. Across the ten similar samples collected in 2023, only three contained benthic invertebrates (3, 62, and 65 individuals). Based on these samples, benthic invertebrates are only apparently present in a limited area of the TSF (generally, locations near South Cell 1 and 2 – Figure 3). Birds are also actively deterred from the TSF. During breeding season, inspections are performed, and birds are deterred through the use of personnel presence, decoys, noise cannons, and flares as necessary. While bird presence around the TSF is observed to occur for up to 2 weeks in the early spring, prior to ice-off on natural lakes, very few birds are seen in this area after that time. Nevertheless, shorebirds are conservatively assumed to obtain 100% of their benthic invertebrate food source from the TSF over a 1-month period (8% of the year) in this evaluation. The same time-in-area factor was applied for all other receptors except vole (25%). This factor is based on the ice-free season and that voles are not actively deterred from the TSF as the other receptor types are.

**Table 1. Exposure factors for the TSF pathway.**

ROC		Northern Red-Backed Vole	Caribou	Lapland Longspur	Canada Goose	Semi-Palmated Sandpiper
Body Weight - kg ww		0.02	75	0.023	2.0	0.0235
Intake Factors	I <sub>water</sub> (L/kg bw/d)	0.253	0.064	0.205	0.044	0.188
	I <sub>sediment</sub> (kg dw/kg bw/d)	-	-	-	-	0.059
	I <sub>food-ww</sub> (kg ww/kg bw/d)	-	-	-	-	1
	I <sub>food-dw</sub> (kg dw/kg bw/d)	-	-	-	-	0.197
Food Preferences	Benthic Invertebrates	-	-	-	-	100%
Time in Area <sup>1</sup>		25%	8%	8%	8%	8%
I = intake; bw = body weight (ww); ww = wet weight; dw = dry weight; “-” = not applicable (1) 1 month exposure scenario (8%) for all receptors except vole (25%) based on ice-free season and that voles are not actively deterred.						

## 2.2.2 C<sub>w,s,f</sub> - Dietary Concentrations of POPCs

Concentrations of POPCs were measured in tailings sediment and water as described in Section 1.3. Complete results are provided with screening tables in Appendix B.

Mean measured concentrations in tailings sediment and ponded TSF water were used in exposure assessment calculations since concentrations were measured directly in exposure media in a suite of samples (10) during the time of year when ROCs could be present.

Concentrations of POPCs in benthic invertebrate tissue were modeled from TSF sediment concentrations using biota-sediment accumulation factors (BSAFs) from the literature, as:

$$[\text{benthic invertebrate; mg/kg ww}] = \text{BSAF} \times [\text{sediment; mg/kg dw}]$$

BSAFs identified from literature review are shown in Table 2. Specifically, BSAFs were obtained from the following sources, in order of preference:

1. Bechtel-Jacobs (1998) – BSAFs available for As, Cr, Cu, Ni
  - As recommended in Bechtel-Jacobs (1998) for screening-level assessment (conservative BSAFs), the selected values represent the 90<sup>th</sup> centile of the BSAF datasets developed by the authors for each contaminant from literature review. These primary study datasets include only freshwater invertebrates, and only results from studies using extraction methods standard in environmental assessment. Many studies included are from Canadian locations.
2. USEPA (1999) – CN
  - No empirically-derived BSAFs were identified in the literature, but USEPA (1999) recommends a value representing the average for all metals with empirical datasets (0.9).

For all other POPCs (molybdenum, strontium), a BSAF of 1 is assumed.

**Table 2. Biota-sediment accumulation factors (BSAFs) used for estimating whole-body concentrations of POPCs in benthic invertebrates (mg/kg wet tissue per mg/kg dry sediment).**

Parameter	BSAF	Reference
Arsenic	0.14	Bechtel-Jacobs (1998)
Chromium	0.09	Bechtel-Jacobs (1998)
Copper	1.05	Bechtel-Jacobs (1998)
Molybdenum	1	N/A
Nickel	0.46	Bechtel-Jacobs (1998)
Strontium	1	N/A
Cyanide	0.9	USEPA (1999)
<i>Note: A moisture content of 80% was assumed in dry to wet weight conversions from literature values, where needed (as in Senes, 2008).</i>		

## 2.3 TOXICITY ASSESSMENT

Toxicity reference values (TRVs) used in this assessment are identified in Table 3. These have been collated from a review of the literature, building on the dataset developed for the original WSLRA (Azimuth, 2006), which was primarily from Sample et al. (1996). In order to ensure the selected TRVs were relevant to the Meadowbank Complex protection goals, several criteria were applied in screening toxicity studies for that assessment. These included selecting values from studies conducted on species of similar phylogeny (i.e. bird or mammal) and selecting studies that examined individual or population-level effects over chronic time periods. Since the protection goal of the risk assessment was no adverse effect of POPCs on populations of the ROCs, LOAEL-based TRVs were considered more relevant than NOAEL-based TRVs. Original mammalian TRVs were updated beginning in 2021 to remove the allometric scaling factors formerly applied, to align with Golder (2019a,b) methods, and as recommended in Allard et al. (2010).

While historically (2011 – 2023) the TRVs selected by Azimuth (2006) were largely maintained in Meadowbank Complex WSLRAs (with adjustment to remove allometric scaling beginning in 2021), values from ECCC (2021) were adopted preferentially here, where available. ECCC (2021) provides default wildlife reference values for the Federal Contaminated Sites Action Plan (FCSAP) from a systematic review of the literature, including sources used in previous Meadowbank assessments (e.g. Sample et al. 1996). For the 2024 POPCs, values from ECCC (2021) are all lower than those used previously for the Meadowbank Complex, and their use therefore increases the conservative nature of the assessment in comparison to past results. In particular, the TRVs for nickel, chromium and copper are identified as likely to be overly conservative for the FCSAP (and Meadowbank) protection goals (i.e. likely to provide protection well below a 20% effect size).

**Table 3. Toxicity references values (TRVs) used for the 2024 TSF assessment.**

Parameter	TRV (mg/kg bw-d)		Reference
	Mammal	Bird	
Arsenic	1.04	4.4	ECCC (2021)
Chromium	2.40	2.66	ECCC (2021)
Copper	5.60	4.50	ECCC (2021)
Molybdenum	2.6	35.3	Sample et al. (1996)
Nickel	1.70	6.71	ECCC (2021)
Strontium <sup>N</sup>	263	26.3*	Sample et al. (1996)
Cyanide <sup>N</sup>	68.7	0.0025	Golder (2004)
<sup>N</sup> - NOAEL			
*Derived in Azimuth (2006) by multiplying mammalian NOAEL from Sample et al. (1996) by 0.1.			

## 2.4 RISK CHARACTERIZATION

Risk characterization compares predicted exposure concentrations (EDIs) with toxicity reference values (TRVs) from the literature, using the hazard quotient approach. For this 2024 assessment, hazard quotients for the TSF study area pathways were calculated as:

$$HQ = EDI / TRV$$

Where:

EDI = estimated daily intake (mg/kg body weight/day)

TRV = toxicity reference value (mg/kg body weight/day)

For this wildlife assessment, risk is considered negligible when  $HQ \leq 1$ . Because of the conservative assumptions included at this level of assessment, there is generally considered to be a high degree of certainty associated with results indicating negligible risk. A hazard quotient > 1 in a WSLRA indicates the possible need for more in-depth assessment, including analysis of assumptions used.

Calculated HQ values for the TSF pathway are provided in Table 4, and the risk characterization is summarized below.

### 2.4.1.1 Northern Red-backed Vole

For the northern red-backed vole, HQs were less than 1 for all POPCs. Risk for this ROC is therefore classified as negligible.



#### **2.4.1.2 Caribou**

For caribou, HQs were less than 1 for all POPCs. Risk for this ROC is therefore classified as negligible.

#### **2.4.1.3 Lapland Longspur**

For Lapland longspur, HQs were less than 1 for all POPCs. Risk for this ROC is therefore classified as negligible.

#### **2.4.1.4 Canada Goose**

For the Canada goose, HQs were less than 1 for all POPCs. Risk for this ROC is therefore classified as negligible.

#### **2.4.1.5 Semi-Palmated Sandpiper**

For semi-palmated sandpiper, HQs were less than 1 for all POPCs except arsenic (1.7), chromium (1.2), and copper (2.1). These are all considered marginal exceedances of the target HQ in the context of this evaluation. For example, in each case, measured sediment concentrations were within the range of acceptable analytical uncertainty (i.e. 30% RPD for laboratory duplicates, 60% RPD for field duplicates; CCME (2016)) that would result in HQ <1. In consideration of this context and the various conservative assumptions used (see Section 2.5), risk from ingestion of these POPCs is considered improbable.

**Table 4. Hazard quotients for the TSF pathway.**

<b>POPC</b>	<b>Northern Red-backed Vole</b>	<b>Caribou</b>	<b>Lapland Longspur</b>	<b>Canada Goose</b>	<b>Semi-Palmated Sandpiper</b>
Arsenic	0.0	0.0	0.0	0.0	<b>1.7</b>
Chromium	0.0	0.0	0.0	0.0	<b>1.2</b>
Copper	0.0	0.0	0.0	0.0	<b>2.1</b>
Molybdenum	0.0	0.0	0.0	0.0	0.0
Nickel	0.0	0.0	0.0	0.0	1.0
Strontium	0.0	0.0	0.0	0.0	0.2
Cyanide	0.0	0.0	0.0	0.0	0.1

## **2.5 UNCERTAINTY ASSESSMENT**

The assumptions included in each section of the assessment are discussed here, along with implications for over- or under-estimating risk.

### **2.5.1 Uncertainty in Exposure Assessment**

ROCs used in the assessment are assumed to represent categories of species (ungulates, small mammals, waterfowl, songbirds, and shorebirds) that are found around the Meadowbank Complex. Exposure is assumed to be similar for other species in these categories. Compared to other Arctic animals, the exposure for the species chosen is expected to be realistic to conservative, because they all are assumed to forage in or on the soil.

Ingestion rates were applied using published values for similar but not identical species. Based on biological factors, these rates were chosen to be conservative.

Dietary preferences are from studies on the same or similar species, but are not from populations specifically inhabiting the study region.

Populations of ROCs are assumed to spend either 1 or 3 months obtaining 100% of their benthic invertebrate food and/or water resources from the TSF. This is considered a conservatively high assumption. Agnico Eagle actively discourages wildlife, including birds, from the TSF area, using personnel presence, decoys, noise cannons, and flares as needed. At the beginning of the open-water season, TSF ponds are open prior to natural lakes, which may attract birds for up to a two-week period, but very few birds are present outside that time. In addition, benthic invertebrate sampling in 2021 and 2023 only identified organisms in a small sub-set of locations.

Exposure concentrations in TSF sediment were assumed to be represented by the mean measured concentration among 10 samples that were spatially distributed around the TSF “shoreline”. Measured concentrations of the POPCs were highly variable in some cases, but tended to be lower than average in locations with evidence of bird activity (Appendix B Table B-12). Overall therefore this is considered a neutral to conservative assumption.

Exposure concentrations in benthic invertebrate food sources were modeled from measured sediment concentrations using BSAFs from the literature, with varying levels of certainty (e.g. most are based on experimental evidence, while others are estimated from chemical principles – see Section 2.2.2).

Ingestion of POPCs was the only route of exposure considered in this assessment. While this assumption may slightly under-estimate actual exposure, inhalation and dermal absorption of metals are generally considered to be insignificant in comparison to exposures through ingestion (USEPA, 2005).

### **2.5.2 Uncertainty in Toxicity Assessment**

TRVs were not available for the ROCs and species-to-species extrapolations were necessary. This included 1:1 scaling for birds and mammals (as in Golder, 2019a,b), and the application of uncertainty factors in mammal-to-avian extrapolation where necessary (strontium). Food intake-to-body weight ratios are well studied and uncertainty factors are designed to be protective, so these extrapolations are likely to be realistic or conservative.

TRVs for most of the 2024 POPCs were from ECCC (2021), which provides default wildlife reference values for the Federal Contaminated Sites Action Plan from a systematic review of the literature. For the 2024 POPCs, ECCC (2021) generally selected more conservative (lower) TRVs from the range of available literature values than those used previously for the Meadowbank Mine. TRVs for nickel, chromium and copper are identified as likely to be overly conservative for the FCSAP protection goals (i.e. likely to provide protection well below a 20% effect size) which are consistent with the Meadowbank Complex protection goals.

As is common in screening level risk assessments, the estimation of risk is for each POPC in isolation, and does not consider potential additive, synergistic or antagonistic reactions. Models for determining mixture toxicity of a large suite of metals are not yet available, and guideline values are for single compounds only. This factor may lead to under-estimation of actual risk from metals overall, but the otherwise conservative nature of an SLRA is assumed to compensate for this issue.

## **2.6 HISTORICAL COMPARISON**

### **2.6.1 Meadowbank Mine – Tundra Pathways**

As described in Section 1.2, the 2006 pre-construction WSLRA assessment for the Meadowbank Mine predicted negligible risk under operational conditions for all ROCs, except songbirds (as represented by Lapland longspur), which were assessed as having potential but improbable risk from chromium ingestion under both baseline and operational conditions (i.e. no change in risk was predicted due to mine operations).

Results of post-construction assessments in 2011, 2014, and 2017 supported those predictions. Negligible risks were found for all ROCs except songbirds, which had HQs > 1 for both onsite and reference locations.

Beginning in 2021, assessment methods introduced a screening step for identification of POPCs. In 2021 and 2024, all soil concentrations (including chromium) met screening values that are considered protective of wildlife health so HQs were not required to be calculated. These results therefore continue to support 2006 predictions that operations at the Meadowbank Complex (tundra locations) have not increased risk to wildlife receptors from ingestion of chemical contaminants.

### **2.6.2 Meadowbank Mine – TSF Pathway**

Risks to wildlife receptors from ingestion of chemical contaminants in the TSF were first assessed in 2019 as part of the Whale Tail Pit Expansion Project permitting process (Golder, 2019b). Using direct mill effluent (as sediment) and ponded water samples collected in 2015 – 2018, and predicted pit water quality post-deposition (2028+), the assessment identified negligible risk to ROCs under 2015-2018 conditions, and predicted negligible risk under post-deposition conditions.

Using direct mill effluent and ponded water samples collected in 2021, negligible risk was identified for all ROCs, except shorebirds. Under the same exposure assumptions as Golder (2019b), potential risks to shorebirds (as represented by semi-palmated sandpiper) from ingestion of arsenic, chromium, and cyanide were identified (i.e. HQ > 1). This difference from the Golder (2019b) predictive assessment was due to an increased concentrations of these parameters in mill effluent compared to samples collected in 2015 – 2018. However, under refined but still conservative exposure assumptions (average instead of maximum concentrations, 8 days exposure instead of 1 month), risk was found to be negligible for all ROCs including shorebirds. Based on comments received from ECCC in 2022, risk for shorebirds was re-evaluated in 2022/2023 (data combined), and 2024 (as described herein; Appendix B) using field-collected samples of in-situ tailings sediment rather than direct mill effluent and ponded water, and using exposure assumptions as described in this 2024 evaluation (birds are assumed to obtain 100% of their benthic invertebrate food source from the TSF throughout a 1 month period). For the 2022/2023 dataset (as reported to ECCC by email in the Technical Memorandum dated March 29, 2024), HQ values were less than 1. After more conservative TRVs were adopted in this 2024 update (from ECCC, 2021), hazard quotients exceeded 1 for arsenic (1.7), chromium (1.2), and copper (2.1). However, in consideration of the various conservative assumptions of this evaluation, these differences were considered marginal and risk to the ROC (shorebirds) from ingestion of these POPCs from the TSF was identified as improbable.

### **2.6.3 Whale Tail Mine**

Risks to wildlife receptors from ingestion of chemical contaminants were predicted for the Whale Tail Pit Expansion Project in Golder (2019a). In that assessment, predicted concentrations of all assessed

parameters in soil and water met screening values, so no quantitative risk characterization was required (no residual impacts to wildlife were predicted).

Results of the assessments in 2021 and 2024 support those predictions. All measured concentrations met screening values with the exception of barium and/or strontium in one sample location in each year. These results were further examined and determined as unlikely to be mine-related, so ultimately no POPCs were identified and quantitative risk characterization was not required.

## 3 HUMAN HEALTH – COUNTRY FOODS ASSESSMENT

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### 3.1 PROBLEM FORMULATION

Further in accordance with NIRB Project Certificate No. 004 Condition 67, an assessment of risks to human receptors from contaminant exposure through consumption of country foods during operation of the Meadowbank Complex was conducted, following methods previously described in the WSLRA Plan. This assessment re-evaluates risks to receptors for exposure pathways initially identified in the pre-construction HHRA (Wilson, 2006), making use of environmental samples collected in 2024, as described in Section 1.3. The conceptual model for country foods consumption is shown in Figure 5.

#### 3.1.1 Potential Receptors

Potential receptors for which risk is evaluated are a young child or toddler (age 7 months – <5 years) and an adult consumer of country foods. These receptors are considered to be representative and protective of the general population.

#### 3.1.2 Exposure Pathways

As described in the WSLRA Plan, food items included in the HHRA<sub>country foods</sub> assessment include caribou meat, kidney and liver, and Canada goose meat.

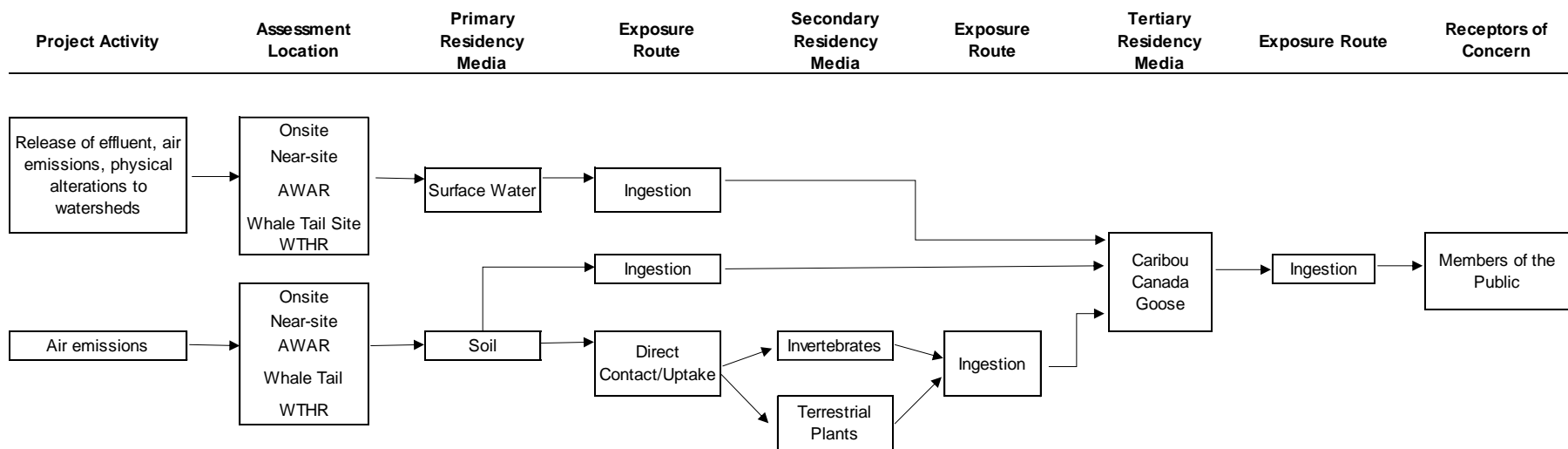
Lake trout was included in the baseline assessment because they represent the majority of fish in the project lakes. However, since a no-fishing policy was put in place for workers and fish from project lakes are non-migratory, consumption rates of fish impacted by the mine site were expected to be negligible. Analyses of risk from fish consumption were therefore excluded from subsequent Meadowbank country foods risk assessments. As required under NIRB Project Certificate No. 008 Condition 63, Agnico Eagle evaluates concentrations of mercury in fish tissue at the Whale Tail Mine under the Mercury Monitoring Plan. Complete results are provided in the Meadowbank Complex Annual Report to the NIRB and summarized here in Appendix C. Further, in response to Health Canada comments on the 2023 Meadowbank Complex Annual Report (received via the NIRB process), Agnico Eagle reviewed results of creel surveys that are completed annually as part of the Hunter Harvest Study. Recent reports continue to indicate that fishing by local harvesters does not occur in lakes near the Meadowbank Complex (e.g. Second and Third Portage Lakes, Wally Lake, Whale Tail Lake, Kangislulik Lake; see the 2024 Wildlife Monitoring Summary Report in the Meadowbank Complex Annual Report to the NIRB).

Although it was determined in Wilson (2006) that local residents may consume wild berries, it was found to be unlikely that they would be harvested from the mine site area due to distance, prohibition of public access past km 85 on the AWAR, and abundance of this food source closer to Baker Lake. Consumption of berries was therefore not evaluated in country foods pathways in the baseline assessment or subsequent updates.

The following food items are therefore included in this HHRA<sub>country foods</sub> evaluation:

- Caribou meat (muscle)
- Caribou kidney
- Caribou liver
- Canada goose meat (muscle)

Assessed exposure pathways for these country food items are identified in Figure 5.



**Figure 5. Human health (country foods) risk assessment conceptual model.**

### 3.1.3 Parameters of Potential Concern (POPCs)

The process used to identify POPCs in the wildlife assessment (Section 2.1.4) was also applied for the human health assessment. Maximum measured concentrations of chemicals in primary residency media (soil and lake water) were screened against regulatory guideline values that are protective of human health, and maximum measured baseline concentrations.

Parameters selected for screening were identified in the Project FEIS phase according to predicted concentrations in dust sources, effluent, and a review of metals regulated under MDMER (see Azimuth 2006, Section 2.5 for details). In general these include all metals with CCME Soil Quality Guidelines for the Protection of Environmental and Human Health (CCME, 2024b) or Health Canada Canadian Water Quality Guidelines for Drinking Water (Health Canada, 2024), plus manganese and strontium, because concentrations of these parameters in onsite dust sources were predicted to exceed baseline soil concentrations.

If measured concentrations in primary residency media were less than screening values, then the parameter was not considered to be of potential toxicological concern (i.e. was not a POPC), and no further assessment was required.

If measured concentrations were greater than screening values, the parameter was retained as a POPC for quantitative risk characterization. The quantitative risk characterization would make use of measured concentrations in soil, drinking water, and vegetation samples to estimate concentrations in country foods, according to the established food chain model, as described in the WSLRA Plan.

All screening parameters, guideline values, baseline concentrations (where required), and measured concentrations in primary residency media are presented in Appendix B and screening results are discussed below for each medium.

**Soil:** Maximum measured concentrations of chemicals in soil were screened against CCME Canadian Soil Quality Guidelines for the Protection of Environment and Human Health (SQGH – Residential Land Use; CCME, 2024b) (primary source), British Columbia Contaminated Sites Regulation guidelines for human health protection (BC CSR, 2023a) (secondary source, where CCME guidelines are not available), and maximum measured baseline concentrations where they exceeded guideline values (from Azimuth, 2006; Golder, 2019a). All concentrations in soil met these screening values (Appendix B, Tables B-14 – B-17). No POPCs were therefore retained for soil.

**Lake Water:** Maximum measured concentration of chemicals in lake water were screened against the Canadian Drinking Water Quality Guidelines from Health Canada (Health Canada, 2024) (primary source), British Columbia Contaminated Sites Regulation Generic Numerical Water Standards for drinking water (BC CSR, 2023b) (secondary source, where Health Canada guidelines were not available), and maximum measured baseline concentrations (where they exceeded guideline values). All concentrations in water met screening values so no POPCs are retained for water (Appendix B, Tables B-18 – B-24).

**Summary:** No POPCs were identified in the primary residency media (soil and water). Measured concentrations of chemicals in these sources continue to meet regulatory screening values or have not increased beyond baseline conditions. As a result, no changes to risk from consumption of country foods under the current operational scenario are predicted and the country foods ingestion pathways are not required to be assessed further.

## **3.2 HISTORICAL COMPARISON**

### **3.2.1 Meadowbank Mine**

Risks to human receptors from consumption of country foods were first assessed for Meadowbank Mine locations in 2006. No incremental risks (changes in risk characterizations) were predicted as a result of mine operations.

Results for assessments in 2011, 2014, and 2017 supported these predictions overall. While 2011 results indicated some potential for incremental risk associated with chromium onsite compared to reference sites, this trend did not continue in subsequent years (and as shown in Figure 5, concentrations of chromium in soil have remained below area baseline and are not increasing over time). Because the target hazard quotient was reduced to 0.2 in 2011 – 2017 (from 1 in Wilson, 2006), some potentially unacceptable risks were identified throughout the assessments, but not as a result of mine operations (there were no major differences between minesite and reference locations).

Since a screening approach was introduced to identify COPCs beginning in 2021, HQs were not required to be calculated because all soil and water concentrations (including chromium) have met screening values that are protective of human health. These results therefore continue to support 2006 predictions that operations at the Meadowbank Mine have not resulted in increased risk from consumption of country foods.

### **3.2.2 Whale Tail Mine**

The human health (country foods) risk assessment for the Whale Tail Pit Expansion Project (Golder, 2019a) compared maximum predicted concentrations in soil and water to screening values to identify POPCs. All parameters met screening values so no POPCs were identified and no residual impacts to human receptors were predicted.

Results of the 2021 assessment and this 2024 update support those predictions. All measured concentrations in soil and water samples met screening values that are protective of human health, so no POPCs were identified and further quantitative risk characterization was not required.

## **4 SUMMARY**

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### **4.1 WILDLIFE ASSESSMENT**

This assessment evaluated risks to wildlife from dietary exposure to chemical contaminants in and around the Meadowbank Complex during the operations period (2024). Because of the conservative assumptions included at this level of assessment, there is generally considered to be a high degree of certainty associated with results indicating negligible risk.

Key findings are as follows:

- Through the soil and water sample screening process, no POPCs were identified for tundra pathways (Meadowbank Mine onsite, near-site, AWAR, Whale Tail Mine, and WTHR sampling locations), so quantitative risk characterization was not required. All parameters were less than baseline concentrations + 10% or published screening values that are considered protective of wildlife receptors.



- Concentrations of several parameters in tailings sediment and water did not meet screening values, so risks for this pathway were quantitatively assessed. For all receptors, risks were found to be negligible ( $HQ \leq 1$ ) with the exception of three POPCs for shorebirds (arsenic  $HQ = 1.7$ , chromium  $HQ = 1.2$ , copper  $HQ = 2.1$ ). However, these exceedances were considered marginal in the context of this assessment which uses several very conservative assumptions. As a result, increased risk to populations of shorebirds from ingestion of these POPCs within the TSF is considered improbable.

Overall, the operation of the Meadowbank Complex does not appear to be increasing risk from dietary exposure to chemical contaminants for wildlife residing in the area.

Based on the results of this assessment, management actions will include continuing to focus on deterring birds from the TSF to minimize potential for exposure.

#### **4.2 HUMAN HEALTH – COUNTRY FOODS ASSESSMENT**

This assessment also evaluated risks to human receptors from consumption of select country foods from tundra locations around the mine site (onsite, near-site, AWAR, Whale Tail Mine, WTHR sampling locations). For these assessment locations, all soil and water concentrations met baseline concentrations or screening values that are considered protective of human health, so no POPCs were identified and quantitative risk characterization was not required.

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## **Appendix A**

### 2024 SAMPLE LOCATIONS AND PHOTOS

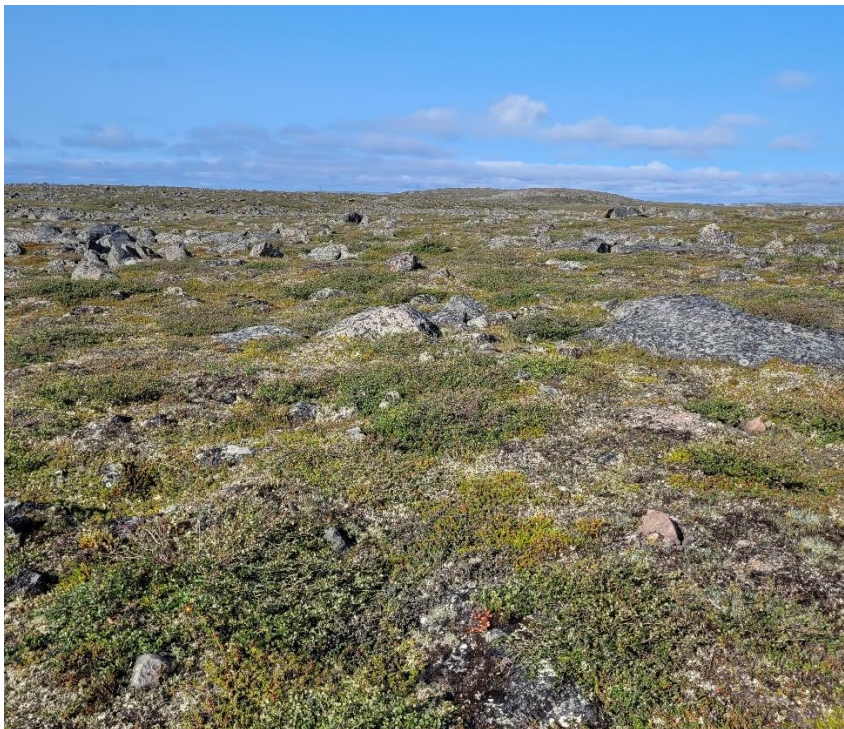
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**Table A-1. UTM coordinates for soil and vegetation sampling locations (historical in strike-through for tracking purposes). For each Sampling Area, 3 Sites are selected at random in a sampling year. Sites selected in 2024 are in bold.**

Sampling Area	General location	Site #1	Site #2	Site #3	Site #4	Site #5
<del>T1 (2006)</del>	<del>MBK – west side of Dogleg</del>	<del>14N 0639238 7215692</del>	<del>14N 0639137 7215734</del>	<del>14N 0639061 7215668</del>	<del>14N 0639109 7215569</del>	<del>14N 0639010 7215459</del>
T1 (2011+)	MBK - see Fig 1	<b>14N 0640110 7215459</b>	14N 0640010 7215458	<b>14N 0640137 7215362</b>	<b>14N 0640090 7215555</b>	14N 0640181 7215525
T2	MBK - see Fig 1	15N 0359410 7214020	<b>15N 0359403 7214128</b>	<b>15N 0359507 7214072</b>	<b>15N 0359459 7213912</b>	15N 0359391 7213816
T3	MBK - see Fig 1	<b>14N 0640069 7212342</b>	<b>14N 0640146 7212421</b>	<b>14N 0639967 7212281</b>	14N 0639976 7212409	14N 0639991 7212541
T4	MBK - see Fig 1	14N 0640916 7210294	14N 0640994 7210201	<b>14N 0641112 7210194</b>	<b>14N 0640890 7210137</b>	<b>14N 0640802 7210271</b>
T5	MBK - see Fig 1	<b>14N 0637020 7211270</b>	14N 0636978 7211160	<b>14N 0637013 7211394</b>	14N 0637162 7211419	<b>14N 0637057 7211513</b>
<del>T6 (2006)</del>	<del>MBK – near airstrip</del>	<del>14N 0638559 7213995</del>	<del>14N 0638651 7213953</del>	<del>14N 0638780 7214028</del>	<del>14N 0638515 7214226</del>	<del>14N 0638400 7214038</del>
T6 (2011+)	MBK - see Fig 1	14N 0637985 7212300	<b>14N 0638081 7212270</b>	14N 0637887 7212318	<b>14N 0637956 7212202</b>	<b>14N 0637991 7212401</b>
T7	MBK - see Fig 1	<b>14N 0640847 7218280</b>	14N 0640872 7218395	14N 0640755 7218444	<b>14N 0640719 7218338</b>	<b>14N 0640788 7218177</b>
T8	AWAR km 78, 100 m east side/downwind	14N 0626884 7200614	14N 0626837 7200520	<b>14N 0626806 7200427</b>	<b>14N 0626746 7200306</b>	<b>14N 0626675 7200224</b>
T9	WT south east side – see Fig 2	<b>14N 609867 7252815</b>	<b>14N 0610005 7252755</b>	<b>14N 0609825 7252981</b>	TBD	TBD
T10	WT north west side – see Fig 2	<b>14N 604817 7257393</b>	<b>14N 0605011 7257344</b>	<b>14N 0604771 7257154</b>	TBD	TBD
T11 (2021)	WT Haul Road – see Fig 2	14N 612035 7250280	14N 0612189 7250361	14N 0612300 7250217	TBD	TBD
T11 (2024)	WT Haul Road – see Fig 2 <b>In 2024 – moved to ensure all sites are 100 – 150 m east from the road.</b>	<b>14N 612124 7250139</b>	<b>14N 0612189 7250361</b>	<b>14N 612350 7250129</b>	TBD	TBD
C1	Ref – see Fig 1	14N 0623453 7211586	<b>14N 0623450 7211467</b>	14N 0623416 7211345	<b>14N 0623339 7211252</b>	<b>14N 0623217 7211558</b>
C2	Ref – see Fig 1	<b>14N 0625518 7221488</b>	<b>14N 0625569 7221607</b>	14N 0625743 7221542	14N 0625790 7221388	<b>14N 0625825 7221244</b>
C3	Ref – see Fig 1	14N 0624717 7222685	14N 0624818 7222623	<b>14N 0624850 7222504</b>	<b>14N 0624861 7222349</b>	<b>14N 0624636 7222313</b>



**Photo 1: T1 Location**



**Photo 2: T2 Location**





**Photo 3: T3 Location**



**Photo 4: T4 Location**





**Photo 5: T5 Location**



**Photo 6: T6 Location**





**Photo 7: T7 Location**



**Photo 8: T8 Location**





**Photo 9: T9 Location**



**Photo 10: T10 Location**



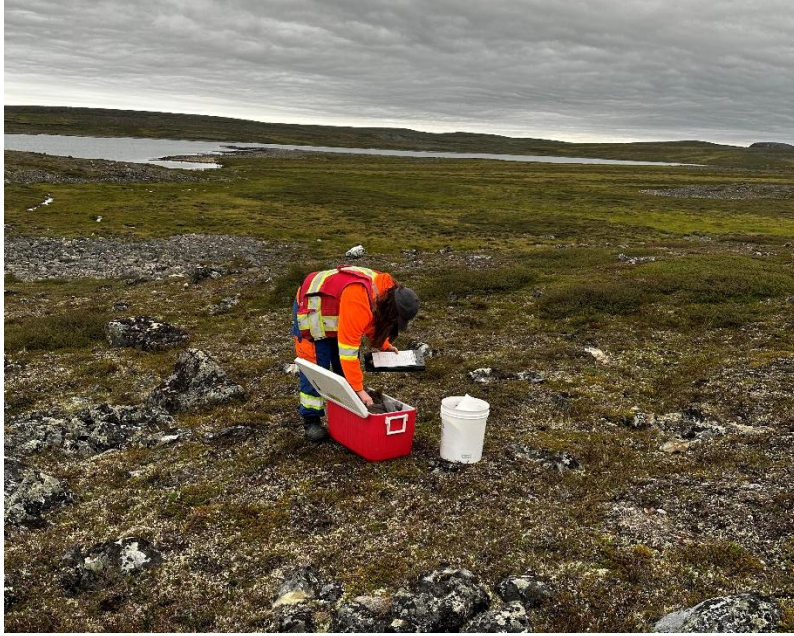


**Photo 11: T11 Location**



**Photo 12: C1 Location**





**Photo 13: C2 Location**



**Photo 14: C3 Location**

**Table A-2. TSF sediment sampling locations in 2024.**

Location ID	Coordinates	Comments
North Cell 1	14W 638036 7216187	No recent deposition. Water flowing but evidence of higher water level.
North Cell 2	14W 637860 7216646	No recent deposition. Water being pumped at low flow.
North Cell 3	14W 637431 7216549	No recent deposition. Limited water present but evidence of water ponding.
North Cell 4	14W 637810 7215331	Large ponded area. Higher moisture content in soils.
North Cell 5	14W 637397 7215319	Some evidence of birds.
South Cell 1	14W 638569 7214287	Large ponded area with limited stratification.
South Cell 2	14W 638610 7214490	Coarser material.
South Cell 3	14W 638218 7215312	Thin brown top layer no real stratification.
South Cell 4	14W 637649 7215141	Evidence of bird activity, higher water content.
South Cell 5	14W 638454 7215235	Evidence of bird activity, seems to be older sediment, sandy texture.



**Photo 15: North Cell 1 Location**





**Photo 16: North Cell 2 Location**



**Photo 17: North Cell 3 Location**



**Photo 18: North Cell 4 Location**

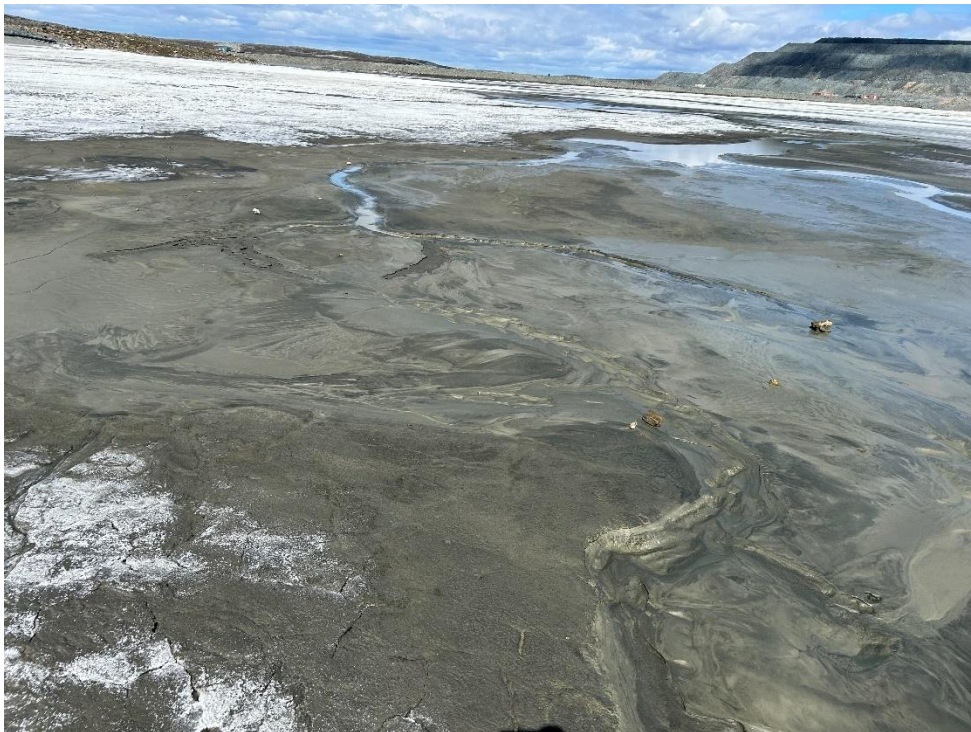


**Photo 19: North Cell 5 Location**





**Photo 20: South Cell 1 Location**



**Photo 21: South Cell 2 Location**





**Photo 22: South Cell 3 Location**



**Photo 23: South Cell 4 Location**



**Photo 24: South Cell 5 Location**

**Appendix B**  
SCREENING TABLES

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Table B-1: Soil screening for wildlife - Whale Tail locations

Chemical	CCME SQG-E <sup>a</sup>	BC CSR-E <sup>b</sup>	Max. Baseline <sup>c</sup>	T9-1-SOIL	T9-2-SOIL	T9-3-SOIL	T10-1-SOIL	T10-2-SOIL	T10-3-SOIL	T11-1-SOIL	T11-2-SOIL	T11-3-SOIL
	mg/kg	mg/kg	mg/kg	17-Aug-2024	17-Aug-2024	17-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024
Antimony	20			<0.10	<0.10	<0.10	0.10	0.15	<0.10	<0.10	<0.10	<0.10
Arsenic	17		173	3.78	4.90	6.55	15.3	31.0	11.8	4.64	3.99	5.18
Barium	500 <sup>d</sup>			25.2	30.0	45.0	86.2	112	30.8	38.3	23.2	29.5
Beryllium	4			0.31	0.37	0.44	0.42	0.56	0.35	0.44	0.38	0.41
Cadmium	10			0.031	0.038	0.045	0.047	0.073	0.044	0.032	0.041	0.04
Chromium	64		549	31.1	31.2	30.2	71.0	68.5	38.2	31.5	24.0	28.9
Cobalt	50			5.34	6.07	6.71	8.64	10.6	5.58	6.65	5.58	7.26
Copper	63			6.19	5.74	7.78	8.89	14.5	5.4	6.79	5.63	5.39
Lead	300			5.58	6.15	7.36	6.38	12.1	5.99	6.13	6.86	6.63
Manganese	NV	2000		202	227	259	330	353	206	285	254	316
Mercury	12			<0.0050	<0.0050	0.0151	0.0056	0.0134	0.0067	<0.0050	<0.0050	0.0076
Molybdenum	10			0.37	0.45	0.67	0.40	1.06	0.31	0.45	0.35	0.49
Nickel	45		168	20.3	18.6	20.0	34.8	29.6	19.1	21.2	16.1	19.3
Selenium	1			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver	20			<0.10	<0.10	1.48	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Strontium	NV	NV	42	31	26.5	26.9	49.2	36.9	23.4	34.5	33.3	33.1
Thallium	1.4			0.058	0.061	0.086	0.106	0.175	0.069	0.080	0.058	0.071
Tin	50			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium	500			2.03	1.77	3.09	1.53	1.70	1.34	2.64	2.47	2.44
Vanadium	130			13.3	14.5	15.9	26.3	39.4	17.9	15.2	13.1	15.3
Zinc	250			26.4	30.2	32.8	33.5	48.6	28.2	37.7	32.2	35.5

Table B-2: Soil screening for wildlife - AWAR location

Chemical	CCME SQG-E <sup>a</sup>	BC CSR-E <sup>b</sup>	Max. Baseline <sup>c</sup>	T8-S3-SOIL	T8-S4-SOIL	T8-S5-SOIL
	mg/kg	mg/kg	mg/kg	15-Aug-2024	15-Aug-2024	15-Aug-2024
Antimony	20			<0.10	<0.10	<0.10
Arsenic	17		173	2.56	5.76	1.77
Barium	500 <sup>d</sup>			28.2	202	25.0
Beryllium	4			0.22	1.44	0.27
Cadmium	10			0.036	0.160	0.024
Chromium	64		549	40.6	99.7	20.4
Cobalt	50			6.30	9.46	3.22
Copper	63			7.03	63.1	5.55
Lead	300			4.52	22.5	4.82
Manganese	NV	2000		211	239	131
Mercury	12			<0.0050	0.0881	<0.0050
Molybdenum	10			0.53	2.53	0.30
Nickel	45		168	18.9	46.6	10.0
Selenium	1			<0.20	0.48	<0.20
Silver	20			<0.10	0.25	<0.10
Strontium	NV	NV	42	24.3	27.6	22.3
Thallium	1.4			0.080	0.364	0.061
Tin	50			<2.0	<2.0	<2.0
Uranium	500			0.999	14.5	2.24
Vanadium	130			21.0	51.3	14.3
Zinc	250			26.4	76.6	21.7

Table B-3: Soil screening for wildlife - Meadowbank locations

Chemical	CCME SQG-E <sup>a</sup>	BC CSR-E <sup>b</sup>	Max. Baseline <sup>c</sup>	T1-S1-SOIL	T1-S3-SOIL	T1-S4-SOIL	T2-S2-SOIL	T2-S3-SOIL	T2-S4-SOIL	T3-S1-SOIL	T3-S2-SOIL	T3-S3-SOIL	T4-S3-SOIL	T4-S4-SOIL	T4-S5-SOIL	T5-S1-SOIL	T5-S3-SOIL	T5-S5-SOIL	T6-S2-SOIL	T6-S4-SOIL	T6-S5-SOIL	T7-S1-SOIL	T7-S4-SOIL	T7-S5-SOIL
	mg/kg	mg/kg	mg/kg	18-Aug-2024	18-Aug-2024	18-Aug-2024	17-Aug-2024	17-Aug-2024	17-Aug-2024	17-Aug-2024	17-Aug-2024	17-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	13-Aug-2024	13-Aug-2024	13-Aug-2024	15-Aug-2024	15-Aug-2024	15-Aug-2024
Antimony	20			0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	mg/kg	mg/kg	mg/kg	mg/kg
Arsenic	17		173	6.12	3.82	4.31	1.30	2.06	1.84	5.39	2.70	2.03	10.1	6.32	3.01	6.01	4.65	10.4	10.0	4.87	4.58	61.5	34.5	25.5
Barium	500 <sup>d</sup>			50.5	36.6	29.7	13.9	24.5	23.4	50.1	25.6	22.6	116	75.3	18.4	83.8	139	42.4	35.6	44.8	39.6	47.2	25.9	31.8
Beryllium	4			0.60	0.32	0.48	0.30	0.38	0.37	0.72	0.42	0.37	0.70	0.20	0.25	0.16	0.19	0.25	0.29	0.35	0.38	0.49	0.32	0.38
Cadmium	10			0.053	0.063	0.039	0.034	0.034	0.030	0.076	0.035	0.035	0.239	0.099	0.084	0.261	0.414	0.153	0.230	0.054	0.051	1.05	0.182	0.165
Chromium	64		549	39.2	32.0	31.1	7.58	17.7	14.7	32.8	20.3	13.7	66.1	43.4	15.8	52.0	35.3	67.6	85.9	49.8	56.1	65.7	48.1	37.8
Cobalt	50			11.3	4.46	8.06	2.78	4.19	3.76	7.30	5.06	4.20	7.49	3.15	2.18	5.82	8.02	10.3	7.70	6.12	6.73	9.54	11.0	5.74
Copper	63			22.0	6.21	9.86	2.06	4.54	3.84	9.38	5.17	3.70	15.3	6.75	3.34	12.3	10.4	7.37	11.8	7.43	8.33	33.0	14.7	10.1
Lead	300			7.70	5.88	5.93	3.93	5.43	5.34	8.57	6.05	4.48	13.8	5.33	4.51	5.89	5.66	8.98	6.52	6.90	7.13	46.7	41.8	13.2
Manganese	NV	2000		408	173	364	171	260	211	453	269	257	390	576	137	765	1440	797	265	275	251	534	363	198
Mercury	12			0.0362	0.0677	<0.0050	0.0070	<0.0050	<0.0050	0.0259	<0.0050	<0.0050	0.2500	0.2390	0.0511	0.3030	0.2510	0.0935	0.0534	0.0297	0.0093	0.0836	0.0154	0.0294
Molybdenum	10			1.22	0.97	0.72	0.41	0.61	0.59	1.31	0.78	0.64	2.54	1.12	0.77	0.82	1.03	0.91	0.96	0.65	1.03	2.05	1.05	1.34
Nickel	45		168	29.5	14.5	19.4	4.76	9.24	8.06	17.4	11.2	8.28	29.0	17.0	6.70	28.7	20.7	20.6	40.9	22.4	25.5	31.6	29.6	19.9
Selenium	1			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.26	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	<0.20
Silver	20			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.36	0.10	<0.10
Strontium	NV	NV	42	21.6	10.8	15.2	7.31	12.9	13.6	13.2	16.3	8.73	24.7	11.5	6.34	25.2	29.6	9.56	13.1	11.7	12.8	11.6	8.84	9.03
Thallium	1.4			0.128	0.093	0.110	0.063	0.102	0.099	0.169	0.106	0.126	0.195	0.135	0.081	0.069	0.081	0.192	0.122	0.141	0.157	0.189	0.112	0.148
Tin	50			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium	500			3.03	1.29	2.71	1.79	3.76	3.15	3.98	2.59	1.92	6.32	0.888	1.10	1.26	1.71	1.60	1.52	1.73	2.58	4.44	1.52	1.58
Vanadium	130			22.2	22.4	18.3	8.01	13.2	12.9	19.4	14.7	11.7	24.0	10.6	10.8	9.91	10.6	20.8	20.4	20.6	19.8	32.9	25.5	26.4
Zinc	250			40.4	29.9	31.2	18.2	25.0	22.0	46.3	26.8	22.9	53.8	31.4	17.8	50.4	66.2	30.2	40.7	35.8	33.1	98.8	59.8	46.0

Table B-4: Soil screening for wildlife - External reference locations

Chemical	CCME SQG-E <sup>a</sup>	BC CSR-E <sup>b</sup>	Max. Baseline <sup>c</sup>	C1-S2-SOIL	C1-S4-SOIL	C1-S5-SOIL	C2-S1-SOIL	C2-S2-SOIL	C2-S5-SOIL	C3-S3-SOIL	C3-S4-SOIL	C3-S5-SOIL
	mg/kg	mg/kg	mg/kg	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024
Antimony	20			<0.10	<0.10	<0.10	0.11	0.11	0.10	0.12	0.13	0.21
Arsenic	17		173	2.46	3.16	2.24	7.73	7.73	8.55	11.1	12.0	6.22
Barium	500 <sup>d</sup>			46.1	62.4	20.0	36.2	38.2	31.6	40.8	51.8	37.6
Beryllium	4			0.26	0.37	0.24	0.37	0.27	0.39	0.42	0.40	0.29
Cadmium	10			0.123	0.213	0.029	0.096	0.068	0.103	0.100	0.180	0.128
Chromium	64		549	23.5	29.6	22.8	174	137	95.2	137	164	139
Cobalt	50			1.90	3.39	3.93	12.2	9.45	9.71	12.9	15.4	10.5
Copper	63			2.94	6.60	3.94	9.06	9.11	13.4	17.6	24.4	9.42
Lead	300			7.66	5.80	3.81	9.21	7.67	11.1	9.17	9.67	6.54
Manganese	NV	2000		109	133	176	465	258	262	362	390	289
Mercury	12			0.1100	0.0880	<0.0050	0.0430	0.0372	0.0334	0.0271	0.0395	0.0534
Molybdenum	10			0.88	1.10	0.39	1.85	0.88	0.66	1.85	1.40	1.21
Nickel	45		168	7.92	15.7	12.9	62.3	63.5	52.6	68.0	89.9	56.6
Selenium	1			0.29	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.21
Silver	20			<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.11
Strontium	NV	NV	42	12.4	19.6	16.2	31.5	28.3	31.8	32.3	27.6	28.5
Thallium	1.4			0.113	0.126	0.059	0.144	0.104	0.108	0.124	0.142	0.225
Tin	50			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium	500			1.97	3.19	2.44	1.34	0.891	1.52	1.06	2.02	1.16
Vanadium	130			17.3	17.7	11.0	37.2	33.0	28.7	39.3	31.9	30.8
Zinc	250			20.4	28.4	19.2	46.2	42.1	40.2	62.1	49.3	40.6

(a) CCME (Canadian Council of Ministers of the Environment). Canadian Environmental Quality Guidelines – Soil Quality Guidelines for the Protection of Environmental and Human Health (SQG<sub>E</sub>-residential/parkland). Accessed November,



Table B-5: Lake water screening for wildlife - Second Portage Lake.

Chemical	CCME WQG - Livestock <sup>a</sup>	Other (Aquatic Life)	Second Portage Lake (SP)									
			2024-03-09	2024-03-09	2024-04-27	2024-04-27	2024-07-03	2024-07-02	2024-08-14	2024-08-14	2024-09-08	2024-09-08
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	5		<0.0030	0.0031	<0.0030	<0.0030	0.0112	0.0113	0.0048	0.0056	<0.0030	<0.0030
Antimony	NV	0.25 <sup>c</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.025		0.0005	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0004	0.0004	0.0004
Barium	NV	1 <sup>d</sup>	0.0033	0.0038	0.0036	0.0036	0.0030	0.0032	0.0028	0.0027	0.0026	0.0027
Beryllium	0.1		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.08		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05 <sup>b</sup>		<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	0.00	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt	1		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	0.5		0.0008	0.0009	0.0008	0.0009	0.0009	0.0008	0.0007	0.0007	0.0006	0.0006
Lead	0.1		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	NV	0.81 <sup>c</sup>	0.0007	0.0007	0.0005	0.0006	0.0030	0.0031	0.0021	0.0019	0.0011	0.0010
Mercury	0.003		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.5		0.00015	0.00017	0.00015	0.00015	0.00011	0.00012	0.00013	0.00014	0.00014	0.00014
Nickel	1		<0.00050	0.00055	0.00058	0.00056	0.00064	0.00064	<0.00050	<0.00050	<0.00050	<0.00050
Selenium	0.05		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NV	0.0001 <sup>c</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	NV	1.25 <sup>d</sup>	0.0242	0.0260	0.0264	0.0287	0.0214	0.0209	0.0211	0.0215	0.0211	0.0212
Thallium	NV	0.00003 <sup>d</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	0.003 <sup>e</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.2		0.000050	0.000047	0.000048	0.000048	0.000053	0.000052	0.000047	0.000049	0.000030	0.000032
Vanadium	0.1		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	50		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B-6: Lake water screening for wildlife - Third Portage Lake - East Basin

Chemical	CCME WQG - Livestock <sup>a</sup>	Other (Aquatic Life)	Third Portage Lake - East Basin (TPE)									
			2024-03-08	2024-03-08	2024-04-26	2024-04-26	2024-07-02	2024-07-02	2024-08-12	2024-08-12	2024-09-05	2024-09-05
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	5		<0.0030	<0.0030	<0.0030	<0.0030	0.0075	0.0074	0.0236	0.0064	0.0056	0.0049
Antimony	NV	0.25 <sup>c</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.025		0.0006	0.0004	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0007	0.0005
Barium	NV	1 <sup>d</sup>	0.0036	0.0032	0.0037	0.0039	0.0032	0.0030	0.0027	0.0026	0.0026	0.0027
Beryllium	0.1		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Chromium	0.05 <sup>b</sup>		<0.00010	<0.00010	<0.00010	<0.00010	0.0002	0.0001	0.0001	<0.00010	<0.00010	<0.00010
Cobalt	1		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	0.5		0.0005	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.0005	<0.00050	<0.00050	<0.00050
Lead	0.1		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	NV	0.81 <sup>c</sup>	0.0004	0.0004	0.0003	0.0003	0.0023	0.0026	0.0015	0.0013	0.0015	0.0015
Mercury	0.003		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.5		0.00014	0.00012	0.00014	0.00013	0.00011	0.00010	0.00012	0.00013	0.00011	0.00012
Nickel	1		0.00068	0.00054	0.00059	0.00061	0.00072	0.00070	0.00051	<0.00050	<0.00050	<0.00050
Selenium	0.05		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NV	0.0001 <sup>c</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	NV	1.25 <sup>d</sup>	0.0155	0.0138	0.0166	0.0169	0.0128	0.0125	0.0131	0.0125	0.0116	0.0133
Thallium	NV	0.00003 <sup>d</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	0.003 <sup>e</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.2		0.000042	0.000037	0.000042	0.000043	0.000041	0.000042	0.000043	0.000042	0.000036	0.000034
Vanadium	0.1		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	50		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

(a) CCME (Canadian Council of Ministers of the Environment). Canadian Water Quality Guidelines for the Protection of Agriculture. Livestock Watering. Accessed November, 2024. Online: <https://ccme.ca/en/resources#>

(b) Value for hexavalent chromium (applied to measured total chromium)

(c) British Columbia Ministry of Environment and Climate Change Strategy. 2024. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary. Water Quality Guideline Series, WQG-20. Prov.B.C., Victoria B.C.

(d) British Columbia Ministry of Environment and Climate Change Strategy. 2024. Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture. Water Quality Guideline Series, WQG-08-01. Prov. B.C., Victoria B.C.

(e ) ANZECC and ARMCANZ (Australia and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand), 2000. Australian and New Zealand guidelines for fresh and marine water quality. Canberra, Australia.

Table B-7: Lake water screening for wildlife - Third Portage Lake - North Basin

Chemical	CCME WQG - Livestock <sup>a</sup>	Other (Aquatic Life)	Third Portage Lake - North Basin (TPN)									
			2024-03-07	2024-03-07	2024-04-26	2024-04-26	2024-07-09	2024-07-09	2024-08-09	2024-08-09	2024-09-05	2024-09-05
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	5		0.0031	<0.0030	<0.0030	<0.0030	0.0072	0.0064	0.0043	0.0045	0.0042	0.0044
Antimony	NV	0.25 <sup>c</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.025		0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002
Barium	NV	1 <sup>d</sup>	0.0033	0.0037	0.0040	0.0038	0.0029	0.0028	0.0027	0.0028	0.0028	0.0028
Beryllium	0.1		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.08		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05 <sup>b</sup>		<0.00010	<0.00010	0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt	1		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	0.5		<0.00050	<0.00050	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lead	0.1		<0.000050	<0.000050	<0.000050	<0.000050	0.000089	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	NV	0.81 <sup>c</sup>	0.0005	0.0005	0.0005	0.0004	0.0019	0.0018	0.0013	0.0016	0.0013	0.0014
Mercury	0.003		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.5		0.00011	0.00013	0.00013	0.00013	0.00010	0.00011	0.00009	0.00009	0.00010	0.00009
Nickel	1		0.00057	0.00056	0.00061	0.00055	0.00060	0.00058	<0.00050	<0.00050	<0.00050	<0.00050
Selenium	0.05		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NV	0.0001 <sup>c</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	NV	1.25 <sup>d</sup>	0.0131	0.0146	0.0157	0.0159	0.0114	0.0111	0.0113	0.0116	0.0115	0.0114
Thallium	NV	0.00003 <sup>d</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	0.003 <sup>e</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.2		0.000041	0.000044	0.000048	0.000050	0.000040	0.000038	0.000039	0.000039	0.000039	0.000034
Vanadium	0.1		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	50		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B-8: Lake water screening for wildlife - Whale Tail Lake - South Basin

Chemical	CCME WQG - Livestock <sup>a</sup>	Other (Aquatic Life)	Whale Tail Lake - South Basin (WTS)									
			2024-03-04	2024-03-04	2024-05-04	2024-05-04	2024-07-01	2024-07-01	2024-08-14	2024-08-14	2024-09-19	2024-09-19
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	5		0.0035	0.0032	<0.0030	<0.0030	0.0200	0.0172	0.0080	0.0062	0.0091	0.0101
Antimony	NV	0.25 <sup>c</sup>	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004
Arsenic	0.025		0.0006	0.0006	0.0006	0.0006	0.0012	0.0012	0.0009	0.0008	0.0010	0.0007
Barium	NV	1 <sup>d</sup>	0.0226	0.0210	0.0252	0.0246	0.0204	0.0197	0.0171	0.0168	0.0166	0.0169
Beryllium	0.1		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.08		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05 <sup>b</sup>		0.00012	0.00012	<0.00050	<0.00050	0.00043	0.00038	0.00018	0.00094	0.00017	0.00015
Cobalt	1		<0.00010	<0.00010	<0.00010	<0.00010	0.00011	0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	0.5		0.00058	0.00056	0.00056	0.00056	<0.00050	0.00056	<0.00050	<0.00050	<0.00050	<0.00050
Lead	0.1		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	NV	0.81 <sup>c</sup>	0.0014	0.0007	0.0032	0.0017	0.0209	0.0204	0.0056	0.0076	0.0072	0.0078
Mercury	0.003		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.5		0.00077	0.00081	0.00080	0.00078	0.00089	0.00093	0.00082	0.00081	0.00080	0.00075
Nickel	1		0.0017	0.0017	0.0018	0.0018	0.0026	0.0024	0.0014	0.0013	0.0015	0.0013
Selenium	0.05		0.000053	<0.000050	<0.000050	<0.000050	<0.000050	0.000058	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NV	0.0001 <sup>c</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	NV	1.25 <sup>d</sup>	0.1090	0.1060	0.1190	0.1160	0.0996	0.1000	0.0932	0.0924	0.0998	0.0939
Thallium	NV	0.00003 <sup>d</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	0.003 <sup>e</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.2		0.000065	0.000065	0.000065	0.000065	0.000103	0.000096	0.000073	0.000071	0.000060	0.000059
Vanadium	0.1		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	50		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0231	<0.0030	<0.0030

(a) CCME (Canadian Council of Ministers of the Environment). Canadian Water Quality Guidelines for the Protection of Agriculture. Livestock Watering. Accessed November, 2024. Online: <https://ccme.ca/en/resources#>

(b) Value for hexavalent chromium (applied to measured total chromium)

(c) British Columbia Ministry of Environment and Climate Change Strategy. 2024. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary. Water Quality Guideline Series, WQG-20. Prov.B.C., Victoria B.C.

(d) British Columbia Ministry of Environment and Climate Change Strategy. 2024. Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture. Water Quality Guideline Series, WQG-08-01. Prov. B.C., Victoria B.C.

(e ) ANZECC and ARMCANZ (Australia and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand), 2000. Australian and New Zealand guidelines for fresh and marine water quality. Canberra, Australia.

Table B-9: Lake water screening for wildlife - Kangislulik Lake

Chemical	CCME WQG - Livestock <sup>a</sup>	Other (Aquatic Life)	Kangislulik Lake (KAN)									
			2024-03-05	2024-03-05	2024-05-04	2024-05-04	2024-06-30	2024-06-30	2024-08-15	2024-08-15	2024-09-19	2024-09-19
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	5		<0.0030	<0.0030	<0.0030	<0.0030	0.0151	0.0112	0.0045	0.0056	0.0040	0.0048
Antimony	NV	0.25 <sup>c</sup>	0.0013	0.0010	0.0011	0.0014	0.0007	0.0005	0.0008	0.0013	0.0009	0.0015
Arsenic	0.025		0.0010	0.0009	0.0009	0.0010	0.0010	0.0008	0.0012	0.0017	0.0012	0.0020
Barium	NV	1 <sup>d</sup>	0.0362	0.0306	0.0349	0.0459	0.0237	0.0197	0.0181	0.0209	0.0198	0.0233
Beryllium	0.1		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5		0.011	<0.010	0.010	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.08		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	1000		25.40	20.80	25.00	31.60	15.90	13.60	15.00	17.90	17.10	19.60
Chromium	0.05 <sup>b</sup>		<0.00010	0.00042	<0.00050	<0.00050	0.00035	0.00024	<0.00010	0.00014	0.00012	0.00017
Cobalt	1		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	0.5		0.00061	0.00058	0.00053	0.00062	0.00051	<0.00050	<0.00050	<0.00050	<0.00050	0.0005
Lead	0.1		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	NV	0.81 <sup>c</sup>	0.0049	0.0038	0.0025	0.0043	0.0062	0.0056	0.0037	0.0040	0.0060	0.0079
Mercury	0.003		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.5		0.00117	0.00097	0.00093	0.00106	0.00055	0.00040	0.00084	0.00134	0.00098	0.00158
Nickel	1		0.0022	0.0016	0.0017	0.0024	0.0014	0.0012	0.0009	0.0014	0.0011	0.0017
Selenium	0.05		0.00009	0.00008	0.00007	0.00009	0.00007	<0.000050	<0.000050	0.00007	0.00006	<0.000050
Silver	NV	0.0001 <sup>c</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	NV	1.25 <sup>d</sup>	0.1990	0.1590	0.1870	0.2300	0.1220	0.0985	0.1130	0.1420	0.1200	0.1580
Thallium	NV	0.00003 <sup>d</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	0.003 <sup>e</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.2		0.000172	0.000132	0.000135	0.000156	0.000127	0.000098	0.000165	0.000252	0.000156	0.000257
Vanadium	0.1		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	50		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B-10: Lake water screening for wildlife - Inuggugayualik Lake

Chemical	CCME WQG - Livestock <sup>a</sup>	Other (Aquatic Life)	Inuggugayualik Lake (INUG)									
			2024-03-14	2024-03-14	2024-04-29	2024-04-29	2024-07-12	2024-07-12	2024-08-10	2024-08-10	2024-09-17	2024-09-17
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	5		0.0048	0.0050	0.0038	0.0041	0.0150	0.0144	0.0074	0.0071	0.0108	0.0103
Antimony	NV	0.25 <sup>c</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.025		0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Barium	NV	1 <sup>d</sup>	0.0026	0.0019	0.0023	0.0024	0.0023	0.0022	0.0019	0.0018	0.0019	0.0020
Beryllium	0.1		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.08		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	1000		2.00	1.46	1.66	1.77	1.32	1.28	1.32	1.33	1.40	1.36
Chromium	0.05 <sup>b</sup>		<0.00010	<0.00010	0.00019	0.00013	0.00018	0.00013	<0.00010	0.00010	0.00012	0.00012
Cobalt	1		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	0.5		0.00057	<0.00050	0.00063	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lead	0.1		<0.000050	<0.000050	<0.000050	<0.000050	0.00006	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	NV	0.81 <sup>c</sup>	0.0008	0.0010	0.0008	0.0008	0.0069	0.0071	0.0025	0.0027	0.0030	0.0029
Mercury	0.003		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.5		0.000051	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel	1		0.00051	<0.00050	<0.00050	0.00053	0.00051	0.00051	<0.00050	<0.00050	<0.00050	<0.00050
Selenium	0.05		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.000055	<0.000050
Silver	NV	0.0001 <sup>c</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	NV	1.25 <sup>d</sup>	0.0111	0.0081	0.0095	0.0102	0.0075	0.0077	0.0080	0.0079	0.0080	0.0078
Thallium	NV	0.00003 <sup>d</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	0.003 <sup>e</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.2		0.000077	0.000059	0.000071	0.000073	0.000067	0.000068	0.000060	0.000061	0.000056	0.000058
Vanadium	0.1		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	50		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

(a) CCME (Canadian Council of Ministers of the Environment). Canadian Water Quality Guidelines for the Protection of Agriculture. Livestock Watering. Accessed November, 2024. Online: <https://ccme.ca/en/resources#>

(b) Value for hexavalent chromium (applied to measured total chromium)

(c) British Columbia Ministry of Environment and Climate Change Strategy. 2024. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary. Water Quality Guideline Series, WQG-20. Prov.B.C., Victoria B.C.

(d) British Columbia Ministry of Environment and Climate Change Strategy. 2024. Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture. Water Quality Guideline Series, WQG-08-01. Prov. B.C., Victoria B.C.

(e ) ANZECC and ARMCANZ (Australia and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand), 2000. Australian and New Zealand guidelines for fresh and marine water quality. Canberra, Australia.

Table B-11: Lake water screening for wildlife - Pipedream Lake

Chemical	CCME WQG - Livestock <sup>a</sup>	Other (Aquatic Life)	Pipedream Lake (PDL)									
			2024-03-08	2024-03-08	2024-04-30	2024-04-30	2024-07-12	2024-07-12	2024-08-11	2024-08-11	2024-09-06	2024-09-06
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	5		<0.0030	<0.0030	<0.0030	<0.0030	0.0051	0.0054	0.0043	0.0044	0.0037	0.0037
Antimony	NV	0.25 <sup>c</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.025		0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Barium	NV	1 <sup>d</sup>	0.0027	0.0026	0.0028	0.0025	0.0022	0.0022	0.0021	0.0022	0.0021	0.0021
Beryllium	0.1		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5		<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.08		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Calcium	1000		3.38	3.52	3.55	3.22	2.60	2.64	2.62	2.72	2.61	2.56
Chromium	0.05 <sup>b</sup>		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt	1		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	0.5		0.00057	0.00054	0.00051	0.00050	0.00052	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lead	0.1		<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	NV	0.81 <sup>c</sup>	0.0007	0.0006	0.0005	0.0005	0.0027	0.0028	0.0019	0.0018	0.0019	0.0020
Mercury	0.003		<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	0.5		0.0001	0.0001	0.0001	0.0001	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001
Nickel	1		0.0008	0.0008	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0006	0.0006
Selenium	0.05		<0.000050	<0.000050	<0.000050	0.00	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NV	0.0001 <sup>c</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	NV	1.25 <sup>d</sup>	0.0143	0.0148	0.0158	0.0147	0.0115	0.0112	0.0115	0.0118	0.0117	0.0118
Thallium	NV	0.00003 <sup>d</sup>	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	0.003 <sup>e</sup>	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.2		0.000032	0.000033	0.000034	0.000031	0.000029	0.000029	0.000030	0.000029	0.000027	0.000025
Vanadium	0.1		<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	50		<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

(a) CCME (Canadian Council of Ministers of the Environment). Canadian Water Quality Guidelines for the Protection of Agriculture. Livestock Watering. Accessed November, 2024. Online: <https://ccme.ca/en/resources#>

(b) Value for hexavalent chromium (applied to measured total chromium)

(c) British Columbia Ministry of Environment and Climate Change Strategy. 2024. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary. Water Quality Guideline Series, WQG-20. Prov.B.C., Victoria B.C.

(d) British Columbia Ministry of Environment and Climate Change Strategy. 2024. Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture. Water Quality Guideline Series, WQG-08-01. Prov. B.C., Victoria B.C.

(e ) ANZECC and ARMCANZ (Australia and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand), 2000. Australian and New Zealand guidelines for fresh and marine water quality. Canberra, Australia.



Table B-12: TSF sediment screening - tailings beach sediment concentrations (collected June 25, 2024).

Chemical	CCME SQG-E <sup>a</sup>	BC CSR-E <sup>b</sup>	Max. Baseline <sup>c</sup>	25-Jun-24										Mean Concentration
				South Cell					North Cell					
				TSF South Cell 1	TSF South Cell 2	TSF South Cell 3	TSF South Cell 4^	TSF South Cell 5^	TSF North Cell 1	TSF North Cell 2	TSF North Cell 3	TSF North Cell 4	TSF North Cell 5^	
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Antimony	20			1.98	0.35	0.42	0.68	0.54	2.54	0.44	0.55	0.32	0.46	0.83
Arsenic	17		173	1610	130	121	241	56.1	1800	62.4	292	177	137	463
Barium	500 <sup>d</sup>			130	37.2	33.8	73.5	39	129	36.3	29.3	47.0	24.6	58.0
Beryllium	4			0.62	0.47	0.38	0.61	0.37	0.56	0.40	0.39	0.67	0.33	0.48
Cadmium	10			0.769	0.169	0.369	0.404	0.611	0.357	0.637	0.406	0.093	0.487	0.430
Chromium	64		549	848	82.2	100	336	51.6	867	51.8	72.8	123	58.2	259
Cobalt	50			42	10.4	12.6	16.3	13.2	46.4	10.9	17.2	8.35	14.9	19.2
Copper	63			95.2	32	51.3	528	71.6	82.2	43.8	58.9	45.3	64	107
Lead	300			133	92.2	70.6	120	118	103	102	65.6	72.6	53.4	93.0
Manganese	NV	2000		1760	386	503	926	540	1950	498	453	322	442	778
Mercury	12			0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025	0.0025
Molybdenum	10			1.74	9.16	17.3	20.6	28.2	1.89	32.4	16.7	2.8	11.2	14.2
Nickel	45		168	431	54.5	67.1	180	43.6	611	39.8	71.3	62.7	60.4	162.1
Selenium	1			1.06	0.10	0.10	0.51	0.10	0.87	0.10	0.23	0.10	0.22	0.34
Silver	20			0.64	0.37	0.41	0.59	0.60	0.33	0.54	0.55	0.15	0.63	0.48
Strontium	NV	NV	42	107	70.8	74.4	78.5	99.3	69.6	87.3	66.3	37.0	73.0	76.3
Thallium	1.4			0.324	0.119	0.116	0.194	0.103	0.379	0.107	0.115	0.133	0.082	0.167
Tin	50			1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0
Uranium	500			0.626	0.97	1.07	2.00	1.64	0.697	1.63	1.00	1.17	1.26	1.21
Vanadium	130			74.9	17.2	20.5	36.7	22.1	60.6	20.1	18.3	19.8	15.2	30.5
Zinc	250			92.1	42.6	64.9	77.6	96.7	51.4	88.6	60.8	37.6	60.2	67.3
Cyanide (WAD)	0.9			0.0335	0.0335	0.034	0.0365	0.033	0.0355	0.036	0.0335	0.035	0.0335	0.0344

(*italics*) = 1/2 LOR (as used in calculation of average concentration)  
WAD = weak acid dissociable  
^Bird tracks identified in sample vicinity.  
NV = no value  
(a) CCME (Canadian Council of Ministers of the Environment). Canadian Environmental Quality Guidelines – Soil Quality Guidelines for the Protection of Environmental and Human Health (SQG<sub>E</sub>-residential/parkland). Accessed November, 2024 at : <https://ccme.ca/en/resources#>  
(b) BC Reg. 375/96 - British Columbia Contaminated Sites Regulation Schedule 3.1 - Matrix Numerical Soil Standards for Environmental Protection. Last amended March, 2023.  
(c ) From Azimuth (2006), Golder (2018), and Golder (2019)  
(d) Overall residential/parkland guideline (1999); no SQG<sub>E</sub> was derived.

Azimuth (Azimuth Consulting Group Inc.). 2006. Wildlife Screening Level Risk Assessment for the Meadowbank Site. Prepared by Azimuth Consulting Ltd. for Cumberland Resources Ltd. 2006.  
Golder (Golder Associates Ltd.) 2018. Final Environmental Impact Statement Addendum - Whale Tail Pit Expansion Project. Appendix 5-B: Total Soil Metal Concentrations. Submitted to: Nunavut Impact Review Board.  
Submitted by: Agnico Eagle Mines Ltd. - Meadowbank Division. December, 2018.  
Golder (Golder Associates Ltd.) 2019. Human Health and Ecological Risk Assessment – Whale Tail Pit – Expansion Project. Prepared for Agnico Eagle Mines Ltd. May 2019.

Table B-13: Tailings water screening (wildlife)

Chemical	CCME WQG - Livestock <sup>a</sup>	Other (Aquatic Life)	South Cell							North Cell						Mean Concentration
			2024-05-19	2024-05-26	2024-06-02	2024-07-07	2024-08-04	2024-09-01	2024-10-13	2024-05-26	2024-06-02	2024-07-07	2024-08-04	2024-09-01	2024-10-13	
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	5		0.444	0.522	1.00	0.237	0.969	0.125	0.491	1.08	0.611	0.652	0.033	0.042	0.760	0.536
Antimony	NV	0.25 <sup>c</sup>	-	-	-	0.00200	-	0.00146	0.00162	-	-	0.00336	-	0.00383	0.00205	0.00239
Arsenic	0.025		<b>0.0680</b>	<b>0.0693</b>	<b>0.0569</b>	<b>0.0487</b>	<b>0.0613</b>	<b>0.0485</b>	<b>0.0723</b>	<b>0.1390</b>	<b>0.0973</b>	<b>0.1440</b>	<b>0.1480</b>	<b>0.1520</b>	<b>0.0991</b>	0.0926
Barium	NV	1 <sup>d</sup>	0.0211	0.0198	0.0181	0.0276	0.0471	0.0418	0.0229	0.0303	0.0203	0.0315	0.0348	0.0368	0.0276	0.0292
Beryllium	0.1		-	-	-	0.000015	-	<i>0.000005</i>	0.000029	-	-	0.000027	-	<i>0.000005</i>	0.000034	0.000019
Boron	5		-	-	-	0.044	-	0.064	0.057	-	-	0.053	-	0.099	0.094	0.069
Cadmium	0.08		0.0000722	0.0000708	0.0000679	0.000087	0.000127	0.0000569	0.0000861	0.000107	0.000074	0.0000713	0.000052	0.000053	0.000152	0.000083
Chromium	0.05 <sup>b</sup>		0.0110	0.0144	0.0268	0.0040	0.0234	0.0025	0.0160	0.0399	0.0211	0.0237	0.0010	0.0016	0.0247	0.0162
Cobalt	1		-	-	-	-	-	-	0.0099	-	-	-	-	-	0.0147	0.0123
Copper	0.5		0.0143	0.0095	0.0225	0.0253	0.0759	0.0281	0.0078	0.0081	0.0039	0.0053	0.0021	0.0027	0.0063	0.0163
Lead	0.1		0.0053	0.0077	0.0095	0.0027	-	0.0017	0.0084	0.0149	0.0088	0.0074	0.0007	0.0011	0.0127	0.0067
Manganese	NV	0.81 <sup>c</sup>	0.347	0.287	0.277	0.409	0.552	0.168	0.434	0.439	0.392	0.375	0.360	0.355	0.709	0.393
Mercury	0.003		<i>0.000005</i>	<i>0.000005</i>	<i>0.000005</i>	<i>0.000005</i>	<i>0.000005</i>	<i>0.000005</i>	<i>0.000005</i>	<i>0.00005</i>	<i>0.000005</i>	<i>0.000005</i>	<i>0.000005</i>	<i>0.000005</i>	<i>0.000005</i>	0.00001
Molybdenum	0.5		0.0088	0.0083	0.0092	0.0141	0.0229	0.0157	0.0170	0.0131	0.0122	0.0178	0.0244	0.0272	0.0273	0.0168
Nickel	1		0.188	0.157	0.100	0.111	0.144	0.092	0.130	0.242	0.173	0.187	0.230	0.228	0.268	0.173
Selenium	0.05		0.000655	0.000584	0.001140	0.001230	0.002120	0.001220	0.000746	0.000653	0.000327	0.000551	0.000567	0.000606	0.000759	0.000858
Silver	NV	0.0001 <sup>c</sup>	0.0000195	0.0000504	0.000023	0.0000137	0.000046	0.0000205	0.0000085	0.0000116	<i>0.000005</i>	0.0000154	<i>0.000005</i>	<i>0.0000025</i>	0.000009	0.000018
Strontium	NV	1.25 <sup>d</sup>	-	-	-	0.371	-	0.557	0.420	-	-	0.438	-	0.695	0.671	0.525
Thallium	NV	0.00003 <sup>d</sup>	0.0000105	0.0000154	0.0000237	0.0000088	0.000018	0.0000052	0.0000237	0.0000316	0.000018	0.0000215	0.000012	0.0000088	0.0000419	0.00002
Tin	NV	0.003 <sup>e</sup>	-	-	-	0.0012	-	<i>0.0001</i>	<i>0.0001</i>	-	-	<i>0.0001</i>	-	<i>0.0001</i>	<i>0.0001</i>	0.0003
Uranium	0.2		-	-	-	0.0059	-	0.0150	0.0069	-	-	0.0061	-	0.0100	0.0131	0.0095
Vanadium	0.1		-	-	-	<i>0.00050</i>	-	0.00036	0.00153	-	-	0.00216	-	0.00021	0.00222	0.00116
Zinc	50		0.0071	0.0074	0.0059	0.0196	0.0063	0.0012	0.0044	0.0040	0.0024	0.0041	<i>0.0005</i>	0.0002	0.0034	0.0051
Cyanide (WAD)	NV	0.005 <sup>g</sup>	<b>0.0065</b>	0.0032	<b>0.0061</b>	0.0019	<b>0.0270</b>	0.0044	0.0031	0.0050	0.0037	0.0024	<b>0.025</b>	<b>0.0057</b>	<b>0.0051</b>	0.0076

(a) CCME (Canadian Council of Ministers of the Environment). Canadian Water Quality Guidelines for the Protection of Agriculture. Livestock Watering. Accessed November, 2024. Online: <https://ccme.ca/en/resources#>

(b) Value for hexavalent chromium (applied to measured total chromium)

(c) British Columbia Ministry of Environment and Climate Change Strategy. 2024. British Columbia Approved Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture - Guideline Summary. Water Quality Guideline Series, WQG-20. Prov.B.C., Victoria B.C.

(d) British Columbia Ministry of Environment and Climate Change Strategy. 2024. Working Water Quality Guidelines: Aquatic Life, Wildlife & Agriculture. Water Quality Guideline Series, WQG-08-01. Prov. B.C., Victoria B.C.

(e ) ANZECC and ARMCANZ (Australia and New Zealand Environment and Conservation Council and the Agriculture and Resource Management Council of Australia and New Zealand), 2000. Australian and New Zealand guidelines for fresh and marine water quality. Canberra, Australia.

(*italics* ) 1/2 DL - used in calculation of average concentration

WAD = weak acid dissociable

"-" = not measured

Table B-14: Soil screening for human health - Whale Tail locations

Chemical	CCME SQG-HH <sup>a</sup>	BC CSR-HH <sup>b</sup>	Max. Baseline <sup>c</sup>	T9-1-SOIL	T9-2-SOIL	T9-3-SOIL	T10-1-SOIL	T10-2-SOIL	T10-3-SOIL	T11-1-SOIL	T11-2-SOIL	T11-3-SOIL
				17-Aug-2024	17-Aug-2024	17-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024
	mg/kg	mg/kg		mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	NV	40000		6190	7460	8720	9230	14300	7930	8800	7320	8120
Antimony	20			<0.10	<0.10	<0.10	0.10	0.15	<0.10	<0.10	<0.10	<0.10
Arsenic	12		173	3.78	4.90	6.55	15.3	31.0	11.8	4.64	3.99	5.18
Barium	6800			25.2	30.0	45.0	86.2	112	30.8	38.3	23.2	29.5
Beryllium	75			0.31	0.37	0.44	0.42	0.56	0.35	0.44	0.38	0.41
Cadmium	14			0.031	0.038	0.045	0.047	0.073	0.044	0.032	0.041	0.04
Chromium	220		549	31.1	31.2	30.2	71.0	68.5	38.2	31.5	24.0	28.9
Cobalt	50			5.34	6.07	6.71	8.64	10.6	5.58	6.65	5.58	7.26
Copper	1100			6.19	5.74	7.78	8.89	14.5	5.40	6.79	5.63	5.39
Lead	140			5.58	6.15	7.36	6.38	12.1	5.99	6.13	6.86	6.63
Manganese	NV	6000		202	227	259	330	353	206	285	254	316
Mercury	6.6			<0.0050	<0.0050	0.0151	0.0056	0.0134	0.0067	<0.0050	<0.0050	0.0076
Molybdenum	10			0.37	0.45	0.67	0.40	1.06	0.31	0.45	0.35	0.49
Nickel	45		168	20.3	18.6	20.0	34.8	29.6	19.1	21.2	16.1	19.3
Selenium	80			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20
Silver	20			<0.10	<0.10	1.48	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10
Strontium	NV	9500		31.0	26.5	26.9	49.2	36.9	23.4	34.5	33.3	33.1
Thallium	1			0.058	0.061	0.086	0.106	0.175	0.069	0.08	0.058	0.071
Tin	50			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium	23			2.03	1.77	3.09	1.53	1.70	1.34	2.64	2.47	2.44
Vanadium	130			13.3	14.5	15.9	26.3	39.4	17.9	15.2	13.1	15.3
Zinc	10000			26.4	30.2	32.8	33.5	48.6	28.2	37.7	32.2	35.5

Table B-15: Soil screening for human health - AWAR locations

Chemical	CCME SQG-HH <sup>a</sup>	BC CSR-HH <sup>b</sup>	Max. Baseline <sup>c</sup>	T8-S3-SOIL	T8-S4-SOIL	T8-S5-SOIL
				15-Aug-2024	15-Aug-2024	15-Aug-2024
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	NV	40000		7520	33200	5620
Antimony	20			<0.10	<0.10	<0.10
Arsenic	12		173	2.56	5.76	1.77
Barium	6800			28.2	202	25.0
Beryllium	75			0.22	1.44	0.27
Cadmium	14			0.036	0.16	0.024
Chromium	220		549	40.6	99.7	20.4
Cobalt	50			6.30	9.46	3.22
Copper	1100			7.03	63.1	5.55
Lead	140			4.52	22.5	4.82
Manganese	NV	6000		211	239	131
Mercury	6.6			<0.0050	0.0881	<0.0050
Molybdenum	10			0.53	2.53	0.30
Nickel	45		168	18.9	46.6	10.0
Selenium	80			<0.20	0.48	<0.20
Silver	20			<0.10	0.25	<0.10
Strontium	NV	9500		24.3	27.6	22.3
Thallium	1			0.080	0.364	0.061
Tin	50			<2.0	<2.0	<2.0
Uranium	23			0.999	14.5	2.24
Vanadium	130			21.0	51.3	14.3
Zinc	10000			26.4	76.6	21.7

Table B-16: Soil screening for human health - Meadowbank Mine locations

Chemical	CCME SQG-HH <sup>a</sup>	BC CSR-HH <sup>b</sup>	Max. Baseline <sup>c</sup>	T1-S1-SOIL	T1-S3-SOIL	T1-S4-SOIL	T2-S2-SOIL	T2-S3-SOIL	T2-S4-SOIL	T3-S1-SOIL	T3-S2-SOIL	T3-S3-SOIL	T4-S3-SOIL	T4-S4-SOIL	T4-S5-SOIL	T5-S1-SOIL	T5-S3-SOIL	T5-S5-SOIL	T6-S2-SOIL	T6-S4-SOIL	T6-S5-SOIL	T7-S1-SOIL	T7-S4-SOIL	T7-S5-SOIL
				18-Aug-2024	18-Aug-2024	18-Aug-2024	17-Aug-2024	17-Aug-2024	17-Aug-2024	17-Aug-2024	17-Aug-2024	17-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	16-Aug-2024	13-Aug-2024	13-Aug-2024	13-Aug-2024	15-Aug-2024	15-Aug-2024	15-Aug-2024
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	NV	40000		14200	9860	10400	3910	6110	5660	12200	7250	5840	14600	4570	4690	4600	5390	6480	8550	8960	8600	17800	16000	13700
Antimony	20			0.13	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	<0.10	<0.10	0.25	0.31	0.10
Arsenic	12		173	6.12	3.82	4.31	1.30	2.06	1.84	5.39	2.70	2.03	10.1	6.32	3.01	6.01	4.65	10.4	10.0	4.87	4.58	61.5	34.5	25.5
Barium	6800			50.5	36.6	29.7	13.9	24.5	23.4	50.1	25.6	22.6	116	75.3	18.4	83.8	139	42.4	35.6	44.8	39.6	47.2	25.9	31.8
Beryllium	75			0.60	0.32	0.48	0.30	0.38	0.37	0.72	0.42	0.37	0.70	0.20	0.25	0.16	0.19	0.25	0.29	0.35	0.38	0.49	0.32	0.38
Cadmium	14			0.053	0.063	0.039	0.034	0.034	0.030	0.076	0.035	0.035	0.239	0.099	0.084	0.261	0.414	0.153	0.230	0.054	0.051	1.05	0.182	0.165
Chromium	220		549	39.2	32.0	31.1	7.58	17.7	14.7	32.8	20.3	13.7	66.1	43.4	15.8	52.0	35.3	67.6	85.9	49.8	56.1	65.7	48.1	37.8
Cobalt	50			11.3	4.46	8.06	2.78	4.19	3.76	7.30	5.06	4.20	7.49	3.15	2.18	5.82	8.02	10.3	7.70	6.12	6.73	9.54	11.0	5.74
Copper	1100			22.0	6.21	9.86	2.06	4.54	3.84	9.38	5.17	3.70	15.3	6.75	3.34	12.3	10.4	7.37	11.8	7.43	8.33	33.0	14.7	10.1
Lead	140			7.70	5.88	5.93	3.93	5.43	5.34	8.57	6.05	4.48	13.8	5.33	4.51	5.89	5.66	8.98	6.52	6.90	7.13	46.7	41.8	13.2
Manganese	NV	6000		408	173	364	171	260	211	453	269	257	390	576	137	765	1440	797	265	275	251	534	363	198
Mercury	6.6			0.0362	0.0677	<0.0050	0.0070	<0.0050	<0.0050	0.0259	<0.0050	<0.0050	0.2500	0.2390	0.0511	0.3030	0.2510	0.0935	0.0534	0.0297	0.0093	0.0836	0.0154	0.0294
Molybdenum	10			1.22	0.97	0.72	0.61	0.61	0.59	1.31	0.78	0.64	2.54	1.12	0.77	0.82	1.03	0.91	0.96	0.65	1.03	2.05	1.05	1.34
Nickel	45		168	29.5	14.5	19.4	4.76	9.24	8.06	17.4	11.2	8.28	29.0	17.0	6.70	28.7	20.7	20.6	40.9	22.4	25.5	31.6	29.6	19.9
Selenium	80			<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.26	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.24	<0.20	<0.20
Silver	20			<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.18	<0.10	<0.10	0.10	<0.10	<0.10	<0.10	<0.10	<0.10	0.36	0.10	<0.10
Strontium	NV	9500		21.6	10.8	15.2	7.31	12.9	13.6	13.2	16.3	8.73	24.7	11.5	6.34	25.2	29.6	9.56	13.1	11.7	12.8	11.6	8.84	9.03
Thallium	1			0.128	0.093	0.110	0.063	0.102	0.099	0.169	0.106	0.126	0.195	0.135	0.081	0.069	0.081	0.192	0.122	0.141	0.157	0.189	0.112	0.148
Tin	50			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium	23			3.03	1.29	2.71	1.79	3.76	3.15	3.98	2.59	1.92	6.32	0.888	1.10	1.26	1.71	1.60	1.52	1.73	2.58	4.44	1.52	1.58
Vanadium	130			22.2	22.4	18.3	8.01	13.2	12.9	19.4	14.7	11.7	24.0	10.6	10.8	9.91	10.6	20.8	20.4	20.6	19.8	32.9	25.5	26.4
Zinc	10000			40.4	29.9	31.2	18.2	25.0	22.0	46.3	26.8	22.9	53.8	31.4	17.8	50.4	66.2	30.2	40.7	35.8	33.1	98.8	59.8	46.0

Table B-17: Soil screening for human health - external reference locations

Chemical	CCME SQG-HH <sup>a</sup>	BC CSR-HH <sup>b</sup>	Max. Baseline <sup>c</sup>	C1-S2-SOIL	C1-S4-SOIL	C1-S5-SOIL	C2-S1-SOIL	C2-S2-SOIL	C2-S5-SOIL	C3-S3-SOIL	C3-S4-SOIL	C3-S5-SOIL
				14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024	14-Aug-2024
	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg	mg/kg
Aluminum	NV	40000		7430	7300	4920	16800	14200	14400	18500	15800	12800
Antimony	20			<0.10	<0.10	<0.10	0.11	0.11	0.10	0.12	0.13	0.21
Arsenic	12		173	2.46	3.16	2.24	7.73	7.73	8.55	11.1	12.0	6.22
Barium	6800			46.1	62.4	20.0	36.2	38.2	31.6	40.8	51.8	37.6
Beryllium	75			0.26	0.37	0.24	0.37	0.27	0.39	0.42	0.4	0.29
Cadmium	14			0.123	0.213	0.029	0.096	0.068	0.103	0.100	0.180	0.128
Chromium	220		549	23.5	29.6	22.8	174	137	95.2	137	164	139
Cobalt	50			1.90	3.39	3.93	12.2	9.45	9.71	12.9	15.4	10.5
Copper	1100			2.94	6.60	3.94	9.06	9.11	13.4	17.6	24.4	9.42
Lead	140			7.66	5.80	3.81	9.21	7.67	11.1	9.17	9.67	6.54
Manganese	NV	6000		109	133	176	465	258	262	362	390	289
Mercury	6.6			0.1100	0.0880	<0.0050	0.0430	0.0372	0.0334	0.0271	0.0395	0.0534
Molybdenum	10			0.88	1.10	0.39	1.85	0.88	0.66	1.85	1.40	1.21
Nickel	45		168	7.92	15.7	12.9	62.3	63.5	52.6	68.0	89.9	56.6
Selenium	80			0.29	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	<0.20	0.21
Silver	20			<0.10	0.11	<0.10	<0.10	<0.10	<0.10	<0.10	0.12	0.11
Strontium	NV	9500		12.4	19.6	16.2	31.5	28.3	31.8	32.3	27.6	28.5
Thallium	1			0.113	0.126	0.059	0.144	0.104	0.108	0.124	0.142	0.225
Tin	50			<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0	<2.0
Uranium	23			1.97	3.19	2.44	1.34	0.891	1.52	1.06	2.02	1.16
Vanadium	130			17.3	17.7	11.0	37.2	33.0	28.7	39.3	31.9	30.8
Zinc	10000			20.4	28.4	19.2	46.2	42.1	40.2	62.1	49.3	40.6

Table B-18: Lake water screening for human health - Second Portage Lake

Chemical	HC Drinking Water <sup>a</sup>	BC CSR - Drinking Water <sup>b</sup>	Max. Baseline <sup>c</sup>	Second Portage Lake (SP)									
				2024-03-09	2024-03-09	2024-04-27	2024-04-27	2024-07-03	2024-07-02	2024-08-14	2024-08-14	2024-09-08	2024-09-08
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	2.9			<0.0030	0.0031	<0.0030	<0.0030	0.0112	0.0113	0.0048	0.0056	<0.0030	<0.0030
Antimony	0.006			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.01			0.0005	0.0005	0.0005	0.0005	0.0004	0.0005	0.0005	0.0004	0.0004	0.0004
Barium	2			0.003	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003
Beryllium	NV	0.008		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.007			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05			<0.00050	<0.00050	<0.00010	<0.00010	<0.00010	0.00011	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt	NV	0.001		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	2			0.0008	0.0009	0.0008	0.0009	0.0009	0.0008	0.0007	0.0007	0.0006	0.0006
Lead	0.005			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	0.12			0.0007	0.0007	0.0005	0.0006	0.0030	0.0031	0.0021	0.0019	0.0011	0.0010
Mercury	0.001			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	NV	0.25		0.00015	0.00017	0.00015	0.00015	0.00011	0.00012	0.00013	0.00014	0.00014	0.00014
Nickel	NV	0.08		<0.00050	0.00055	0.00058	0.00056	0.00064	0.00064	<0.00050	<0.00050	<0.00050	<0.00050
Selenium	0.05			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NR			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	7			0.0242	0.0260	0.0264	0.0287	0.0214	0.0209	0.0211	0.0215	0.0211	0.0212
Thallium	NV		0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	2.5		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.02			0.000050	0.000047	0.000048	0.000048	0.000053	0.000052	0.000047	0.000049	0.000030	0.000032
Vanadium	NV	0.02	0.030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	NR			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B-19: Lake water screening for human health - Third Portage Lake - East Basin

Chemical	HC Drinking Water <sup>a</sup>	BC CSR - Drinking Water <sup>b</sup>	Max. Baseline <sup>c</sup>	Third Portage Lake - East Basin (TPE)									
				2024-03-08	2024-03-08	2024-04-26	2024-04-26	2024-07-02	2024-07-02	2024-08-12	2024-08-12	2024-09-05	2024-09-05
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	2.9			<0.0030	<0.0030	<0.0030	<0.0030	0.0075	0.0074	0.0236	0.0064	0.0056	0.0049
Antimony	0.006			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.01			0.0006	0.0004	0.0005	0.0005	0.0006	0.0005	0.0005	0.0005	0.0007	0.0005
Barium	2			0.004	0.003	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003
Beryllium	NV	0.008		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.007			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05			<0.00010	<0.00010	<0.00010	<0.00010	0.00022	0.00010	0.00014	<0.00010	<0.00010	<0.00010
Cobalt	NV	0.001		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	2			0.0005	<0.00050	<0.00050	<0.00050	0.0005	<0.00050	0.0005	<0.00050	<0.00050	<0.00050
Lead	0.005			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	0.12			0.0004	0.0004	0.0003	0.0003	0.0023	0.0026	0.0015	0.0013	0.0015	0.0015
Mercury	0.001			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	NV	0.25		0.00014	0.00012	0.00014	0.00013	0.00011	0.00010	0.00012	0.00013	0.00011	0.00012
Nickel	NV	0.08		0.00068	0.00054	0.00059	0.00061	0.00072	0.00070	0.00051	<0.00050	<0.00050	<0.00050
Selenium	0.05			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NR			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	7			0.0155	0.0138	0.0166	0.0169	0.0128	0.0125	0.0131	0.0125	0.0116	0.0133
Thallium	NV		0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	2.5		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.02			0.000042	0.000037	0.000042	0.000043	0.000041	0.000042	0.000043	0.000042	0.000036	0.000034
Vanadium	NV	0.02	0.030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	NR			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

NR - none required (non-toxic); NV - no value

(a) Health Canada, 2024. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Heath Canada. Ottawa, ON.

(b) BC Reg. 375/96 British Columbia Contaminated Sites Regulation Schedule 3.2 Generic Numerical Water Standards - drinking water. Last amended March, 2023.

(c) Azimuth (2006) or Golder (2019)

Azimuth (Azimuth Consulting Group Inc.). 2006. Wildlife Screening Level Risk Assessment for the Meadowbank Site. Prepared by Azimuth Consulting Ltd. for Cumberland Resources Ltd. 2006.

Golder (Golder Associates Ltd.) 2019. Human Health and Ecological Risk Assessment – Whale Tail Pit – Expansion Project. Prepared for Agnico Eagle Mines Ltd. May 2019.

Table B-20: Lake water screening for human health - Third Portage Lake - North Basin

Chemical	HC Drinking Water <sup>a</sup>	BC CSR - Drinking Water <sup>b</sup>	Max. Baseline <sup>c</sup>	Third Portage Lake - North Basin (TPN)									
				2024-03-07	2024-03-07	2024-04-26	2024-04-26	2024-07-09	2024-07-09	2024-08-09	2024-08-09	2024-09-05	2024-09-05
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	2.9			0.0031	<0.0030	<0.0030	<0.0030	0.0072	0.0064	0.0043	0.0045	0.0042	0.0044
Antimony	0.006			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.01			0.0002	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002	0.0002	0.0002	0.0002
Barium	2			0.003	0.004	0.004	0.004	0.003	0.003	0.003	0.003	0.003	0.003
Beryllium	NV	0.008		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.007			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05			<0.00010	<0.00010	0.00010	<0.00010	<0.00010	0.00012	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt	NV	0.001		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	2			<0.00050	<0.00050	0.0005	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lead	0.005			<0.000050	<0.000050	<0.000050	<0.000050	0.0001	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	0.12			0.0005	0.0005	0.0005	0.0004	0.0019	0.0018	0.0013	0.0016	0.0013	0.0014
Mercury	0.001			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	NV	0.25		0.00011	0.00013	0.00013	0.00013	0.00010	0.00011	0.00009	0.00009	0.00010	0.00009
Nickel	NV	0.08		0.00057	0.00056	0.00061	0.00055	0.00060	0.00058	<0.00050	<0.00050	<0.00050	<0.00050
Selenium	0.05			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NR			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	7			0.0131	0.0146	0.0157	0.0159	0.0114	0.0111	0.0113	0.0116	0.0115	0.0114
Thallium	NV		0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	2.5		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.02			0.000041	0.000044	0.000048	0.000050	0.000040	0.000038	0.000039	0.000039	0.000039	0.000034
Vanadium	NV	0.02	0.030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	NR			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B-21: Lake water screening for human health - Whale Tail Lake - South Basin

Chemical	HC Drinking Water <sup>a</sup>	BC CSR - Drinking Water <sup>b</sup>	Max. Baseline <sup>c</sup>	Whale Tail Lake - South Basin (WTS)									
				2024-03-04	2024-03-04	2024-05-04	2024-05-04	2024-07-01	2024-07-01	2024-08-14	2024-08-14	2024-09-19	2024-09-19
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	2.9			0.0035	0.0032	<0.0030	<0.0030	0.0200	0.0172	0.0080	0.0062	0.0091	0.0101
Antimony	0.006			0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004
Arsenic	0.01			0.0006	0.0006	0.0006	0.0006	0.0012	0.0012	0.0009	0.0008	0.0010	0.0007
Barium	2			0.0226	0.0210	0.0252	0.0246	0.0204	0.0197	0.0171	0.0168	0.0166	0.0169
Beryllium	NV	0.008		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.007			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05			0.00012	0.00012	<0.00050	<0.00050	0.00043	0.00038	0.00018	0.00094	0.00017	0.00015
Cobalt	NV	0.001		<0.00010	<0.00010	<0.00010	<0.00010	0.00011	0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	2			0.00058	0.00056	0.00056	0.00056	<0.00050	0.00056	<0.00050	<0.00050	<0.00050	<0.00050
Lead	0.005			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	0.12			0.0014	0.0007	0.0032	0.0017	0.0209	0.0204	0.0056	0.0076	0.0072	0.0078
Mercury	0.001			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	NV	0.25		0.00077	0.00081	0.00080	0.00078	0.00089	0.00093	0.00082	0.00081	0.00080	0.00075
Nickel	NV	0.08		0.0017	0.0017	0.0018	0.0018	0.0026	0.0024	0.0014	0.0013	0.0015	0.0013
Selenium	0.05			0.0001	<0.000050	<0.000050	<0.000050	<0.000050	0.000058	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NR			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	7			0.1090	0.1060	0.1190	0.1160	0.0996	0.1000	0.0932	0.0924	0.0998	0.0939
Thallium	NV		0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	2.5		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.02			0.000065	0.000065	0.000065	0.000065	0.000103	0.000096	0.000073	0.000071	0.000060	0.000059
Vanadium	NV	0.02	0.030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	NR			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	0.0231	<0.0030	<0.0030

NR - none required (non-toxic); NV - no value

(a) Health Canada, 2024. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Heath Canada. Ottawa, ON.

(b) BC Reg. 375/96 British Columbia Contaminated Sites Regulation Schedule 3.2 Generic Numerical Water Standards - drinking water. Last amended March, 2023.

(c) Azimuth (2006) or Golder (2019)

Azimuth (Azimuth Consulting Group Inc.). 2006. Wildlife Screening Level Risk Assessment for the Meadowbank Site. Prepared by Azimuth Consulting Ltd. for Cumberland Resources Ltd. 2006.

Golder (Golder Associates Ltd.) 2019. Human Health and Ecological Risk Assessment – Whale Tail Pit – Expansion Project. Prepared for Agnico Eagle Mines Ltd. May 2019.

Table B-22: Lake water screening for human health - Kangislulik Lake

Chemical	HC Drinking Water <sup>a</sup>	BC CSR - Drinking Water <sup>b</sup>	Max. Baseline <sup>c</sup>	Kangislulik Lake (KAN)									
				2024-03-05	2024-03-05	2024-05-04	2024-05-04	2024-06-30	2024-06-30	2024-08-15	2024-08-15	2024-09-19	2024-09-19
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	2.9			<0.0030	<0.0030	<0.0030	<0.0030	0.0151	0.0112	0.0045	0.0056	0.0040	0.0048
Antimony	0.006			0.0013	0.0010	0.0011	0.0014	0.0007	0.0005	0.0008	0.0013	0.0009	0.0015
Arsenic	0.01			0.0010	0.0009	0.0009	0.0010	0.0010	0.0008	0.0012	0.0017	0.0012	0.0020
Barium	2			0.0362	0.0306	0.0349	0.0459	0.0237	0.0197	0.0181	0.0209	0.0198	0.0233
Beryllium	NV	0.008		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5			0.011	<0.010	0.010	0.013	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.007			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05			<0.00010	0.00042	<0.00050	<0.00050	0.00035	0.00024	<0.00010	0.00014	0.00012	0.00017
Cobalt	NV	0.001		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	2			0.00061	0.00058	0.00053	0.00062	0.00051	<0.00050	<0.00050	<0.00050	<0.00050	0.0005
Lead	0.005			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	0.12			0.0049	0.0038	0.0025	0.0043	0.0062	0.0056	0.0037	0.0040	0.0060	0.0079
Mercury	0.001			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	NV	0.25		0.0012	0.0010	0.0009	0.0011	0.0005	0.0004	0.0008	0.0013	0.0010	0.0016
Nickel	NV	0.08		0.0022	0.0016	0.0017	0.0024	0.0014	0.0012	0.0009	0.0014	0.0011	0.0017
Selenium	0.05			0.000088	0.000075	0.000065	0.000094	0.000068	<0.000050	<0.000050	0.000074	0.000056	<0.000050
Silver	NR			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	7			0.1990	0.1590	0.1870	0.2300	0.1220	0.0985	0.1130	0.1420	0.1200	0.1580
Thallium	NV		0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	2.5		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.02			0.000172	0.000132	0.000135	0.000156	0.000127	0.000098	0.000165	0.000252	0.000156	0.000257
Vanadium	NV	0.02	0.030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	NR			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

Table B-23: Lake water screening for human health - Inuggugayualik Lake

Chemical	HC Drinking Water <sup>a</sup>	BC CSR - Drinking Water <sup>b</sup>	Max. Baseline <sup>c</sup>	Inuggugayualik Lake (INUG)									
				2024-03-14	2024-03-14	2024-04-29	2024-04-29	2024-07-12	2024-07-12	2024-08-10	2024-08-10	2024-09-17	2024-09-17
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	2.9			0.0048	0.0050	0.0038	0.0041	0.0150	0.0144	0.0074	0.0071	0.0108	0.0103
Antimony	0.006			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.01			0.0002	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001	0.0001
Barium	2			0.0026	0.0019	0.0023	0.0024	0.0023	0.0022	0.0019	0.0018	0.0019	0.0020
Beryllium	NV	0.008		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.007			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05			<0.00010	<0.00010	0.00019	0.00013	0.00018	0.00013	<0.00010	0.00010	0.00012	0.00012
Cobalt	NV	0.001		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	2			0.00057	<0.00050	0.00063	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lead	0.005			<0.000050	<0.000050	<0.000050	<0.000050	0.000061	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	0.12			0.0008	0.0010	0.0008	0.0008	0.0069	0.0071	0.0025	0.0027	0.0030	0.0029
Mercury	0.001			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	NV	0.25		0.000051	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Nickel	NV	0.08		0.00051	<0.00050	<0.00050	0.00053	0.00051	0.00051	<0.00050	<0.00050	<0.00050	<0.00050
Selenium	0.05			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	0.0001	<0.000050
Silver	NR			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	7			0.0111	0.0081	0.0095	0.0102	0.0075	0.0077	0.0080	0.0079	0.0080	0.0078
Thallium	NV		0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	2.5		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.02			0.000077	0.000059	0.000071	0.000073	0.000067	0.000068	0.000060	0.000061	0.000056	0.000058
Vanadium	NV	0.02	0.030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	NR			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

NR - none required (non-toxic); NV - no value

(a) Health Canada, 2024. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Heath Canada. Ottawa, ON.

(b) BC Reg. 375/96 British Columbia Contaminated Sites Regulation Schedule 3.2 Generic Numerical Water Standards - drinking water. Last amended March, 2023.

(c) Azimuth (2006) or Golder (2019)

Azimuth (Azimuth Consulting Group Inc.). 2006. Wildlife Screening Level Risk Assessment for the Meadowbank Site. Prepared by Azimuth Consulting Ltd. for Cumberland Resources Ltd. 2006.

Golder (Golder Associates Ltd.) 2019. Human Health and Ecological Risk Assessment – Whale Tail Pit – Expansion Project. Prepared for Agnico Eagle Mines Ltd. May 2019.

Table B-24: Lake water screening for human health - Pipedream Lake

Chemical	HC Drinking Water <sup>a</sup>	BC CSR - Drinking Water <sup>b</sup>	Max. Baseline <sup>c</sup>	Pipedream Lake (PDL)									
				2024-03-08	2024-03-08	2024-04-30	2024-04-30	2024-07-12	2024-07-12	2024-08-11	2024-08-11	2024-09-06	2024-09-06
	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L	mg/L
Aluminum	2.9			<0.0030	<0.0030	<0.0030	<0.0030	0.0051	0.0054	0.0043	0.0044	0.0037	0.0037
Antimony	0.006			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Arsenic	0.01			0.0003	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002	0.0002
Barium	2			0.0027	0.0026	0.0028	0.0025	0.0022	0.0022	0.0021	0.0022	0.0021	0.0021
Beryllium	NV	0.008		<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100	<0.000100
Boron	5			<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010	<0.010
Cadmium	0.007			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Chromium	0.05			<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Cobalt	NV	0.001		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Copper	2			0.00057	0.00054	0.00051	0.00050	0.00052	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Lead	0.005			<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Manganese	0.12			0.0007	0.0006	0.0005	0.0005	0.0027	0.0028	0.0019	0.0018	0.0019	0.0020
Mercury	0.001			<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050	<0.0000050
Molybdenum	NV	0.25		0.0001	0.0001	0.0001	0.0001	0.0003	0.0001	0.0001	0.0001	0.0001	0.0001
Nickel	NV	0.08		0.0008	0.0008	0.0007	0.0007	0.0007	0.0007	0.0006	0.0007	0.0006	0.0006
Selenium	0.05			<0.000050	<0.000050	<0.000050	0.000051	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050	<0.000050
Silver	NR			<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Strontium	7			0.0143	0.0148	0.0158	0.0147	0.0115	0.0112	0.0115	0.0118	0.0117	0.0118
Thallium	NV		0.10	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010	<0.000010
Tin	NV	2.5		<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010	<0.00010
Uranium	0.02			0.000032	0.000033	0.000034	0.000031	0.000029	0.000029	0.000030	0.000029	0.000027	0.000025
Vanadium	NV	0.02	0.030	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050	<0.00050
Zinc	NR			<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030	<0.0030

NR - none required (non-toxic); NV - no value

(a) Health Canada, 2024. Guidelines for Canadian Drinking Water Quality - Summary Table. Water and Air Quality Bureau, Healthy Environments and Consumer Safety Branch, Heath Canada. Ottawa, ON.

(b) BC Reg. 375/96 British Columbia Contaminated Sites Regulation Schedule 3.2 Generic Numerical Water Standards - drinking water. Last amended March, 2023.

(c) Azimuth (2006) or Golder (2019)

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Golder (Golder Associates Ltd.) 2019. Human Health and Ecological Risk Assessment – Whale Tail Pit – Expansion Project. Prepared for Agnico Eagle Mines Ltd. May 2019.

## Appendix C

### 2024 MERCURY MONITORING PROGRAM SUMMARY

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*Complete methods and results for the 2024 Mercury Monitoring Program are provided as an appendix of the 2024 Meadowbank Complex Annual Report to the NIRB, and are summarized below from that report, in the context of the HHRA<sub>country foods</sub> (focus on Lake Trout).*

The purpose of the Mercury Monitoring Program (MMP) is to assess changes in mercury concentrations caused by creation of the Whale Tail Impoundment (“Impoundment”) following construction of the Whale Tail Dike (2018). Construction of the dike raised the elevation of the south basin of Whale Tail Lake (WTS) and connected WTS with Lake A20, Lake A65, and other small waterbodies (main document, Figure 1).

One of the effects of newly formed reservoirs is an increase in the production of methylmercury. Methylmercury bioaccumulates in aquatic food webs with the highest concentrations typically observed in large-bodied fish species like Lake Trout. Predictions for the expected increase of mercury concentrations in Lake Trout were made in the Whale Tail Pit Project’s Final Environmental Impact Statement (FEIS). Mercury concentrations in Lake Trout are predicted to increase between 2-3 times above baseline concentrations. Total mercury concentrations in surface water are predicted to peak at 50-100 ng/L.

The scope of the 2024 MMP included large-bodied fish tissue (Lake Trout), small-bodied fish tissue (Slimy Sculpin), surface water, and sediment sampling at various locations within the Impoundment, downstream of the mine, and at local reference lakes.

Measured concentrations of mercury in the Impoundment surface water in 2024 were well below predictions in the FEIS and below the CCME water quality guidelines for the protection of aquatic life (26 ng/L for total mercury and 4 ng/L for methylmercury). Concentrations of total mercury and methylmercury increased during the early post-flooding years (2019 – 2021), appeared to peak in 2022-2023, and are now apparently declining. Evidence of downstream transport of methylmercury to Kangislulik Lake (formerly called Mammoth Lake) and beyond is weak.

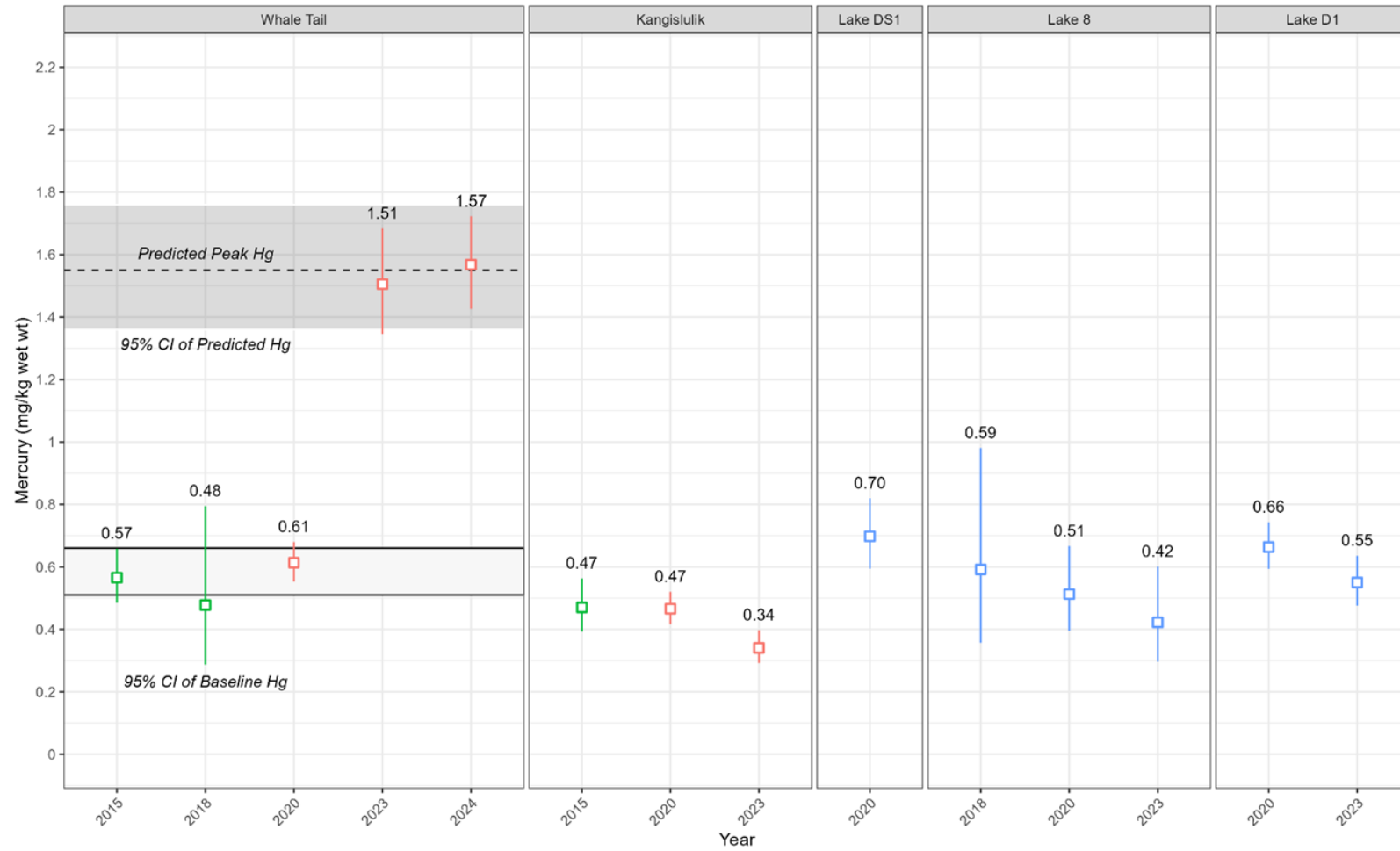
Lake Trout is the target species to monitor mercury bioaccumulation in the food web. In the Project FEIS, peak tissue concentrations for a 550-mm Lake Trout were predicted, along with implications for acceptable serving sizes. The MMP has committed to implementing further risk-based analyses if fish tissue mercury concentrations in the Impoundment exceed the predicted peak mercury concentration. The estimated mean tissue mercury concentration for a 550-mm Lake Trout in 2024 from Whale Tail Lake (1.57 mg/kg ww) was greater than baseline (0.57 mg/kg ww in 2015 and 0.60 mg/kg ww in 2018) and slightly greater than 2023 (1.51 mg/kg ww) (Figure C-1). However, results in 2023 and 2024 were generally consistent with the FEIS-predicted peak concentration (1.55 mg/kg ww, with an upper confidence limit of 1.72 mg/kg ww). Therefore, no MMP-related risk management measures are required at this time.

In addition, and as described above, 2024 creel survey results continue to indicate that no fishing currently occurs within the Impoundment. Finally, it is expected that Lake Trout mercury levels will start to decrease soon as there are indications (e.g., water methylmercury) that methylmercury production within the Impoundment has slowed. Ultimately (e.g., over the next few decades), Lake Trout mercury levels will decrease to a new baseline.



### Mercury Model Estimates - Lake Trout (550 mm)

Area Designation ■ Control ■ Impact ■ Reference



**Figure C-1. Estimated tissue mercury concentrations for a 550 mm Lake Trout in Whale Tail area lakes since 2015 (figure from 2024 MMP Report).**